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HEAD OFFICE

Johannesburg (011) 392 0000 (011) 974 9420 info@ecasa.co.za

REGIONAL OFFICES

Highveld	(010) 271 0686	(011) 974 9420	highveld@ecasa.co.za
Pretoria	(012) 342 3242	(012) 342 3455	infopta@ecasa.co.za
Durban	(031) 312 6313	(031) 312 0851	ecakzn@ecasa.co.za
Bloemfontein	(051) 447 0859	(051) 430 2355	nita@ecasa.co.za
Port Elizabeth	(041) 363 1990	[041] 364 0162	adminpe@ecasa.co.za
East London	(043) 726 6359	(043) 726 6740	adminel@ecasa.co.za
Cape Town	(021) 462 2690	(021) 465 6319	ecact@iafrica.com

NATIONAL HELP DESK 087 944 4555

website: www.ecasa.co.za

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PUBLISHER
Isikhova Media (Pty) Ltd
10th Floor, Metal Box, 25 Owl Street,
Milpark, Johannesburg, South Africa
Tel: +27 11 883 4627
www.sabuilder.co.za/www.isikhova.co.za

CONTRIBUTIONS
Master Builders South Africa
Tel: +27 11 205 9000
E-mail: editor@sabuilder.co.za
www.masterbuilders.org.za

Publishing director/
editor-in-chief: Jason Aarons
E-mail: jason@isikhova.co.za

Editor: Nicholas McDiarmid
E-mail: nicholas@isikhova.co.za

Director: brand strategy: Jenny Justus
Tel: 083 450 6052
E-mail: jenny@isikhova.co.za

Managing director: Imraan Mahomed
E-mail: imraan@isikhova.co.za

Creative director: Joanne Brook
E-mail: joanne@isikhova.co.za

Operations director: Thuli Majola
E-mail: thuli@isikhova.co.za

Copy editor: Anne Phillips
Graphic designer: Zian Cornelissen

Advertising sales: Tel: +27 11 883 4627
Mobile: 072 383 3203/083 450 6052

Free download available on: www.sabuilder.co.za
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SHIFTING FOUNDATIONS AND NEW OPPORTUNITIES



The confidence with which our government announced its infrastructure plans has added to the suspicion that it was fundamentally a piece of propaganda, with roll-out at a standstill. Putting aside the Constitutional Court's suspension of the preferential procurement regulations, who is not wondering what became of the promised public-private partnership and strategic infrastructure projects? The impact of this deafening silence radiates concentrically and

diminishes the entire economy. Uncertainty is increasingly certain.

Construction in the private sector is ripe with opportunities and is responsively adjusting to several "new normals". On the retail front, e-commerce is

already shifting construction demand from trading spaces to storage and logistics facilities.

Other promising growth areas include healthcare, pharmaceuticals, technology and the logistics sectors, all of which are frequently mentioned by industry commentators as the likeliest opportunities for the construction sector's full recovery. In the education sector, student housing is seeing a lot of construction activity, which will probably continue.

So while the public sector sorts itself out, contractors who are agile and creative have their work cut for them. *SA Builder* would love to hear how you are finding opportunities and how we can assist you in doing so. We thank you for your commitment and support.

Nicholas McDiarmid: editor ■

A promotional graphic for the 2022 Congress. The background features a cityscape with a hexagonal grid overlay. The text "2022 CONGRESS" is prominently displayed in large white letters. Below it, a white arrow points right with the text "SAVE THE DATE". To the right, the Master Builders South Africa logo is shown, consisting of a stylized building icon above the text "MASTER BUILDERS SOUTH AFRICA". A yellow banner at the bottom right contains the text "9 SEPTEMBER 2022 The Capital Zimbali". At the very bottom, the text "RECONSTRUCTING SOUTH AFRICA" is written in large white letters.

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AFRISAM AND SUSTAINABILITY: THE FUTURE BEGAN LONG AGO

Climate change is the greatest threat to our survival and as we pass the critical milestones which flag the tipping point of no return, science and industry are increasingly unified in the effort to reduce the emissions which are the primary cause. As we all unite behind this common cause, the smart thing to do is learn from those with the most experience in managing their environmental impact – and AfriSam’s track record is second to none.

The South African cement industry contributes around 1% of CO₂ emissions annually. While the shift towards sustainable business practices is now an undeniable imperative, AfriSam’s environmental responsibility

programme pre-dates the 1990s. “AfriSam was at the forefront of introducing proactive measures in the Southern African cement manufacturing sector,” explains Nivashni Govender, environmental specialist at the company. “To put actions to our concerns, we established our own environmental department as early as 1992 and developed an environmental policy just two years later.”

FIRSTS IN SA’S CEMENT INDUSTRY

AfriSam was the first Southern African cement producer to install sophisticated plant emission abatement equipment to reduce



dust emissions from its kiln stacks, measure metals, dioxins and furans in its kiln emissions and install baghouse filter technology for those emissions. “We’ve moved away from utilising 100% of traditional raw materials and reduced our reliance on non-renewable resources. Through key initiatives, AfriSam has reduced the clinker factor of its cements from 90% in 1990 to just under 75% at present,” says Govender.

PROJECT GREEN CEMENT

AfriSam launched Project Green Cement in 2000 to increase the use of extenders from other industries and promote more sustainable products in the market. In 2009, the company was the first in the industry to introduce a CO₂ rating system. This indicated the carbon footprint of each of its cement products relative to ordinary portland cement. In 2010, AfriSam launched its lowest carbon footprint product at the time, Eco Building Cement.

It has become arguably the world’s first construction material supplier to carbon-footprint all its

(Above): Nivashni Govender, AfriSam environmental specialist.

(Left): AfriSam is the world’s first construction material supplier to carbon-footprint all its production operations.



production operations, including cement, aggregate and ready-mix concrete.

A POLICY WITH TEETH: ENERGY CONSUMPTION

AfriSam's policies include the effective and efficient procurement of energy-efficient products and services. "Back in 2008, we installed a vertical roller mill at our Rodepoort cement factory," says Govender. "This is the most energy-efficient mill on the market, reducing our energy usage at the factory by at least 30%." Optimising AfriSam's energy usage is a continuous, granular process, including modifying and replacing variable-speed motors, energy-efficient compressors, fans and pumps.

AfriSam's environmental responsiveness has included the substitution of traditional fossil fuels with alternative fuels such as waste tyres, petroleum sludge, biomass, waste oil and refuse-derived fuels, achieving a 25% reduction in clinker-specific fuel consumption since 1990 through these measures.

IT STARTS WITH MEASUREMENT: ALTERNATIVE MATERIALS

From cement substitution to recycled water, AfriSam's ready-mix facilities are a hotbed of continuous environmental impact reduction. Supplementary cementitious materials combined with optimal use of existing extenders equates to a high-performing 45% substitution rate, while the use of chemical activators enhances this figure. The use

of recycled water for batching purposes leads to CO₂ reduction benefits by marginally lowering the total binder content.

MEASURING, MANAGING AND TWEAKING

"AfriSam's continuous emission monitors installed at our cement manufacturing facilities provide us with real-time information on kiln emissions at any given point," explains Govender. "We recently



(Above): In 2008, the company installed a vertical roller mill at its Rodepoort cement factory, reducing energy usage by at least 30%.

installed a low-NOx burner at our Dudfield cement plant and, combined with well-maintained filter bags, the plant emissions are below the legislated norms."

RESPONSIVE, INFORMED CHOICES WITH BENEFITS

AfriSam's forward-looking approach to its impact beyond the factory wall has already changed the game. For the construction industry and society as a whole, its operations, products and institutional wisdom are major

assets in its path towards sustainable transformation.

"Customers and developers can now make informed choices and it's becoming common practice for developers to request low-carbon composite cements, especially if these developments are looking to be graded by the Green Buildings Association," notes Govender. "AfriSam cement allows developers to claim credits for the use of 'green' building materials, should these be required and although the uptake of green buildings in SA has been slow to date, our sponsorship of the South African Architecture Institute's awards has helped change the minds not only of developers, but of the individuals designing a building – the architects themselves."

Understanding the full picture is itself an ongoing process and managing impact must include all sides of the picture. "Concrete surfaces have the ability to absorb CO₂ and over the course of its service life, a building can re-absorb around 10% of cement and concrete production emissions," says Govender.

It becomes vitally important to develop products and systems that can be used to construct more durable, energy-efficient eco-buildings – and concrete from a responsible producer like AfriSam can do just that. The company's concrete, with its strength, durability and excellent thermal mass, should be considered a key component in eco-buildings today and in the future. ■



AREBONE BUILDING ENTERPRISES – MAKING IT HAPPEN



Arebone Building Enterprises (ABE) is a Johannesburg-based construction company and was established in 2012 by founder and director Dwaine Moth, who had studied civil engineering.

The company's aim is to provide competent and reliable service and to alleviate poverty as a vehicle for the technical advancement and training of the youth, in particular, with a view to finding desperately-needed employment. "We're a team of dedicated professionals who have one thing in common: a desire to improve the lives of our fellow men and women," says Moth.

ABE is a leader in the small market building field and aims to grow much bigger, possibly expanding beyond South Africa's borders, while effecting a positive change in the building industry

"The construction environment in SA remains challenging, with a shortage of skills and few of our young people entering these fields. Our plan isn't to give a man a 'fish' to feed him for a day, but rather to teach him to fish himself and feed him for a lifetime," says Moth.

ABE was selected to complete a two-year Property Point

incubation programme, a Growthpoint initiative. In 2018 it was listed as the top-performing runner-up building enterprise in the initiative.

"We pride ourselves on being a company which thrives on challenges. No building enterprise is too big or too small. No deadline intimidates us. We make it happen," says Moth. "Our company's motto, 'Let's see it and fix it', stands as testament to this."

ABE currently employs 38 people in permanent and temporary

positions, many of whom have been with the company for eight or nine years.

Its client base includes Growthpoint, Broll, Edcon, Bytes Technology, Trueprop, City Power, Fikile Construction, the National Bargaining Council for Private Security, SANBS, Monwana, Bodicare, Stargate Scientific and Life Healthcare. ■

"ABE IS SOON TO BECOME AN APPROVED PLASCON PAINT APPLICATOR."



ABE specialises in painting, drywalling, demolitions, tenant installation, brickwork, plastering, RhinoLiting, tiling, maintenance, bulkheads, plumbing and carpet installation.

The company travels anywhere to work and its current coverage includes Cape Town, Durban, Witbank, Polokwane, Nelspruit, Bloemfontein and Gauteng.

OBITUARY: EUNICE FORBES

The construction sector is mourning the loss of Eunice Forbes, a powerhouse within the Master Builders Association South Africa and MBA North, who became the first woman to be elected president of both. She passed on the 20 June 2022, the day before her 81st birthday.

Forbes was president of the Gauteng Master Builders Association (now MBA North) from 2004-2006 and president of Master Builders SA from 2007-2009. In 2014, she was awarded an honorary life membership by MBA North at its annual general meeting, citing her just some of her extraordinary accomplishments:

- Her more than 36 years' business management experience included owner-managed concerns across a broad spectrum of service industries.
- She was skilled in lateral thinking, analytical decision-making, skilful negotiation, effective business strategy and entrepreneurial acumen.
- She had a proven track record in product and business development.
- She also had flexibility and innovation in adapting and applying knowledge and experience to different circumstances and environments.
- She was able to work well under pressure and in deadline situations.

Forbes, who was owner and managing director of a leading sport surfaces supplier, held memberships and executive positions in an impressive range of professional bodies. She was a fighter for equal rights for women and disabled people, and served on the National Disability Task Team on behalf of Business Unity SA.



Her tireless work in cementing ties between Master Builders SA and its counterparts in the rest of Africa assumed particular significance over the past five years. Through her membership of the African Federation of Construction Contractors' Association (AFCCA), she played a critical role in the development of the new close association South Africa now enjoys with 28 other African countries in the building

sector. Forbes managed to lift the MBSA from observer status to holding one of the AFCCA's five regional seats headed by a vice-president. She was elected vice-president of AFCCA Southern Africa and summed up the significance of building inter-continental ties with these words: "MBSA's closer ties with contractor organisations on the rest of the continent are important not only for South Africa, but also for our neighbouring states. There are now unprecedented opportunities for joint ventures for Southern African contractors when operating outside their respective borders."

On behalf of MBSA, Forbes recently organised a visit by a delegation from the Sudanese Contractors' Association which included discussions with both MBSA and the Construction Industry Development Board (CIDB).

Her achievements speak to a sense of purpose that reached beyond borders and limitations, and she leaves a powerful legacy for both the individuals and the institutions of our sector, within SA and throughout the continent. ■





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MANAGING A CONSTRUCTION CONTRACT: INTRODUCTION

This is the first of three articles on contract management in construction. It will be followed by the pre-award phase of a contract, with the third and final article the post-contract phase

By *Bilal Dawood:*
Bilal Dawood Attorneys

When a project is awarded, the pitfall many contractors face after signing the contract is that this is the last time they look at it. Contract management is seen as a specialised discipline and, in some instances, specialised resources are hired to manage the contracts, supporting the project managers.

While it may not be necessary for all contractors to have such specialised resources in place, it is highly recommended that in order to reduce risk, the personnel charged with addressing all contractual matters as part of the job profile be at least adequately conversant with the contract in place and general principles

of contract. In this regard, due consideration should be given to training.

THE MOST COMMONLY USED CONTRACTS

The most commonly used contracts in the construction industry are the JBCC, FIDIC, NEC3, MBSA and GCC agreements. In other instances, bespoke contracts are used. Each of these contracts has a different risk profile and different allocation of risks between the employer and contractor. Being familiar with these contracts and the management thereof is crucial to project success.

The implications of not adhering to the contract terms or not having regard to them can best be

explained using the example of the processes contained in the notice and claims clauses of contracts for additional time or costs. These are critical instances where non-compliance with these terms often leads to time-barring of claims and the contractor enduring the losses.

STEPS AND FLAGS FOR EFFECTIVE CONTRACT MANAGEMENT

The following steps should be taken by contractors to manage their contracts effectively. They are based on an assessment of best practices and past experience in managing contracts:

1. Take time to understand the basis of the contract and the nature of the risk allocation, including any special terms,

to ensure that you are able to comply with them. This also plays a role in the contractor's pricing of the works during the tender stage in ensuring that risks allocated to the contractor are priced in. This should be done in the pre-award phase.

2. In allocating resources, it is prudent to ensure that people tasked with managing the contract are familiar with the type of contract used in the circumstances. This is particularly important in the post-award phase.
3. The contract is also used as a basis of alignment between the employer and contractor by ensuring that there is an understanding of what is required from both parties, including their obligations. Clear, unambiguous language is key.
4. Ensure that there is frequent alignment with the employer at progress meetings, where you should discuss matters of concern. Follow each meeting up by ensuring that these are dealt with in terms of the contract.
5. Regular internal risk reduction meetings at contractor level should be held to ensure that risks are identified early and addressed within the time requirements of the contract. The major risks are those affecting the schedule, costs or quality of the works. From these meetings, contractors may realise that there are certain notices which may need to be given to the employer or that

they need to accelerate the works at their own expense to ensure timely, practical completion and avoid delay penalties. Some broad examples of these are:

- a. Schedule slippages.
 - b. Access delays.
 - c. Additional works.
 - d. Variation orders.
 - e. Delays.
6. It is important for key resources to be aligned and for no resource to be working in a vacuum. This facilitates easier identification of risks and ensures that they are dealt with in a timely manner in terms of the contract and that schedules/programmes are updated, where required.
 7. Closing out the contract is equally important to ensure that both parties are protected and that avoidable claims are managed. At this stage, it is also advisable to address items such

as liens over materials and works, together with the final account.

IN THE NEXT TWO ARTICLES

- The pre-award phase of a contract providing guidance. This includes all steps in the contract negotiation up until contract signature.
- The post-award phase of the contract, from the time of contract signature up until practical completion. The requirements of bonds and guarantees will be highlighted.
- During this phase, proper management of the contract is vital.
- Issues faced during the defects liability phase.
- The close-out phase of the contract will be covered. This phase entails the final account and closing out the contract with only the latent defect liability and guarantee periods to run. ■

(Below): As construction contracts become ever more complex, this three-part series is a useful guide to navigating the process.



WIND ENERGY INDUSTRY REAFFIRMS COMMITMENT TO ENERGY SECURITY



As the country bears the weight of continued load-shedding, the SA Wind Energy Association (SAWEA) has reaffirmed the sector's role in delivering energy security. This is despite the recent announcement of delays of two renewable energy procurement rounds meant to unlock and deliver new-generation capacity.

Responding to a recent statement issued by Bernard Magoro, the head of SA's Independent Power Producer Office (IPPO), the association says it is encouraged by the leadership demonstrated and the sentiments of stakeholder alignment. SAWEA has been lobbying for increased stakeholder engagement and alignment, which is key to establishing the foundation for accelerated procurement and unblocking hurdles.

"We continue to build relationships with the key stakeholders, including the IPPO, Eskom, the Department of Trade Industry and Competition and the Department of Mineral Resources and Energy. We're assured that the stakeholders are having the right conversations to support the procurement process with the aim of more megawatts on the grid as quickly as possible," says Niveshen Govender, CEO of SAWEA.

The SA wind power sector is robust and has the appetite, ability and capacity to deliver at least 1,6GW of new power generation per year for the next decade. This has been demonstrated by exceedingly high levels of bid submissions for BW5 and was reaffirmed by

Magoro, who stated his confidence in the market appetite for the Renewable Energy Independent Power Producer Procurement Programme's BW6. He noted that more than 50 potential bidders have acquired the bid documentation. Furthermore, the National Treasury has confirmed that the programme will continue to be granted a government guarantee.

The association points out that the sheer scale of these mega-projects, each valued at on over R1,5 billion investment, on average, requires a slew of work to be brought to commercial closure, which refers to the point where the project agreements are signed. This point basically indicates the achievement of the necessary power purchase agreement to sell electricity with Eskom and the implementation agreement with the government, which determines how independent power producers will implement their projects and what economic development goals



will be achieved. "We're dealing with billion-rand projects that require more than 60 applications, licences, permit agreements and regulatory compliance processes. These demonstrate the importance of cross-sector stakeholder relations and supportive policies," says Govender.

Citing the procurement round delay since the end of April, the association has pointed out that the failure to secure final budget quotations from Eskom for grid connection should not be singled out as the only reason for postponements. It has been suggested that a six- to 12-month time-frame might be more realistic to navigate these cumbersome processes.

"SA can address fundamental challenges of energy access, energy security and climate change through the deployment of renewable energy. For that to happen, it's best that all stakeholders move towards working better together," says Govender. ■



THE INTEGRATION OF EMERGING CONTRACTORS

An Eastern Cape company has become the first member of Cement & Concrete SA's (CCSA's) new "Emerging Contractors" membership category, created for this important part of the construction industry and the national economy.

Hanlie Turner, business development manager of CCSA, says the new Emerging Contractors category – which falls under the CCSA Corporate Members section – is specifically designed to support and uplift cement and concrete industry micro-enterprises with BBBEE Level 1 status and an annual revenue of up to R5 million. "The category aims to provide important market exposure and CCSA corporate membership benefits to emerging contractors, who very often have limited marketing capacity and

budgets. CCSA's also fixed an affordable membership fee of R3 000 per year for contractors who qualify for inclusion in this category," she says.

Turner explains that up to three individuals can be listed under an Emerging Contractor membership, while their company receives a listing in the CCSA directory and digital listing in the CCSA journal *Concrete Beton*, as well as hyper-linking of the company's logo to the CCSA website. The listed individuals benefit from cost discounts on CCSA publications, technical events and educational courses.

EXPERIENCING THE BENEFITS

The first company joining CCSA under this category is Eastern Cape-based GloQ Construction & Projects. Owned and managed by Qaqamba Gloria Selikane, it describes itself as a "leader in various phases of construction projects that demand ready-mix concrete products and consulting in design development, tender documentation and procurement, construction documentation and management, as well as the 'closing-out' phases of residential and rural developments, commercial building and civil engineering projects".

Selikane has over 15 years' experience in the construction industry and is a member and registered mentor of the SA Council for the Project and Construction Management Professions (SACPCMP) as a

professional construction manager. She serves as a non-executive director of the Construction Management Foundation.

Her professional experience includes working for Murray & Roberts, Sasol and Eskom. She holds a BSc Honours degree in construction management and an MSc in project management (construction).

GloQ's operating base is Bizana, on the border of the Eastern Cape and KwaZulu-Natal. The small town is the birthplace of Struggle icons Oliver Tambo and Winnie Madikizela-Mandela.

OPENING MARKET DOORS

CCSA's comprehensive corporate membership structure is open to medium and micro-enterprises, suppliers, contracting and consulting firms, government organisations, provincial and national producer companies, as well as professional bodies in the cement and concrete industry, which can join as organisational members at various levels of benefits and costs. "The members benefit from affordable and targeted marketing levels to broaden their reach, create brand awareness and remain competitive and relevant in the market," says Turner.

Interested parties can find further information at: www.cemcon-sa.org.za. ■

(Left): Qaqamba Selikane, owner and MD of GloQ Construction & Projects, CCSA's first Emerging Contractor member.



THE CLAY BRICK ASSOCIATION AT YOUR SERVICE

The Clay Brick Association of SA (CBASA) promotes sustainable, contemporary brick architecture and building design across the built environment: commercial, residential and landscape, underpinned by ongoing research, monitoring and stakeholder engagement.

The CBA's goal is to ensure that local property-owners achieve long life, good value and sustained performance from brick walling and paving. As for most industries, the past number of years have presented significant challenges, despite which much progress was made under outgoing president, Hendrick van Dyk.

"2022 is the beginning of a new era in SA. After the two-year pandemic, many businesses faced unprecedented challenges, followed by the looting and floods in KwaZulu-Natal, but – as a country – we rose to the occasion and we're coming back stronger," noted incoming president Christopher du Trevou in his recent inaugural speech. "As an industry, we need to commit to creating good and fair jobs, expanding our facilities and playing a key role in building infrastructure like schools, low-cost housing and clinics. It's our responsibility to build cities and towns where families can be safe and warm, and to provide South Africans with the most sustainable option in clay bricks."

SUSTAINABILITY AND STANDARDS

Essential resources include property-owner guides and technical manuals for builders, bringing together the makers and users of clay bricks with knowledge, choices and solutions.

The CBA provides strategic direction for members through its investment in research and educational initiatives in energy-efficiency, reduced emissions, green building and sustainable construction.

SERVING PROPERTY-OWNERS, DEVELOPERS AND BUILDERS

The association is renowned for its first-rate technical information which is used by the construction industry to design, detail and build in burnt clay masonry products with absolute confidence.



(Above): Christopher du Trevou and Mariana Lamont.

The website www.claybrick.org provides an extensive library of fact sheets and in-depth articles for property-owners and developers, architects and builders.

ENVIRONMENTALLY CONSCIOUS

Clay bricks are the building material of choice in creating environmentally responsible living and workspaces for today's generation and beyond. Their natural insulation properties ensure the moderation of internal temperatures.

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Everyone is encouraged to visit and re-visit our website at: www.claybrick.org. Our offices in Bedfordview, Johannesburg, can be reached on: Tel: (011) 805-4206. E-mail: admin@claybrick.org.za. ■



THE POCKET GUIDE TO WWW.CLAYBRICK.ORG

- Find your closest CBA MEMBER clay brick supplier through our map-based search facility.
- Fact sheets for builders, developers and property-owners.
- Carbon emission management tools, facts and legislation.
- The SANS 204 series for Energy-Efficiency in Buildings.



INNOVATIVE CONSTRUCTION METHODS ON THE RISE IN SA

With SA's young and growing population comes the need for civil society to cater for this growth. "The building and construction sector – infamous for project delays – must ensure that it's equipped to meet deadlines and client requirements in order to cater for the needs of our ever-changing country. Drawn out, inefficient and sometimes unsafe building methods should be reconsidered in favour of fit-for-purpose, efficient construction processes," says Petrov, MD of Peikko SA.

Peikko specialises in construction products and systems which are designed to get projects from initiation to completion faster, safer and more efficiently. This is not just a tagline: the Peikko Group has a long history and proven track record of providing innovative solutions to construction challenges.

A Finnish-based company, Peikko entered the South African market in 2018 and has experienced a steadily growing uptake of its solutions and products. Peikko SA has a strong focus on doing business in Gauteng, the Western Cape and KwaZulu-Natal, completing projects ranging from residential schemes and parkades to warehouses, sports facilities, office parks, industrial and mining applications, etc. It is looking forward to growing this presence in the future.

At present, it is focusing on its product range for traditional on-site cast-in-situ concrete with Peikko connections, which help ensure that connectivity of structural elements is quick, precise and will stand the test of time. This includes solutions for load-transferring, punching prevention, rebar splicing and more. "Peikko offers

long-term solutions that can be trusted. These solutions are perfect for heavy-duty applications, where concrete connections must be guaranteed to carry the design loads," says Petrov.

He adds that the past two years of Covid-19 pandemic challenges have not dampened the organisation's determination to revolutionise the industry. "We make no excuses. There are many opportunities to partner with companies in SA and drive their success. Peikko doesn't just offer products: we work together with our customers to add value, from the start of a project. I believe that innovation in local methods of design and construction will unlock positive, industry-wide benefits," he says. ■

(Top, from left): Rebar anchor belt and punching reinforcement.

(Above): Daniel Petrov, MD of Peikko SA.

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TENDERS *NEED* DESIGN ENGINEERS

Consulting Engineers SA (CESA) is challenging the recent decision by the SANRAL board to cancel critical infrastructure tenders on the basis that their adjudication process was flawed due to the involvement of design engineers in it.

“There’s a clear lack of understanding of the role of an independently appointed design engineer in the contractor tender adjudication process,” says Chris Campbell, CEO of CESA. “That role is to provide independent advice to the client body acting as the owner’s engineer. The design or consulting engineer is distinctly separate from the contractor, is bound by a code of ethics and has huge risk exposure in performing this duty. In fact, an engineer in this position found to be acting unethically could put their company at risk of being expelled from CESA and the individual responsible could be disbarred from providing such professional services by the Engineering Council of SA.”

CONFUSING CONTRACTORS WITH CONSULTING ENGINEERS

“The client body, in this case SANRAL, often doesn’t have sufficient internal technical knowledge and capacity to perform such in-depth analyses of construction bids on projects. Consulting engineers have been providing professional services in this capacity for as long as we can recall – and those services have become even more necessary over the past 20-odd

years, during which the internal technical capacity in the public sector has diminished significantly. This partnership between the public and private sectors is therefore essential. The appointment of the consulting engineer, as the trusted advisor to the client, is distinct from that of the contractor, so there’s no conflict of interests, as alleged by the current board of SANRAL.

RISKING EXPOSURE FOR DESIGN INTEGRITY

“In many instances, SANRAL isn’t unique. Numerous other public entities and SOEs have been adopting a similar approach, all with the same governance considerations and accountability, none of which has been found wanting by the Office of the Auditor-General. So one has to wonder whether the SANRAL board resolution was adequately informed by local and global best practice. SANRAL, as a public-sector entity, has successfully delivered on its mandate since its inception in 1993, with the support of independent advisory services from consulting engineers,” says Campbell.

“A consulting engineer can be involved first in the design of an infrastructure project, followed by tender adjudication analysis and then possibly site supervision services – all acting as the trusted advisor to the client body, especially when a public-sector client

(Right): Chris Campbell, CESA CEO.

has limited specifically experienced resources. Failing to address such capacity challenges within the public sector will have significant consequences for our ability to leverage infrastructure development as a catalyst for our economic recovery. Already the SANRAL *Horizon 2030*, first published in 2018, has been set back by funding challenges. We need to leverage the social compact between the government and the private sector, maintaining good governance and transparency for the sake of economic growth, transformation and the many unemployed citizens who’d benefit from the job opportunities that would emanate from getting this show back on the road.” ■



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A NEW HOME FOR THE GREEN BUILDING COUNCIL SA

The Green Building Council SA (GBCSA) moved to new green offices in Cape Town at Growthpoint Properties' River Park, Mowbray on 1 June this year. The council has taken a three-year lease of some 330m² of space at the recently refurbished multi-tenant office building.

River Park recently improved its rating to a GBCSA Five-Star Green Star SA – Existing Building Performance v1 certification. The building has high scores for its land use and ecology, green transport access, and energy- and water-savings.

SETTING STANDARDS AND LIVING BY THEM

Lisa Reynolds, CEO of the GBCSA, says a green building rating was a prerequisite for the council's choice of offices, but it also had several other rigorous requirements, such as cost-effectiveness. The council also required an inspiring workspace in a good location with excellent accessibility for visitors. The office is near the GBCSA's former offices, so staff travel has not been affected by the move and their carbon footprint has not increased.

THE RIGHT PROPERTY DEVELOPER

"River Park's offices meet all our needs and more. We're excited to continue encouraging and enabling SA's green building movement and green economy from our new green home at River Park. We're very pleased to be taking this journey with



Growthpoint, a leading advocate for green building and a founding member of the GBCSA," says Reynolds.

"We're pleased to extend our long-standing relationship with the GBCSA and welcome it as a tenant in our office portfolio. No-one knows better the advantages of green offices than the council. In addition to their positive environmental impacts, such offices save money, increase employee productivity and are generally great places in which to work. Green buildings support the performance of the businesses occupying them, which is why we at Growthpoint prioritise providing green, resource-efficient workspaces," says Timothy Irvine, Growthpoint regional asset manager for the Western Cape.

Green building and solar energy are the two main tools Growthpoint has identified to meet its ambitious target of all 400-plus of its SA buildings being carbon-neutral by 2050.

DECADES OF GREEN DEVELOPMENT

Growthpoint started investing in green buildings and solar energy over a decade ago. It has 12,3MW of renewable energy generation capacity installed at its properties, which it aims to increase to 46MW in the next five years. Over 100 of its buildings are certified green. The organisation's ongoing investment in solar energy and green buildings reduces carbon emissions, creates energy- and water-efficiency, lowers tenant costs and ensures continuity of power supply. ■

CONSTRUCTION INDUSTRY GETS NEW REGULATOR

The Construction Industry Development Board (CIDB) is pleased to announce the confirmation of Bongani Dladla (32) as its new chief executive officer (CEO), effective 1 June 2022.

Dladla has been serving as acting CEO at the board since the passing away of Cyril Gamede in August last year. He is now tasked with guiding the organisation in its mission of driving enhanced delivery management, capacity improvement and contractor development in the construction industry – this through strategic interventions and partnerships.

Appointed as the CIDB's chief operating officer at the beginning of 2021, Dladla has played a dual role since 1 August that year. During his tenure, he oversaw the operational implementation

plan for the core industry developmental initiative, BUILD.

After graduating from the University of KwaZulu-Natal with a Bachelor of Science in engineering: civil engineering (*cum laude*), Dladla went on to obtain his M Phil in engineering for sustainable development at the UK's University of Cambridge.

ACCOUNTABILITY AND TRANSPARENCY

"In his career as a civil engineer, Bongani has dedicated himself to the construction industry, learning the business from the ground up. A recognised leader, his broad experience in managing complex programmes, public-sector procurement and digital innovation has made it clear to the board that he fulfils the profile required to become its CEO.

"In his tenure as acting CEO, we've all come to appreciate his dedication to creating an environment of accountability, transparency and consensus-building. We're confident that he'll continue to lead by example and ensure that our clients and contractors are given the tools they need to succeed," says chairperson Khulile Nzo. ■



WHEN CLIENTS MAKE VACCINATION OF YOUR STAFF COMPULSORY

With Covid-19 vaccinations becoming compulsory in many working environments, the new challenge faced by contractors is a requirement from the client that all the contractor's employees be vaccinated before they can commence work on the client's premises. This could cause issues for contractors if they have not updated their policies for mandatory vaccinations in their company.

HEALTH AND SAFETY SPECIFICATION

According to legislation, the client

must supply the contractor with a health and safety specification at tender stage. This allows the contractor to plan ahead and price accordingly with respect to specific client requirements, including medical care, training, etc.

In some cases, the health and safety specification requires that all employees of the contractor be vaccinated in order to enter the client's premises. This gives the contractor time to either ensure that all employees earmarked for the contract are fully vaccinated

or to decline the work. A client cannot introduce this or any other requirement to the health and safety specification at a later stage in the project, unless the contractor is given an opportunity to price for any additional cost implications.

SECTION 37(2) MANDATORY AGREEMENT

If the Section 37(2) agreement stipulates that contractors be fully vaccinated before they enter the client's premises, the contractors have to comply with this instruction as well. ■



SECURING KZN'S STORMWATER SYSTEM

With the vital N2 corridor in Durban damaged to the extent that the road is impassable in certain sections following the recent flooding in KwaZulu-Natal (KZN), an existing contract related to settlement repair of the route has been fast-tracked by the SA National Roads Agency SOC Ltd (SANRAL).

Zutari was awarded the contract, following a competitive tender early last year. The engineering design and advisory services company is now playing a major role in devising the most cost-effective and resilient solution to repair a section of the route.

ASSESSING THE DAMAGE

"We've effectively pulled together significant resources and expertise as quickly as possible to assist to the best of our capabilities," says Zutari technical director Tashna Margo. This includes advising on measures to ensure human life is protected and quickly restoring the damaging impact of the floods on key infrastructure.

In addition, dams expertise leader Dr Frank Denys and senior

water resources engineer Martin Kleynhans have been called upon to assist in assessing the flood damage as part of Zutari's urban stormwater and flooding expertise.

A contributing factor has been the role played by the existing slope instabilities in the province. KZN is known for slope instability, as it relates to the local geology and topography. Floods and climate change influence this risk.

EXTREME WEATHER DEMANDS RESILIENT DESIGN

"There's a broader narrative about this and how, with climate change and design and construction, we need to assess risk and design differently for more resilient infrastructure," says Dr Gabi Wojtowicz, a geotechnical engineer and associate design director at Zutari. "It also speaks to risk classes and defining areas in which one shouldn't develop. Perhaps a similar risk classification for development in respect to slope instability could be drawn up as to what's currently used for dolomitic ground conditions, where specific measures are

imposed for high-risk areas," she suggests.

CLIMATE CHANGE CHANGES EVERYTHING

Wojtowicz concurs that the catastrophic flooding has increased the focus on climate change as an area of serious concern. She notes that such extreme weather events are likely to become even more extreme and common in future. This speaks to the need for resilient infrastructure and risk mitigation, as well as bringing human-centred and environmentally aware design to bear.

"If we highlight potential issues that aren't responded to, then these become the cause of a disaster scenario. That's a much harder scenario to rectify after the fact. Not that this wasn't an extreme event – it certainly was. However, there are definite multiple underlying contributing factors that might have made it worse, which suggests that this could be an example of what's likely to occur more regularly in future," says Dr James Cullis, technical director and sustainability expertise leader at Zutari. ■

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Senzekile Shongwe

Mental health counsellor & training facilitator

KEY STRATEGIES TO BE DISCUSSED

- Highlighting how to anticipate, prepare and respond to a crises, Occupational Safety and Health Systems ISO 45001:2018 can measure safety data to prevent further injury at work
- Discussing the mandatory vaccination policy and how it will impact the organisation and the employee
- Eradicating discrimination against the LGBTIQ+ and others for a more inclusive workforce and community
- Updates of legal framework to inform and regulate workplace health and safety
- Looking at the impact of mental health in the workplace and the adoption of first aid electives at work, along with awareness campaigns to educate and persuade mental health good practice
- Workplace transitions back to the office taking into account working remotely and hybrid models
- Critically analysing safety measures set out for employees in the workplace

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CLEAN, GREEN PUMPING MACHINES

"MARKET-LEADING FUEL-EFFICIENCY ALSO MEANS THAT THE UNITS ARE ABLE TO OPERATE CONTINUOUSLY FOR 24 HOURS."

The UN sustainable goals and the Paris Agreement call for all product manufacturers to develop more efficient, carbon-neutral products, both in terms of how they are made and how they are used. Pumps and motors used in the construction industry offer great potential for emission reductions and a local manufacturer is championing this cause.

The Atlas Copco Group has aligned itself with the UN sustainable goals and the Paris

Agreement during product development and manufacturing practices. In line with the group's commitment this year to follow science-based targeting with regard to emission reductions and global warming, efforts are focused on the development of more efficient, greener, carbon-neutral products that offer sustainable solutions to customers and end-users.

INNOVATIVE, RELIABLE AND LASTING

The company's innovative surface

dewatering pump ranges are defined by high performance, reliability, long life-cycles and ease of use, making them the preferred choice of countless industries that put them to work in multiple applications.

The rugged PAS dry self-priming and PAC H high-head dewatering surface pump series feature a smart

(Above): These fully automatic dry self-priming centrifugal pumps offer the five easies: easy to use, stack, pack, move and maintain.

SYSTEMS AND MATERIALS FOR REPAIRING, SKIMMING & PROTECTING CONCRETE.



A durable, sustainable structure can only be achieved by thinking in terms of systems rather than products, which is why the MAPEI building line is extended by introducing new, cutting-edge systems and materials with the aim of supplying solutions for every type of problem encountered on site.

With over 80 years experience in the industry and backed by our established world class R&D infrastructure & resources, the MAPEI Building Line has been developed to meet the most stringent requirements and provide the most advanced protection for any concrete, on any site worldwide.



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INDUSTRY NEWS

design, cutting-edge technology, quality components and advanced manufacturing to deliver best-in-class pumping solutions even in stringent environments.

"Our pumps are certainly no exception," says Sarel Bekker, business development manager at Atlas Copco Power Technique. "Our comprehensive range of super-efficient, robust, compact, versatile and easy-to-service pumps get the job done seamlessly, while being respectful to the environment. We have a good understanding of pumps and their application and we listen to what our customers and end-users need."

THE FIVE "EASIES"

The PAS range of fully automatic dry self-priming centrifugal pumps serve as a prime example of Atlas Copco's commitment to developing smaller, lighter products. "Our PAS range

delivers the five 'easies', ie easy to use, stack, pack, move and maintain," says Bekker. "Thanks to a modular design, one pump is capable of covering multiple requirements. The need for fewer pumps is combined with fast, easy manoeuvrability and enhanced uptime and productivity."

Equipped with a high-efficiency hydraulic end, the PAS pump range consumes very little fuel, irrespective of operating conditions. Market-leading fuel-efficiency also means that the units are able to operate continuously for 24 hours. All these value-adding features help to reduce operational expenditure for ultimate lowest total cost of ownership.

FROM WATER TO TRASH-HANDLING

The PAS range delivers a maximum flow capacity of 2 100m³/h, with a maximum head of 75m and

an outlet size of 100-300mm.

These fit-for-purpose diesel pump systems are equipped with several features that render them particularly well suited for mining applications. With the ability to work with clean or dirty water and handle trash and fibrous materials with ease, they can pump, raise and transport liquids with solids of up to 100mm in suspension over long distances without the risk of clogging. This exceptional solid-handling capability is due to the inclusion of a centrifugal pump

"EQUIPPED WITH A HIGH-EFFICIENCY HYDRAULIC END, THE PAS PUMP RANGE CONSUMES VERY LITTLE FUEL, IRRESPECTIVE OF OPERATING CONDITIONS."



(Above): The open-frame centrifugal pump can work with clean or dirty water and is ideal for handling trash and fibrous materials.

with a semi-open impeller and an abrasion-resistant pump casting.

The robust PAS pumps' dry prime capabilities enable the user to start pumping immediately with a simple flip of the switch, ensuring reliable operation in stringent conditions where start-up can often present a challenge. The system's high-capacity diaphragm pump allows for convenient and time-saving automatic priming.

HIGH-PRESSURE APPLICATIONS

Atlas Copco's PAC H pumps offer a turnkey solution for high-pressure applications. Part of the company's renowned Head series, this high-head centrifugal pump combines performance and efficiency in one smart package. The unit is capable of handling liquids containing solids of up to 89mm and features a maximum head size of up to 150m and a maximum flow of up to 1 200m³/h. The PAC H series is well suited to industrial applications such as water transfer, benefiting industries such as oil and gas, quarrying, surface mining and construction, as well as the municipal sector.

MADE CLEAN TO USE CLEAN

The new PAS 100 and PAS 150 HardHat® models feature Atlas Copco's unique HardHat® technology, which ensures a high level of robustness and durability in any condition. Made of medium-density polyethylene instead of metal, the canopy effectively protects the working operation underneath from the elements. These clean, green machines are fully EU emission-compliant and feature a 120% fully leak-free structure. PAS



HardHat® pumps incorporate digital technology in the form of QR codes that provide essential parts and spares information with one quick, easy scan.

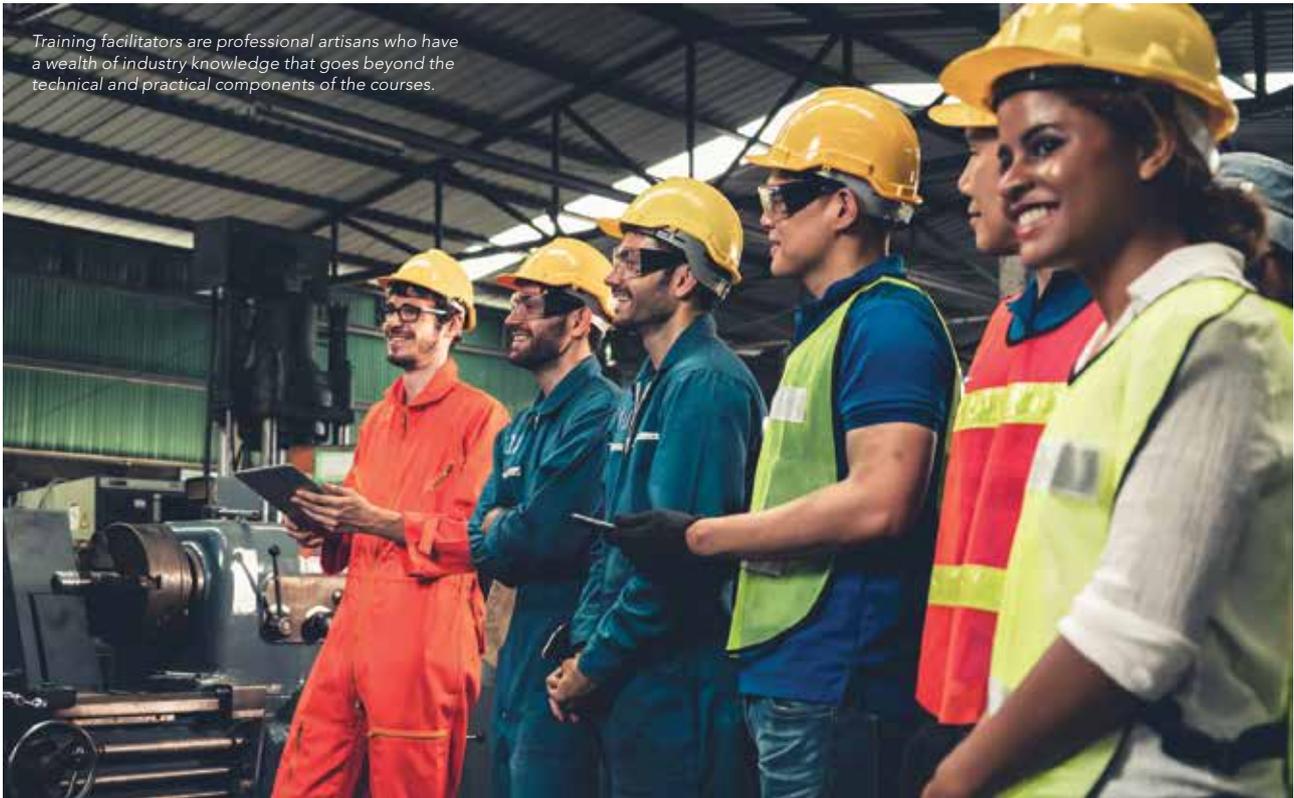
The speed with which service and maintenance work can be carried out is fundamental to high equipment availability and subsequent prolonged uptime, so Atlas Copco ingeniously centred the design of the PAS and PAC H pump series on serviceability. "Regular servicing carried out by trained Atlas Copco technicians using OEM parts will contribute to reduced maintenance costs, improved pump reliability, prolonged life-cycles and maximised operational efficiency and productivity," notes Bekker.

SMART COMPONENTS

Wear components can be serviced and replaced without dismantling the pump, thanks to Atlas Copco's semi-cartridge seal design, hinge kit, bolted wear plate and link belts. This both simplifies and speeds up pump maintenance. The standard semi-cartridge seal,

which is normally an optional extra on other pumps, makes the lip seal and impeller easily accessible. The innovative hinge kit includes a "swing door" that allows quick and easy access to the pump's internal workings. By using link belts to enable changeovers without having to dismantle the entire wet end of the unit, mean time to repair is reduced by up to 30%. The impeller is easily removed with a single bolt and the hinged cover provides fast, easy access to components, enabling an industry-leading three-minute clean-up and restart.

Atlas Copco also offers service packs, including preventive maintenance kits, wear part kits, seal kits and gasket or O-ring kits. "Our high-performance, long-lasting lubricants have been specially engineered to match pump maintenance specifications and provide optimal pump protection," says Bekker. "Applications range from dewatering, site drainage and sludge removal to jetting, flood control and even temporary fire-fighting protection." ■



Training facilitators are professional artisans who have a wealth of industry knowledge that goes beyond the technical and practical components of the courses.

PORTABLE TRAINING PAVES A BETTER FUTURE FOR SA'S UNEMPLOYED

Unemployed members of a mining community in Steelpoort, Limpopo, have taken the first step towards becoming qualified artisans, having completed Tjeka Training Matters' basic instruction in brick-paving, which was provided in association with Train-the-Nation. It is just one of a number of construction-related short courses that this leading private Technical and Vocational Education and Training college provides as part of its portable skills training offering to the mining industry. These short courses are having a profoundly positive impact on mining communities by equipping individuals with essential skills that will help them find employment or start their own businesses.

(Above): Hands-on group training is highly effective for more manual processes and safety procedures.



The theoretical and practical instruction in brick-paving was provided by Kevin Vena and Benjamine Mlambo, skilled and experienced Tjeka Training Matters' artisans and training facilitators. "Our client takes its commitment to human resource development – as outlined in its social labour plans – very seriously. It doesn't train to simply 'tick boxes'. To ensure that its human resource development programmes have a large, positive impact, the mine only partners with reputable training providers who have a strong track record in working with mining communities," says Vena.

TRAINING WITH PRACTICAL OUTCOMES

Moreover, Tjeka Training Matters only focuses on construction training and is acknowledged as a specialist in the field. All of the company's training facilitators are professional artisans who have a wealth of industry knowledge that goes beyond the technical and practical components of the courses. This also ensures that Tjeka Training Matters' instruction is always relevant and in line with the demands of the construction sector. By the time they join the working world, students have a holistic view of the industry.

During their training, these students only work with the best tools, equipment and materials in the market. A case in point was the use of Stabila spirit levels for brick-paving training, because of their reliability and accuracy. The students were able to develop a sound basis upon which to significantly expand

their knowledge of level transfer at a later stage, when they enrol for Tjeka Training Matters' Learnerships and Skills Paths. As part of the training programmes and on certification day, students are given a start-up toolbox kit which includes a Stabila spirit level.



(Above): Theoretical and practical instruction in brick-paving was provided by Kevin Vena and Benjamine Mlambo.

TOOLING UP

Tjeka Training Matters believes that by exposing students to tool brands that are widely used in the construction industry right from the outset, they are better able to hit the ground running once they start working as tradespeople. In addition, this approach teaches them the importance of selecting the correct tools for the job to ensure quality workmanship and reduce waste on site. Representatives from Upat SA also spend time with the students teaching them how to correctly use and care for the company's

products so that they continue adding value over their entire life-cycle. During these sessions, the students gain first-hand insights into new products ahead of their launch in the country and trends that have a bearing on their chosen profession. This puts them at the cutting edge of industry practice after they have completed their training.

NURTURING PARTNERSHIPS

Tjeka Training Matters continues to nurture a long and close professional relationship with Upat SA, which also supplies Fischer fixing systems and Milwaukee power tools for use in the company's learnerships, skills paths and short courses.

However, it is the depth of practical instruction that students receive from Tjeka Training Matters which really sets it apart from its closest competitors. As part of their practical training, the students paved various walkways and areas around selected structures under Vena's and Mlambo's watch. This, combined with the theoretical component of the training, contributed to a recognised qualification in brick-paving.

"It was an absolute pleasure training a group of very enthusiastic students who want to become professional artisans. This was very encouraging, considering the shortage of skilled tradespeople in the country. I believe that these students have a lot to contribute to the construction industry, if they're given the chance to do so," says Mlambo. ■

THE FULL SCOPE OF GREEN PLUMBING

Enterprising South African property developers are increasingly exploring ways of using water more efficiently. This trend has seen an increase in demand for qualified plumbers, as they have the skills and experience to help property developers and their professional teams implement water-efficient designs. This understanding transcends the installation of water-efficient taps and appliances, as well as ensuring that plumbing systems are installed, maintained and repaired correctly so that they do not waste water.



The skills and experience of qualified plumbers are also being harnessed in the next step of the water management hierarchy, which entails re-using available water on a property as part of a more holistic green plumbing solution.

PLUMBERS WITH A PEDIGREE

"Many of our members have been appointed to work on innovative greywater and rainwater harvesting projects, alongside consulting and wet services engineers, in view of the extensive knowledge which Institute of Plumbing SA [IOPSA] members bring to such initiatives. [That knowledge] spans the correct installation of these systems through to the selection of appropriate materials which have been approved by standards

authorities, as well as ensuring compliance with municipal by-laws. A further benefit of working with our members is that they're held accountable by IOPSA, so they provide follow-up should any problems arise in the installation of these systems," says Brendan Reynolds, executive director of the IOPSA.

There are many examples of how these systems are helping property-owners to conserve water and reduce their utility bills. A large industrial property on the East Rand, for instance, only uses municipal water in the dry winter months. This is to top up rainwater supplies that it harvests and purifies to drinking quality. Meanwhile, two commercial developments in

Sandton have reduced potable water consumption by as much as 90% by harnessing rainwater harvesting technology and other efficient systems, such as air-cooled chillers.

RAINWATER HARVESTING

There has also been growing interest in rainwater harvesting in the residential property market. In response to this demand, a large property developer intends implementing rainwater and greywater harvesting systems at all its lifestyle centres. The company has already achieved significant savings in water through effective demand-side



management practices and this development will enable it to further reduce reliance on municipal supplies.

This focus on water-efficiency is also demonstrated by the many International Excellence in Design for Greater Efficiency (EDGE) Advanced certifications the company has received for its developments. EDGE Advanced-certified developments reduce energy and water consumption by at least 40%.

Meanwhile, many private homeowners are also working with qualified plumbers to design and install rainwater-harvesting systems, with the rising cost of water another major motivator for pursuing green plumbing.

TECHNICAL PRECISION

Qualified plumbers know how to install downpipes correctly from roofs to rainwater storage tanks, as well as the correct way to connect the tank overflow to a stormwater system and a pressure pump. Moreover, their knowledge has helped avoid typical mistakes in the installation of rainwater tanks, such as locating tanks on a base that can erode in the rain or wind, using piping material that reacts with acidity in the rainwater and specifying incorrectly sized pump and pipes for an application. Another common mistake is installing pumps at a low outlet because they draw in sediment from the bottom of tanks into the system.

Tanks also need to be of watertight construction, covered with materials that are weather-, insect- and vermin-proof, as well



**"THERE ARE MANY
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WATER AND REDUCE
THEIR UTILITY BILLS."**

as ventilated, with access for regular inspection and cleaning.

GREYWATER KNOW-HOW

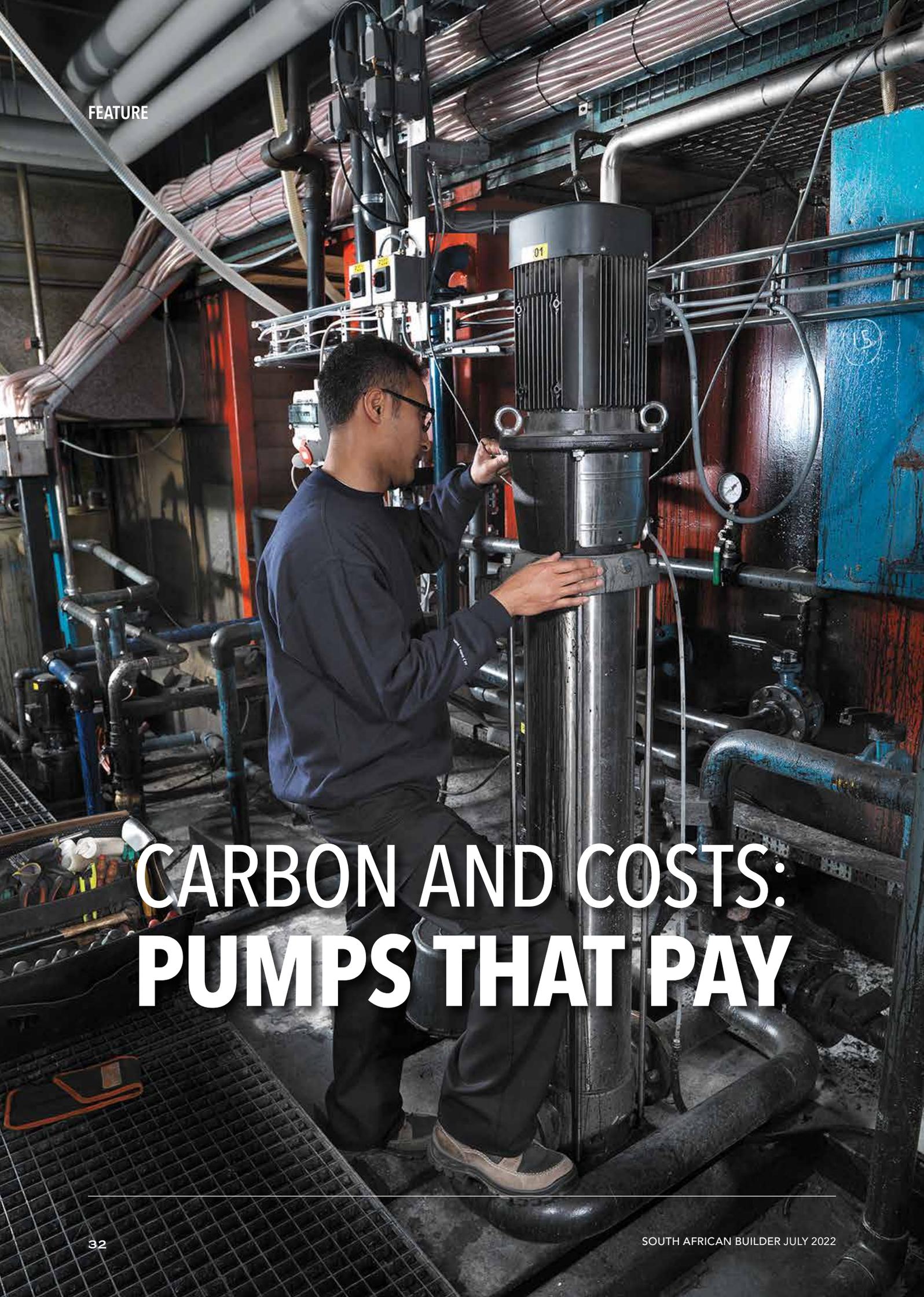
Significant strides have also been made in the country in the field of greywater re-use systems. A case in point is an automated greywater system at one of the country's universities. It collects shower water at campus residences, treats it and sends it back into the system for flushing toilets. This is a significant saving, considering that flushing toilets account for about 30% of all indoor water use.

It is often incorrectly assumed that these systems are simple to install. Sub-standard installations can also sometimes be a legal liability, placing home-owners at risk.

Qualified plumbers know how to isolate the shower and bath greywater correctly in the system for recycling and then route it to bathrooms to flush toilets. The installation should include a plumbed portion of the pipe from the unit as a riser branching off to the toilets. This is in addition to an overflow line that leads from the inflow pipe to the main building drain as a bypass, in case the system is overloaded. Moreover, the installation should include a vent pipe overflow outlet that connects to the same drainage line, preventing excess greywater from backing up into the system.

A qualified plumber would also be required to install a vent line and, as this water is non-potable, all lines need to be marked accordingly. Preventing backflow into the potable water system is another crucial legal requirement to prevent contamination. In addition, correct maintenance of the system by a qualified plumber is an important consideration.

"It's encouraging to see the growing interest in green plumbing in a country where water's a very scarce resource. However, to realise the full benefits of these systems, which include a smaller water footprint and savings in utility bills, it's imperative that qualified plumbers be involved in their installation, repair and maintenance," says Reynolds. ■



CARBON AND COSTS: PUMPS THAT PAY

With water pumps consuming a significant portion of the energy needs of most buildings, plants or industrial facilities, South African businesses still have plenty of opportunity to save costs and cut carbon emissions. Grundfos senior service sales specialist Nicolette Gomes explains that it all starts with an energy check.

Energy costs continue to rise and the pressure is on for the private sector to create a more sustainable, low-carbon economy; what better time for companies to optimise energy usage on their water pumps?

TAKE THE OPPORTUNITY

“Original equipment manufacturers like Grundfos have been working hard for many years to make our pumps more energy-efficient,” says Gomes. “I’m still surprised that so few pump-users take advantage of the opportunity to improve their bottom line by cutting energy costs – at the same time reducing their carbon footprint.”

Doing this requires, firstly, a clear picture of a company’s current energy costs, says Gomes, so Grundfos offers an “energy check” service to help establish the foundation for a considered solution. This involves a service engineer visiting the site and collecting data from pumps and motors, as well as basic energy consumption indicators. “From this data, we produce an

(Left): Information includes life-cycle costs and return on investment.

(Right): Grundfos offers an “energy check” service to help establish the foundation for a considered solution.

analytical report that shows where improvements can be made,” she says. “Knowing exactly what our energy-efficient Grundfos systems can achieve, we can compare these expectations with the current situation. In our experience, the savings can be up to 30%.”

The information contained in these reports also includes the new system’s life-cycle costs and its return on investment. Gomes highlights that some customers’ energy-savings have paid off the new equipment in less than two years, after which the system provides ongoing and substantial savings in operational costs.



(Above): Skilled technicians use the correct equipment to undertake comprehensive pump audits on installations.



AN AMORTISING INVESTMENT

“A useful rule of thumb is to look at the age of the pumps in your existing arrangement. If they’re older than six or seven years, then an upgrade invariably makes perfect financial sense,” she says. “Where the capital outlay can be recouped in three years or less, it’s usually an easy decision to make.”



(Above): Nicolette Gomes, senior service sales specialist at Grundfos.

Where data is more difficult to gather – for instance, where nameplates have been removed or are not legible – Grundfos can also conduct a more intensive pump audit. Using a range of equipment from a specialised audit kit, the service engineer will install flow meters and pressure transducers, and measure kilowatt ratings of pumps.

“This will log data for five to seven days, to create a detailed load profile for the customer,” says Gomes. “An added benefit is that the cost of this audit is deducted, should they decide to go ahead with our Grundfos solution.”

A POWERFUL PART OF YOUR ENERGY MIX

This intervention is of particular interest to the head of engineering in a plant or facilities manager in a building, whose key performance indicators (KPIs) are often linked to the cost-effectiveness of their operations – as well as the carbon emissions generated. “With services like our energy check and energy audit, we can help key personnel achieve their KPIs in relation to energy consumption,” she says. ■

BEST-PRACTICE SUSTAINABLE BUILDING DESIGN FOR SA HEALTHCARE NETWORK



(Above): AECOM plays a programme management role in being part of a larger collaborative team delivering sustainability projects for Netcare.

A leading global trusted infrastructure consulting firm has been lead project manager for the Netcare environmental sustainability division since 2015, in conjunction with project management specialist That Interesting Company. The team identifies and shepherds projects through feasibility to implementation.

The projects relate to water- and energy-savings, renewable energy and waste reduction at healthcare provider Netcare’s local network of facilities. Yearly targets in terms of anticipated savings are compiled and tracked to monitor progress.

“This is a Netcare initiative driven by Netcare. We play a role in being part of a much larger team that delivers the actual projects. It’s a highly collaborative effort to get the projects through the various stages, which involve numerous Netcare resources, in addition to our own project management services,” says AECOM programme manager Carl Erasmus.

INTERNATIONAL RECOGNITION AND THE RACE TO ZERO

Such has been the success of Netcare’s environmental sustainability drive that it won gold medals in all four categories in the 2021 global Healthcare Climate Challenge Awards – a feat it also accomplished

(Above, from top): Carl Erasmus, Programme Manager at AECOM and Janet Traut, Healthcare Architectural Planner.

“IT’S A HIGHLY COLLABORATIVE EFFORT TO GET THE PROJECTS THROUGH THE VARIOUS STAGES, WHICH INVOLVE NUMEROUS NETCARE RESOURCES, IN ADDITION TO OUR OWN PROJECT MANAGEMENT SERVICES.”

in 2020. The annual awards are organised by Global Green and Healthy Hospitals (GGHH), an initiative of Health Care Without Harm (HCWH). The categories are Greenhouse Gas Reduction (Energy), Renewable Energy, Climate Resilience and Climate Leadership.

The GGHH network comprises over 1 450 members in 72 countries, representing the interests of over 43 000 hospitals and health centres.

Last year, Netcare was also the first private healthcare institution in Africa to join the "Race to Zero" global campaign, which strives to rally leadership and support from businesses, cities, regions and investors for a healthy, resilient, zero-carbon recovery that prevents future threats, generates employment and unlocks inclusive sustainable growth.

To further emphasise Netcare's contribution to sustainability, it was awarded Commercial Corporate Company of the Year for 2021 by the Southern African Energy Efficiency Confederations, the South African chapter of the Association of Energy Engineers. André Nortje, Netcare's national environmental sustainability manager, was awarded Young Energy Professional of the Year for 2021.

MANAGING PROJECTS AND HEALTH NEEDS REMOTELY

Due to AECOM's involvement with Netcare dating back to well before the Covid-19 pandemic, Erasmus says the consultancy was able to adjust quickly to remote working and get on board to help hospitals

prepare certain infrastructure – for example, additional oxygen supply to meet the additional demands brought about by the coronavirus. "We were able to integrate this process successfully with our project management work on the sustainability side," says Erasmus.

"We have considerable experience and expertise in the healthcare sector," highlights healthcare architectural planner Janet Traut. Focusing on the African and Middle East region, she is part of a global network of specialists in

**"TO FURTHER EMPHASISE
NETCARE'S CONTRIBUTION
TO SUSTAINABILITY, IT WAS
AWARDED COMMERCIAL
CORPORATE COMPANY OF
THE YEAR FOR 2021."**

key healthcare markets from the Americas to the UK. AECOM's global reach allows it to pull in any skills set imaginable, from acoustics to vertical transportation.

BUILDING INFORMATION MANAGEMENT

Working with BIM 360 and Autodesk software allows AECOM to offer a global best-practice approach to healthcare that can be tailored to local market requirements, especially in response to challenges posed by the public and private sectors. While Traut herself slots into the architectural team, this has a multi-disciplinary function

in providing complete project solutions and a single point of contact for clients.

"The challenge with healthcare projects is that work's usually conducted in existing operational facilities. A lot of upfront planning is required and a wide range of services and functions needs to be considered, from patients on life support to smaller details like the type of paint selected for the walls. Healthcare facilities are some of the most complex building types. There's nothing simple about a hospital," she says.

AECOM's long-standing partnership with Netcare is testament to the value it has been able to add to the healthcare provider through constant collaboration and adoption of global best practice, says Erasmus. "Even as an external consultant, we're part of the entire Netcare environmental sustainability division. We work closely with the rest of the professional team, from project management to engineering and energy monitoring."

Commenting on the latest trends in project management, Erasmus contends that its contribution to value engineering and cost and risk management is only now being acknowledged. "From the perspective of the South African construction industry, project management is a robust sector showing growth. We believe our expertise and experience are what have allowed our partnership with the Netcare Sustainability Unit to flourish over the years," he says. ■

FEATURE

Wrapping up another fast-track project, leading black-owned contractor Concor has handed over the Ikusasa building in Rosebank's Oxford Parks precinct to Anglo American Global Shared Services (AGSS). Construction of the building began in March 2021.

Applying innovative construction methods and its well-established quality and scheduling systems, Concor met another tight deadline with the handover this February of the Ikusasa building, which features four storeys above ground and three basement levels.

According to the Concor site agent, Warren Mills, the company's core team was required to manage around 70 specialised sub-contractors, ensuring the most efficient deployment



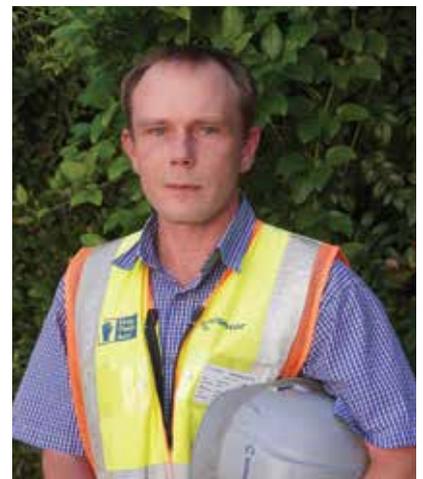
SUSTAINABLE BUILDING MATERIALS AND METHODS



(Above): In line with sustainable building practice, a priority on the site was reducing, re-using and recycling construction waste.

(Above): Among the innovations employed was the use of larger foundation piles, which allowed columns to be cast over the piles.

(Below): Warren Mills, Concor site agent.



of resources to meet the project's demanding time-frames.

DEPLOYING LARGER FOUNDATION PILES

"Among the innovations we employed to cut the construction time was the use of larger foundation piles," says Mills. "This meant that there was no need for concrete bases or excavating around each pile; instead, the design allowed the columns to be cast over the piles."

Some 115 piles were cast, with columns spaced on an 8,4m x 8,4m grid to hold the suspended concrete slabs. By expediting this part of the contract, Concor could give early access to the wet trade contractors like bricklayers and tilers, as well as to the installers of the unitised façade panels.

"This allowed us to make rapid progress towards the external works and the internal fit-out," he says.

Another innovation was to back-prop on just two levels, rather than the traditional three. This also allowed earlier access to the lower floor plate, to initiate brickwork and "first-fix" services such as floors, ceilings, electrical supply cables and water pipes.

"The result was to facilitate beneficial occupation for the tenant, giving them early access in a phased approach to prepare the working areas with furniture and



(Above, from top): Concor was able to give early access to the wet trade contractors; another innovation was to back-prop on just two levels, rather than the traditional three and waste was separated at source, ensuring that rubble, wood, steel and plastic were sorted into dedicated skips.

other fixtures in time for employees to start work," says Mills.

The building's four levels make up over 7 500m² GLA, while the three basement levels cover more than 10 300m². The structure consumed about 8 700m³ of concrete and over 800 tons of reinforced bar.

RECYCLING, RE-USING, RE-INVENTING

In line with sustainable building practice, a priority on the site was reducing, re-using and recycling construction waste. This included separating waste at source, ensuring that rubble, wood, steel and plastic were sorted into dedicated skips. By preventing contamination of different streams,

waste could be more efficiently and cost-effectively recycled.

Ikusasa is Concor's first six-Green Star building in terms of the Green Building Council SA's Green Star rating. In recent years, the company has completed a number of award-winning buildings in the Oxford Parks precinct. ■

"IN LINE WITH SUSTAINABLE BUILDING PRACTICE, A PRIORITY ON THE SITE WAS REDUCING, RE-USING AND RECYCLING CONSTRUCTION WASTE."

FEATURE

The work of specialist demolition companies practically defines them as safety specialists. No in-depth understanding of demolition can exist in the absence of highly sophisticated dedication to all safety factors.

Jet Demolition offers specialised demolition services to large industrial and mining facilities. These range from selected brownfield demolition of redundant plant and structures to turnkey demolition and rehabilitation services at end-of-life. "Furthermore, we offer demolition costing services, assisting large multi-national mining clients to determine their demolition liability provisions as part of their eventual closure planning and preparation," says contracts manager Kate Bester.

EXTENDING PROCEDURES TO ALL STAKEHOLDERS

In terms of the specific requirements that mines generally have for demolition work or ancillary services, Bester explains that large industrial and mining clients extend their own working standards and safe-working procedures to all contractors who work on their premises. These requirements vary from site to site, but ultimately aim to achieve the best possible safety profile for their projects.

In most cases, it is critical that the contractor and client align their approach to the works as closely as possible so that all relevant risks are addressed and mitigated as effectively as possible. This calls for knowledgeable and



DEMOLISHED: ALIGNING CONTRACTOR AND CLIENT



experienced client personnel to be part of the direct site management team, who are then able to offer direct guidance and support on the ground.

"Jet Demolition has extensive experience in large, heavy industrial demolition services," notes Bester. "We've adapted and adopted the best approaches deployed on a variety of sites across most industries and throughout Africa and abroad. This exposure to different sites, conditions and requirements allows the demolition specialist to offer alternative and bespoke solutions to clients who may not have undertaken large-scale demolition works previously."

DOWNSTREAM SERVICES AND EQUIPMENT

Furthermore, there are integrated services that can be offered by

(Above): Jet Demolition has been undertaking industrial demolition works since 1994.

(Left): Jet Demolition contracts manager Kate Bester.

the demolition contractor that had already been planned for by a second or even third contractor. Supplementary services such as localised rehabilitation or hydroseeding often enable the client to benefit from an accelerated programme and reduced cost of works.

Jet Demolition’s fleet of demolition excavators is differentiated from conventional earth-moving equipment by being adapted to carry specialised demolition tools. These tools are specifically suited to their intended purpose and improve both production and safety. By having access to a variety of fit-for-purpose tools and equipment, projects can be undertaken with minimal interface between workers and risk.

SITE SAFETY AND SECURITY

All Jet Demolition projects are managed by a full-time, on-site management team generally comprised of senior site management and safety management personnel. “The most common and significant challenge we experience on demolition projects on mining properties is unlawful ingress to the site by members of the public,” says Bester.

In most instances, this ingress is due to criminal intent, which not only poses the risk of financial loss to the client, but – more significantly – introduces an increased and heightened safety risk. In these cases, it is imperative that an integrated working approach be adopted in

which the client liaises with local communities and embarks on education and awareness drives, supplemented by an adequate security presence.



“SAFETY IS OF PARAMOUNT IMPORTANCE ON ALL OUR SITES. IT ISN’T LIMITED TO MINING SITES.”

(Above, from top): Jet Demolition has extensive experience in large, heavy industrial demolition services and large industrial and mining clients extend their own safe-working procedures to all contractors.

“It’s critical to ensure that sites can be managed safely, which includes being able to prevent ingress to site by persons who aren’t aware of the risks associated with a large-scale demolition project,” stresses Bester. “Safety is of paramount importance on all our sites. It isn’t limited to mining sites. There’s no difference in how we would

approach and prepare for a site, whether it be a commercial or mining property.”

ALIGNMENT AND ACCOUNTABILITY

What is different is the documentation of the safety processes, procedures and protocols. Large mining clients have the advantage of well-documented safety processes, procedures and standards with which all contractors must comply to ensure a harmonious and suitably managed site. “These procedures are often closely aligned to our own, making it straightforward to either adapt to, or adopt, specific working procedures,” says Bester.

Mining clients must comply with the Mine Health and Safety Act, whereas large commercial clients, for instance, operate in accordance with the Occupational Health and Safety Act. Although different in their approach, the fundamental principles underpinning both Acts are identical in preventing harm.

Jet Demolition is currently undertaking various demolition projects on mining properties. Most of these focus heavily on local participation, whereby the main contractor assists smaller and emerging contractors to undertake specific works packages to acquire knowledge in a safe and controlled environment. “We’ve undertaken large-scale, heavy industrial demolition work cross-border for the past 20 years and look forward to continuing to do so in future,” says Bester. ■



CITI-CON HARNESSSES DIGITAL TECHNOLOGIES FOR STRUCTURAL SURVEYS

Citi-Con, a leading South African concrete repair company, is harnessing sophisticated digital technology to undertake accurate and detailed surveys of structures. The company has already successfully deployed the technology on two projects to help clients gain a deeper understanding of the condition of their assets and the remedial work required.

Citi-Con worked with Delta Scan, a specialist engineering inspection and digitisation company consisting of a team of engineering, quantity surveying and architecture professionals, on the projects. The two companies will also collaborate

on other projects, considering the high demand for these services. In particular, mining and industrial companies are driving the uptake of this technology to enable them to better manage infrastructure assets over their entire life-cycle. Leading mining houses, for example, are already deploying augmented reality and creating virtual sites to gain a greater understanding of the condition of their assets which will better inform their preventative maintenance strategies.

Darryl Epstein, MD of Delta Scan, says: "While the engineering and construction industries have been slower than most other sectors to adopt digital technologies,

they're now gradually realising the significant value that can be extracted from these powerful analytical 3D models. This includes improvements in efficiency, cost reductions and, most importantly, access to comprehensive information to facilitate better decision-making in greenfields and brownfields projects. Delta Scan uses a combination of drone technology, LiDAR and panorama cameras to recreate an exact digital version of a structure down to millimetre detail, enabling project teams to analyse entire structures

(Above): The technology provides improvements in efficiency, cost reductions and access to comprehensive information to facilitate better decision-making.

from their desks without needing to visit the site. This is a game-changer for inspections. Companies started realising the immense value of these digital solutions during the hard lockdown that was implemented to contain the spread of the Covid-19 virus.

Andre Vermeulen, MD of Citi-Con, believes it would have been impossible to provide the depth of information that was generated for owners of these developments using conventional rope-access investigation techniques. "Delta Scan generated a one-to-one scale 3D model of the structures, with specific focus also placed on the geometry of the structure to provide accurate measurements, as well as details of the construction materials used for analysis and engineering design. This was followed by ultrasonic and thermal testing to map all of the defects in the structures. The result was a very accurate replica of the structures and a detailed analysis of the immediate and longer-term problems that would be encountered," he says.

In this way, Delta Scan approaches the use of drone technology from an engineering viewpoint.

The company knows exactly what it is looking for, how to find it and what to do with the information. This wealth of data is then stored in a cloud-based platform that can be accessed quickly, efficiently and cost-effectively by all relevant stakeholders.

"THIS WEALTH OF DATA IS THEN STORED IN A CLOUD-BASED PLATFORM THAT CAN BE ACCESSED QUICKLY, EFFICIENTLY AND COST-EFFECTIVELY BY ALL RELEVANT STAKEHOLDERS."

This collaboration between stakeholders and the use of detailed visual information is changing the way clients and their professional teams are communicating regarding asset management, maintenance and optimisation. It also fosters trust between all members of the professional team and client body.

On both projects, the surveys exposed major faults requiring urgent and sustainable interventions which would have

gone largely undetected. For example, a survey of one of the developments, a high-end apartment block, revealed major issues with the façade and roof structure. As another example, a thermal analysis revealed water trapped inside the concrete panels of the façade. This would eventually have led to the corrosion of the reinforcing bar inside and major cracks as the concrete blocks started to expand, due to the pressure being exerted by the water. Elevation mapping of the roof also revealed major depressions where water started pooling and would eventually have leaked into the structure.

Vermeulen was initially approached by the property-owner to undertake a survey of the one side of the structure where cracks were already evident and water had started seeping into one of the apartments. However, he suspected that there would be larger problems with the building that he would not be able to identify using a rope-access survey. He therefore proposed that Delta Scan survey the entire structure.

"The findings were very favourably received by both clients. They're now preparing to implement sustainable solutions, which will be undertaken by Citi-Con. This is considering that we already have an intricate understanding of the structures and their problems, combined with our proven concrete repair capabilities," says Vermeulen. ■



(Left): Delta Scan approaches the use of drone technology from an engineering viewpoint. The company knows exactly what it is looking for, how to find it and what to do with the information.

INNOVATIONS

In the world of machine-building, core components – and the ease with which they can be selected and installed – form a vital part of overall efficiency. Thanks to the continued proliferation of Industry 5.0 and IIoT, machine-builders are now benefiting from simplified design processes.

Not long ago, it would have been hard to imagine machine-builders connecting motors to the Internet to access the data required to improve design, installation and machine maintenance decisions.

Now manufacturers are producing digitised solutions tailor-made for machine-builders. These technologies are fully digital, offering object-orientated management and other gains throughout the entire machine life-cycle.

CHOOSE YOUR AVATAR

Once the components are delivered, they need to be properly mounted, connected to the PLC and then programmed.

Digital solutions such as Schneider Electric's TeSys island digital load management offering ship with online configurator tools that feature avatars, pre-programmed with the requisite and integrated functionality.

These avatars, which are essentially digital objects, provide the knowledge required to build a specific application. A comprehensive avatar catalogue features anything from load functionalities and basic applications to conceptual and digital twin in Industry 4.0.

For example, the machine-builder can simply select the appropriate avatars that represent the functions required and the configuration tool automatically generates the appropriate bill of materials of the TeSys Island build components for the chosen application.



BUILD AN AVATAR?

When the machine-builder starts programming the solution, the file created by the configuration tool – as well as all the settings that were indicated in the selection process – are automatically imported. The time-consuming task of dual or triple entry of specifications is avoided.

ACCELERATING COMMISSIONING

Machine-builders are now also benefiting from software tools and hardware which are simplifying the commissioning process. Again, with a digital solution such as TeSys island, individual avatars can provide:

Predictive maintenance:

Machine-builders can now determine precisely (at an end user site) where a particular machine is located and determine accurately the end of life of the machine.

Other information includes motor starter statistic data, energy data, motor performance, motor protection and upstream protection, which comprise phase and ground current.

Trouble-shooting: Machine-builders are forewarned if, for example, the pre-set threshold has been breached and a machine starts overheating. This warning is issued before the machine experiences any downtime. Importantly, this information can then be analysed to mitigate future incidence. The data is also viewable from most browsers and mobile devices.

Digitised solutions are also simplifying machine-builders' workload due to their open communication features. This means that these OEMs can work with several brands of motor starter equipment, while still benefiting from the productivity enhancement without interoperability issues.

Schneider Electric's EcoStruxure Machine facilitates OEM implementation work by connecting intelligent devices, regardless of manufacturer, with edge control and software-based analytics, all within a cyber-secure envelope.

(Above): A machine-building avatar contains the necessary instructions to load machine processes and designs.



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PRIMING THE WORKFORCE FOR THE NEXT REVOLUTION

The focus of organised labour, as well as that of the public and private sector, needs to shift towards developing the proficiencies of the vast number of unskilled workers in the country. Instilling a culture of lifelong learning in the workplace, especially among low-skilled and unskilled employees, will help companies to bolster productivity and efficiency so that they can compete effectively at a global level. This approach will also empower and motivate employees to play a more meaningful role in the growth and development of the economy, as opposed to only performing mundane jobs that do not pay decent living wages and are not secure in an economy which relies heavily on advanced skills.



RAISING PRODUCTIVITY

South Africa has the lowest productivity rates among emerging economies. This is due to the high cost of doing business, which includes the impact of increasingly frequent industry strikes, lack of competition in many markets and a dire shortage of skilled labour. Many citizens of working age do not possess sound workplace literacy skills. This is the ability of

(Above): Marco Maree, expert training and development advisor of Triple E Training.

(Right): Skills development and training also help to address rising inequality.



"SKILLED SOUTH AFRICAN EMPLOYEES CURRENTLY EARN ALMOST FIVE TIMES THE AVERAGE WAGE OF THEIR UNSKILLED COUNTERPARTS."

employees to deploy basic literacy and mathematical skills to perform their jobs productively, efficiently, accurately and safely.

While this is also a legacy of the past that deprived many South Africans of a basic education, the situation has been exacerbated by the significant deterioration of the country's school system over the years. The outcome is students who have average skills and a vast majority of young pupils who are performing poorly in a very unequal education system. Worryingly, young pupils in the top 200 schools still achieve more distinctions in critical science, technology, engineering and mathematics than pupils in the next 6 600 schools combined. Meanwhile, more than 90% of nine-year-old pupils in Limpopo and 85% in the Eastern Cape cannot read for meaning.

There is a strong likelihood that they will not be able to close this wide learning gap and will therefore struggle to complete their schooling, or join the many South Africans who have chosen to forgo their education.

ACCELERATING SKILLS ACQUISITION

Of a group of 100 young pupils who start their learning journey, only 50-60 will complete their basic education and just 14 will obtain a university degree. In 2017, there were about 2 million unskilled workers in the labour force who only attained a primary or lower education. This group was made up of 12,5% of employed South Africans in 2017, compared with



"SKILLED SOUTH AFRICAN EMPLOYEES CURRENTLY EARN ALMOST FIVE TIMES THE AVERAGE WAGE OF THEIR UNSKILLED COUNTERPARTS."

16,6% in 2010. While there has been an improvement in upskilling South Africans, the rate of change has been very slow. Clearly, significantly more will have to be done to make a substantial impact.

The onus lies on the government, the private sector and organised labour to collectively work towards a sustainable solution, which entails developing the skills the country needs to compete in this new digital era that focuses on high productivity and efficiency. Instead, the focus of labour across both the private and public sectors, to date, has mainly been on paying higher wages for less work produced. This is simply unsustainable, especially in the current economic conditions, and will only lead to further retrenchments.

(Above): Foundational construction skills are among the most urgently needed in SA.

These inefficiencies manifest in both the public and private sectors through declines in service delivery and productivity, respectively. A severely bloated government intends restructuring its public-sector wage bill, which poses a serious risk to the national fiscus. At the same time, 60 000 public-sector jobs are at risk in the foreseeable future, which will only compound our already-high unemployment rate. It is unlikely that the private sector will be able to compensate for this, as it is also shedding jobs.

BEING RELEVANT

"Some companies are relying increasingly on advanced technologies to survive the challenging economic climate. Meanwhile,

some low-skilled positions are simply being made redundant because they are no longer relevant in an economy which is preparing to undergo the Fourth Industrial Revolution in order to compete effectively at an international level. Rather, both the government and the private sector should be focusing on developing the skills that they need and then retaining them as part of a long-term solution," says Marco Maree, expert training and development advisor of Triple E Training, a leading, accredited provider of adult literacy and numeracy training solutions which are helping companies to enhance the proficiencies of their low-skilled employees. Employees who have completed the company's training programmes have been primed for further learning so that they can continue adding value, while also developing as individuals both inside and outside the world of work.

In this way, skills development and training also help to address rising inequality, which is at the heart of the strikes that are crippling the economy. The private sector continues to grapple with increased disruptions to business due to prolonged strikes from a smaller workforce. This, in turn, is thwarting productivity and leading to further job losses. One protracted strike, for example, cost a mining company



about R400 million a day in lost revenue. These incidents also lead to a reduction in business confidence and increased risk of economic stagflation.

Labour status and education levels are among the leading drivers of the stubbornly high levels of inequality in the country, combined with lasting legacies of the previous system, including race and geo-spatial factors. Skilled South African employees currently earn almost five times the average wage of their unskilled counterparts. Yet skilled employees make



(Above): Foundational skills open the door to ongoing training and the opportunity to remain relevant in a changing economy.

up less than one-fifth of the total population. This has led to a so-called "missing middle", in terms of skills supply. Companies must therefore pay a premium for scarce skills, which hinders their ability to compete effectively at a global level – and they are still not nearly as productive as their international counterparts.

CLOSING THE WAGE GAP

Wage inequality in SA has been an ongoing trend since 1995. Between then and 2014, the real wage Gini coefficient increased from 58 to 69. This was mainly due to an increase

(Left): Skills development must be emphasised as a fundamental in all national social support initiatives.

in capital and skills intensity in most local industries since the advent of democracy in 1994. The shift from labour to capital and the change in the skills composition of the local workforce was evidenced by the decline in formal unskilled and semi-skilled job prospects from 1994-2015. This was despite growth in gross domestic product. Therefore, increasing employment alone will not necessarily have the desired impact on inequality in the country. For example, creating a million jobs would only reduce the Gini coefficient by 0,8-1,5 points, depending on the industry in which these employment opportunities emerge, since they would mainly be geared at individuals with high skills sets, rather than the poorest job-seekers.

"To help fight rising inequality, the public sector recently launched a national minimum wage and there are even plans to introduce a basic income grant. No-one can dispute the humanitarian benefits of such initiatives, which were already shown to be very effective during the lockdown that was implemented to contain the spread of the Covid-19 virus. However, such initiatives pose a high risk to our very weak economy. Another major concern is that they'll further entrench low-skilled labour, when we should rather be focusing all our efforts on building a robust pipeline of skills that we need to grow and develop our economy. This includes equipping employees with the basic skills to embark on a journey of continuous learning so that they can sustain their jobs and improve their employability," says Maree. ■

BRINGING TECHNOLOGY INTO THE CONSTRUCTION FOLD

Digital construction has been on the horizon in South Africa for quite some time. The Covid-19 pandemic has produced a new way of working and new possibilities have emerged, offering opportunities to transform construction processes.

Digital technology trends are revolutionising the construction landscape. This technical revolution means we need to think about the future and the way we design, build and manage buildings.

We need a clear and well-co-ordinated strategy to support digital transformation and adoption to increase revenue and reduce costs.

Given the importance of this sector to the economy of our country, there needs to be an overhaul of methods and ways of executing activities in the industry. Many stakeholders are advocating this transformation, but right now, we are working in silos. We need to start collaborating to make it a reality.

The world is experiencing one of the most transformational phases in human history and the Fourth Industrial Revolution



(Above): New technologies like augmented reality are an opportunity to transform the industry.

(Below): While an early technology adopter, SA's construction sector is highly diverse, with many levels of technology in need of adequate co-ordination.

presents an opportunity to find new ways of eliminating many of the inefficiencies and problems associated with the construction process.

New digital technologies such as building information modelling have made it possible for projects to be built virtually before they are even constructed physically, thus increasing the competitiveness of the construction sector. Artificial intelligence, the Internet of Things and virtual reality technologies are paving the way for digital transformation. Using video game technology, construction professionals are now able to operate augmented reality wearables and drones to access data and make quicker and better-informed decisions, while building better and wasting less.

THE THREAT OF CLIMATE CHANGE

According to the World Economic Forum, buildings and construction account for 38% of worldwide carbon emissions, which means that we cannot solve the climate change problem without transforming the construction and building industry. This challenge also presents an opportunity to leverage technology and improve efficiency and sustainability.

Customer expectations is also one of the factors driving digitisation in the industry. Environmental issues have become more important, as customers are becoming increasingly concerned about the well-being of the environment.

Innovative green construction technologies such as self-healing concrete are expected to bring



"WE CANNOT SOLVE THE CLIMATE CHANGE PROBLEM WITHOUT TRANSFORMING THE CONSTRUCTION AND BUILDING INDUSTRY."

(Above): The Fourth Industrial Revolution presents an opportunity to find new methods, materials and methods across the entire construction process.

the industry a step closer to its more efficient and lower-carbon future. Currently, the global output of concrete accounts for 8% of the world's carbon emissions, according to the Royal Institute of International Affairs.

URBANISATION

It is estimated that 1,3 million people move into cities every day. By 2040, an estimated 65% of the world's population will be living in cities. This pace of urbanisation requires significant investment in infrastructure and housing to accommodate regional population shifts, highlighting the need for urban sustainability.

Construction and the built environment deliver a huge amount of waste to the world, so choices made about the way cities are built, inhabited and maintained will

have a long-term global impact on the environment. This is one of the reasons many city governments are working on smart city initiatives.

Digital technologies can help governments become resilient to the effects of climate change and contribute to economic growth. Compact cities, with well-designed services and infrastructure, reduce the cost of energy provision, transport and other services which businesses need. This, in turn, increases productivity and efficiency, while encouraging private investment for economic growth.

Disruption has become the new normal. As imagination becomes innovation, we need efforts from industry stakeholders, professional bodies and government agencies to drive much-needed collaboration between architects, quantity surveyors, builders and engineers. We need to work together across the various sectors to drive change and create the future we want. ■

BUILDING PARTNERSHIPS

MASTER BUILDERS CONTRACT DOCUMENTS

Standard Forms of Contract are an essential part of construction project administration. They are standardised agreements that provide a legal framework regarding rights, obligations and duties of contracting parties in relation to construction work that is to be carried out. Master Builders South Africa has developed useful model agreements for a variety of applications, which are available for use by members and non-members.



HOUSE BUILDING & SMALL CONTRACTS AGREEMENT



DOMESTIC SUBCONTRACT AGREEMENT



LABOUR ONLY SUBCONTRACT



AGREEMENT FOR RENOVATION & REFURBISHMENT WORK TO EXISTING PREMISES

CONSTRUCTION INDUSTRY MANUALS

CONSTRUCTION OCCUPATIONAL HEALTH & SAFETY (OHS) MANUAL

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MASTER BUILDERS SOUTH AFRICA

Tel: +27 11 205 9000 | Fax: +27 11 315 1644

Email: info@masterbuilders.org.za | www.masterbuilders.org.za

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