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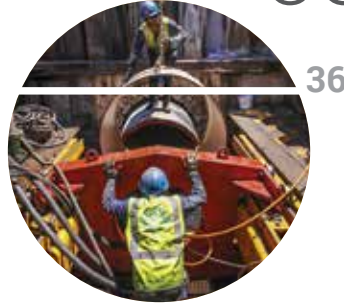
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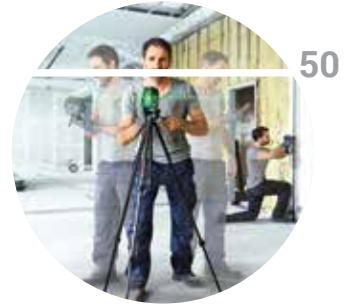
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ON THE COVER

The tiny town known as Tugela Ferry in the local municipality of Msinga, in central KwaZulu-Natal, is part of one of South Africa's most impoverished areas.

People struggle to make a living in Tugela Ferry and the harsh conditions were, for many years, exacerbated by the town being split by the Tugela River and connected only by an inadequate single-lane bridge, the Tugela Ferry Bridge.

The KZN Department of Transport therefore embarked on a project to widen the bridge to two lanes by constructing a new, reinforced concrete bridge adjacent to the existing steel structure.

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COMMENT

Two articles in this month's issue, 'Gauteng to roll out the green carpet for urban development – page 32' and 'Affordable housing solutions using prefabrication' – page 35 are of direct relevance for the speed and quality of urbanisation in Johannesburg.

By 2018 Johannesburg's population will reach 10 million and by 2030 it will reach 11,6 million. This is according to international law firm, Pinsent Masons that has launched a thought leadership programme that will bring together experts from their 23 global offices.

The inaugural event of this programme revealed some interesting facts. Cities produce some 80% of global economic output; no country has grown to middle-class status without urbanising and no country has attained high income status without urbanising. It is very clear that cities play a vital role in national and global growth.

In a city the size of Johannesburg, the infrastructure backlog is high – and getting higher. If South Africa wants to improve its economy, this widening gap has to be closed. Instead of relying only on government spend to achieve this, significantly more private investment has to be attracted. Even though public-private partnerships are notorious for their high bureaucratic cost and endless red tape, Pinsent Masons does offer some indication of how such private investment can be achieved.

Planning is key

It firstly states that there has to be transformation in infrastructure governance which will in turn unlock private investment. It furthermore proposes the drawing up of a long-term plan (two decades or more) of what is to be achieved.

Planning ahead is a characteristic of advanced emerging economies: without planning long enough ahead no development gap will be closed.

It also proposes the development of a clear infrastructure delivery strategy that will support an innovative infrastructure sector. This in turn, has to be supported by skills development.



An aerial view of a rapidly developing township close to the Johannesburg CBD. Only through good urban planning will South Africa develop into a solid middle-class country.

When you do not plan

Many growing African economies, sadly, have a severe lack of urban planning. This is evidenced by the massive traffic congestion often found in African cities, lack of water, sanitation, electricity, etc. When these basics are not in place, there is no way that cities can become the centres from which the country's main economic output has to be generated, resulting in stagnant economies.

Wilhelm du Plessis

Editor

REMEMBER TO

- Enter your Best Project. The deadline for entries is 8 September 2017
- Book your advertisement in the special Best Projects issue in December to **associate your brand with excellence** Contact Erna Oosthuizen in this regard (contact details at the bottom of this page)

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MINISTER STICKS to her guns with Cubans

Replying to a question from the National Council of Provinces, Minister of Water and Sanitation, Nomvula Mokonyane, defended her department's decision to continue employing Cuban technicians and engineers to exchange skills within the department's Water Programme.

► The South African Institution of Civil Engineering (SAICE) is perturbed that South African civil engineering practitioners are once again being ignored in favour of engineers from abroad.

The Minister reported that the Programme had led to black engineers being given opportunity to gain work experience from the Cuban engineers. She said local companies and service providers are often hesitant to support black engineers, and to provide them with accreditation. She continued by saying that, "thanks to the Cuban programme, black engineers who could previously not obtain accreditation in the water industry, have now been accredited". The first question that arises is whether the Cuban technicians and engineers are registered as professionals with the Engineering Council of South Africa, a process that every South African technician, technologist and engineer have to do in order to obtain accreditation and being registered as a professional engineering practitioner.

South Africa has world-class civil engineering professionals in hydrology and hydraulics and water engineering in general. There are many experts such as Neil Macleod, who received the 2014 Stockholm Industry Water Award for "Most progressive water utility in Africa" on behalf of eThekweni Water & Sanitation, in the Durban Municipality, South Africa. The utility was awarded for its transformative and inclusive approach to providing water and sanitation services. Manglin Pillay, CEO of SAICE, states, "Our engineers are world-renowned and very well recognised globally, but we don't seem to be having the same favour here in South Africa!"

Manglin Pillay, CEO of SAICE.



Should the DWS have launched their "recruitment drive to find skilled professionals to deal with South Africa's water problems" in South Africa, with the same remuneration and incentives, SAICE is confident that many a civil engineering practitioner, who knows South Africa's water challenges inside out, would have been available to assist the department in rural communities, and in national and provincial infrastructure departments. The money spent on establishing and accommodating the Cuban engineers in South Africa, could possibly be better spent re-looking current salaries and working environments in these areas to the benefit of civil engineering professionals, a number of whom are unemployed due to the current economic climate, thereby creating sustainable jobs within South Africa.

Pillay emphasises, "Our engineers need to get first choice. We have excellent, experienced engineers both locally, as well as those who are currently working outside of South Africa.

"Government needs to make strides to attract South African engineers back to South Africa, and back into our government sector where they are most needed. If there is a shortage thereafter, then the whole world can join us."

On the issue of deployment and looking at the above tasks, one could ask how language would affect efficiency in capacity building through training of staff – are these the non-existent technical staff in rural local authorities? The Cuban engineers also have to adapt to performing and living in a democracy, as Cuba is a communist country. Learning the culture and the South African environment could prove to be extremely difficult.

Pillay explains, "Having to face these challenges, overcome them, and adjust to them could take at least 18 months – that out of a contract period of a few years. Because of these challenges, the Cuban engineers previously employed at the Development Bank of Southern Africa and several government departments in Gauteng, were simply not used on projects, and were marginalised in

the work environment. Some complained that they played video games and downloaded stuff off the internet all day – they were not incorporated into the South African engineering teams." Wasteful, not only in the context of money lost for South African engineers, but also for the Cubans, away from their families and with little constructive to do.

As SAICE and other voluntary industry associations have pointed out over the past five years, there is a serious shortage of technically qualified managers in all three tiers of government, which is of great concern. However, bringing in Spanish-speaking engineers is not a solution, as their work spans only a couple of years. Their presence will also not address the issue of inappropriately qualified and inexperienced persons appointed in technical positions in government.

Pillay furthermore argues, "Importing Cuban engineers has a possible unintended cost, i.e. the lack of training and developmental opportunities for our own young engineers.

"It appears the weakness in government structures is the lack of knowledge on how to identify projects and how to spend the allocated money. This is evident from the lack of structures, processes and systems in government to manage infrastructure spend. Then there is the cauldron of unsuitably qualified individuals, ineffectually occupying technical engineering posts, nervously managing engineering projects, and second-guessing the allocation of funds. It is necessary to re-install appropriately qualified and professionally registered technical people back into the system to plan, identify, procure and manage large-spend engineering projects."

The National Development Plan, and the State of the Nation addresses over the past years, placed emphasis on job creation and infrastructure development. This affords SAICE the opportunity to engage with government, and to serve as the honest and non-biased broker for civil engineering expertise to be installed back into the system

Pillay concludes, "SAICE is seriously perturbed about the import of Cuban engineers and once again implores government, and specifically the Department of Water and Sanitation, to further engage with us (SAICE), to find solutions. Together we can solve South Africa's problems." In this manner the Minister can avoid shooting herself in the foot. ●



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Reputation as world-leader in road construction

The Atlas Copco Group has sold its global Road Construction Equipment Division, including the Dynapac brand name, to the number one construction Group in France and world-leader in road construction equipment, Fayat Group.

The Road Construction Equipment division became part of Atlas Copco's Construction Technique business area in 2007 and manufactures Compaction Rollers for asphalt and soil application, as well as asphalt equipment Planers and Pavers. The products are well known globally under the Dynapac trade name.

Founded in 1957, Fayat is a 100% independent family owned Group with an international scope in 120 countries and representation by 152 companies around the world. Fayat has earned a reputation for being a dedicated and reputable original equipment manufacturer through eleven road construction equipment companies and dedicated brands active in this area.

Dynapac will transfer to Fayat on 1 July 2017 and become a company within the Group operating under the Dynapac brand name. Following the acquisition, road

construction equipment which forms one of the Group's seven core businesses – public works, foundations, building, energy services, steel and mechanical construction and pressure vessels – will become the strongest division in the Fayat Group.

Middle East Africa will be one of 11 regional Dynapac business areas globally, with sales and service operations in 37 countries together with five global production facilities being Brazil, Sweden, Germany, India and China. The global holdings company will be based in Sweden and the divisional management head office in Germany.

Once all due diligences have been finalised, Dynapac SA will be a local legal company responsible for the Southern Africa territory within the MEA region and the head office based in Dubai.

"This is an ownership change and not a change in business structure," says Neville Marthinussen, Atlas Copco Construction Technique Business line manager, Dynapac Road Construction Equipment. "Until closure, the Road Construction Equipment Division will remain part of Atlas Copco's Construction Technique Business Area. So it is business as usual," Marthinussen assures customers. "As Dynapac South Africa we will continue to serve the market with our products and services. The current product portfolio remains unchanged and



all scheduled product renewals will continue as planned." Marthinussen confirms that the Atlas Copco name will gradually be phased out to end 2017 and the Dynapac brand will be prominently displayed on all products come 2018.

Fayat has plans to further strengthen its strategic position in road construction and road maintenance equipment. "The Group's reputation as a world-leader in road construction equipment with over 60 years' experience, presents a solid platform on which we are able to reinforce the strength of the Dynapac brand through continued development, improvement and expansion of our Dynapac product ranges and services that have clearly earned the respect and trust of our customers over many years," concludes Marthinussen. ●

New brand identity

WSP Global has unveiled its new brand identity, represented by the introduction of a new logo that marks its growth and transformation, and celebrates the culture built on the coming together of over 85 companies in the last five years.



The new brand is evocative of WSP's strong and forward-looking identity. Engineering is about asking questions, looking at complex problems from different angles, and finding solutions that break paradigms. WSP's new brand speaks to the complexity and intelligence of engineering, while remaining open to the endless possibilities driving the work of its 36 000 employees around the world.

"There has never been a more rewarding time to be a WSP employee. The launch of our new brand is a direct reflection of what we have accomplished, where we are today and our vision for the future. It reflects our uncompromising determination for excellence and focus on connecting our employees, clients and other stakeholders to deliver complex and sustainable projects, paving the way for a future where society can thrive," said Alexandre L'Heureux, president and chief executive officer of WSP. "Over the years, we have focused on providing advanced solutions for the communities where we live and work. We value our people and

reputation, and stand for our other Guiding Principles: our local presence and international scale; our focus on the future and ability to challenge the status quo; our collaborative approach; and our culture of empowerment and accountability. We have what it takes to help our clients design lasting solutions for the development of better communities, thus building a powerful legacy for generations to come."

In addition to the new logo, the new brand is supported by rich and unique photography, combining striking work with rich textures, bustling urban crowds, and moments of human reflection. Together, they embody the desire to ask questions and to plan, design, and engineer an impactful legacy. The brand platform aims to invite the beholder into the WSP world; to let them complete the equation, and be part of the work.

The new logo and brand identity were developed in collaboration with Sid Lee, a global brand consultancy recognized for helping organisations grow through brand-driven creativity. ●



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RECOGNISED BY INDUSTRY

The PMR awards are industry-driven and based on in-depth market research from within the construction industry, and are a reflection of how clients rate companies. The awards, which are hosted by PMR.africa, who are industry research specialists, aim to enhance and recognise excellence while setting benchmarks in the different industries.



The PMR.Africa awards were accepted on behalf of SMEC South Africa by (left to right) SMEC South Africa CEO Kostas Rontiris; HR manager for Johannesburg Ayanda Maphumulo; regional manager for Gauteng South Andrew McKune; Paula Cang, senior technologist, management services; Dinesh Baqha, generation manager, power & energy; Terence Ganamany, commercial manager, legal; and SMEC Africa COO, Thomas Marshall.



Mariana Lamont with Ocon Brick's 9th PMR Award.

Ocon Brick

Ocon Brick, part of the Infrastructure Specialist Group of companies (ISG), won their ninth consecutive PMR Golden Arrow Award within the suppliers of bricks and formwork/scaffolding category.

"We are very pleased to have won this ninth PMR Golden Arrow Award it is a reflection of our commitment to supplying a quality product to the construction industry as well as recognition of our technical expertise and service from our customers. I believe it is the continuous reviewing of our manufacturing processes and our due diligence that enables us to continue to offer this professional service," said Mariana Lamont, regional sales manager for Ocon Brick.

SMEC South Africa

SMEC South Africa was once again the top winner at the 2017 Construction Industry Business Excellence Awards.

For the second year running, SMEC South Africa was placed first overall in the following categories for companies with more than 400 employees:

- Civil consulting engineers
- Structural consulting engineers
- Combined civil & structural consulting



SF van der Linde, client director – property, Africa, and Portia Derby, Aurecon senior regional director – Gauteng, proudly present Aurecon's PMR.africa Excellence Awards.



Masana Mabasa received the award on behalf of Corobrik.

Corobrik

Corobrik is delighted to receive the PMR Diamond Arrow Award, the highest rating for the seventh year running. The score is attained after respondents rank their perceptions of Corobrik across eleven attributes and is a public acknowledgement of excellence. Dirk Meyer, Corobrik managing director says, "We are proud to receive this award as the research conducted tell us that our clients value our service, something we constantly strive to improve. This year Corobrik has received a mean score of 4.30 out of a possible 5.0.

To arrive at the final score relevant respondents in the industry are contacted between December 2016 and the end of February 2017. Each person rates suppliers across 11 attributes, including: ability to meet orders, Black Economic Empowerment, competitive pricing, deliveries meeting promises, environmentally friendly solutions, flexibility, range and quality of products, response to queries, reputation and sustainable development practises.

"We would like to thank our clients, building materials retailers and members of the construction industry for their honest evaluation. The result confirms the consistency in our performance," continues Meyer. "Without the dedication of all staff, who are shareholders in Corobrik, this award would not have been achieved."

Aurecon

For the fourth consecutive year global engineering and infrastructure advisory firm Aurecon has been recognised for its achievements in several categories at the PMR.africa Excellence Awards.

This year Aurecon garnered a Diamond Arrow Award – the highest rating – for three categories, including electrical consulting engineers, mechanical consulting engineers, and combined electrical and mechanical consulting engineers for firms with over 400 employees

Historically, Aurecon has excelled at these awards time and again. "As a firm, we aspire to being an inspiration for Africa. We are ecstatic about this recognition as it reflects the positive impact Aurecon is having on our peers, partners and clients across Africa. We value our clients' feedback highly and will continue to use this valuable input as building blocks to even further enhance and improve our services," says Ferdi Nell, Aurecon's managing director, Africa.

Widening reach to service

Focused on building relationships and servicing all stakeholders in the civil engineering sector, the Bargaining Council for the Civil Engineering Industry (BCCEI) has widened its geographical reach; this time into the Eastern Cape.

Lindie Fourie, operations manager at the BCCEI, reports that its office in Port Elizabeth is up and running and the opening of an office in East London is imminent. Both offices will be manned by qualified and experienced designated agents.

"With the current level of civils projects underway in the Eastern Cape, we believed it was critical to have personnel on the ground to assist and attend to any matters in this region," Fourie says. "Being locally based allows for greater responsiveness and a higher level of service for the stakeholders, and this is in line with BCCEI's operating ethos to level the playing fields and be accessible to all."

The BCCEI is a statutory body registered with the Department of Labour and is independent, while being funded by employers and employees for the benefit of the whole industry. She explains that the building of relationships with stakeholders, especially those operating on contracts in remote areas, is critical to ensure inclusivity.

"The BCCEI has conducted several roadshows across the country and we found that some contractors and many employees were not aware that there is a bargaining council that is able to assist them. By opening offices in more regions we will be able to inform and educate more companies," Fourie says. "And more importantly by increasing our footprint across South Africa we will provide direct access to BCCEI for employers and employees."

She says there are currently five collective agreements, concluded under the auspices of the BCCEI, in place between the employee representatives, BCAWU (Building, Construction and Allied Workers Union) and NUM (National Union of Mineworkers), and the employer representative, SAFCEC (South African Forum of Civil Engineering Contractors) and CEO (Consolidated Employers' Organisation).

BCCEI's head office in Johannesburg has also recently added to its considerable resources with the appointment of a new senior designated agent, Mhlengi Mdladla. Mdladla brings with him extensive experience and knowledge within the compliance environment in bargaining councils.

BCCEI also operates branches in Durban and Cape Town, and Fourie encourages all companies that fall within the jurisdiction of the BCCEI to visit the council's newly revamped website which has all the information pertaining to its branches. ●



Lindie Fourie, operations manager at the BCCEI.

General builders remain PESSIMISTIC

During the first quarter of 2017, the confidence of general builders as measured by the cidb SME business conditions survey barely moved to 46 index points (from 45 points previously). In all, sentiment remained pessimistic, as building activity weakened. Tendering competition intensity abated slightly, and this helped alleviate some of the pressure on profitability.

Among the different cidb grades, Grades 3 and 4 general builder confidence rebounded by 20 index points to 55. This outcome was underlined by improved building activity. Ntando Skosana, project manager of monitoring and evaluation at the cidb pointed out that, "After ending 2016 on a disappointing note, the smaller Grades 3 and 4 regained some ground this quarter. The underlying performance indicators improved immensely, especially building activity growth which is currently at a two year high." This improvement in activity supported profitability and employment within this group of contractors.

On the other hand, sentiment deteriorated for builders in Grades 5 and 6, with confidence levels dropping to below the 50-neutral mark. Building activity deteriorated for Grades 5 and 6 and Grades 7 and 8 builders, while profitability remained under pressure.

Looking at the provinces, general builder confidence in the Western Cape remained above the rest, albeit to a lesser extent. During the quarter, 64% of respondents were satisfied with prevailing business conditions. Skosana cautioned that, "Although Western Cape confidence remained relatively high; one should interpret this outcome with caution. Underlying indicators suggest that the Province fared poorly, to such an extent that they all fell into negative territory in Q1 after being mostly positive previously." Results were even more discouraging in the other provinces.

Civil contracting confidence dipped by 4 index points during the first quarter of 2017 to 37, after moving sideways for the full year

of 2016. The public sector is the largest client for civil engineering works, and civil contracting profitability came under more pressure, on the back of weaker construction activity. Tendering competition also intensified. "Civil confidence is disconcertingly low at this stage – the worst level in nearly 5 years. An overwhelmingly high majority of 63% was dissatisfied with prevailing business conditions during the quarter. What's even more concerning is the fact that the deterioration was broad-based across all grades and provinces," said Skosana.

The largest drop in confidence was registered among the smaller Grades 3 and 4 contractors to 33 points (-10 index points). For Grades 7 and 8, although confidence dropped marginally, it remained significantly low. A majority of 75% of respondents were dissatisfied with prevailing business conditions in Q1. Skosana noted that, "The picture across the grades was indeed very disappointing, with confidence falling further below the neutral 50-point mark. This is reflective of the weak fundamentals, particularly civil activity, which continued to deteriorate."

Unfortunately, the provincial landscape for civil engineering offered no consolation. The highest confidence level was registered for civil contractors in the Western Cape, where 50% of respondents remained satisfied with prevailing business conditions. At the opposite end of the spectrum, Gauteng civil confidence deteriorated to a significantly low 25 points.

Conclusion

The SME segment in both the building and civil engineering sectors remained under pressure during the first quarter of 2017. Discouragingly, this marks the seventh consecutive quarter where business confidence for both sectors is below the neutral 50-point mark. The outcome for the building sector was less severe, however there was an improvement in the performance of Grades 3 and 4 contractors. Unfortunately for civil contracting, the deterioration was broad-based.

Going forward, the outlook for both sectors remains clouded (albeit to a lesser extent for building), especially against the backdrop of weakness in the broader macro-economy. General builders expect to see some improvement in activity in the near-term, while there is very little pointing towards improvements for civil engineers. The survey also showed that 77% of respondents in the civil sector attested to insufficient demand for construction work being a hindrance to business operations. This suggests continued pressure on construction activity. ●



About the survey

The cidb SME business conditions survey is conducted quarterly among Grades 3 to 8 cidb-registered contractors (categorised into Grades 3 to 4, Grades 5 and 6 and Grades 7 and 8), both for general building and civil engineering.

The main indicator used for analysis purposes is business confidence, which indicates whether respondents find the current business conditions satisfactory. A business confidence index can vary between zero (indicating an extreme lack of confidence) and 100 (indicating extreme confidence). The 50 index point mark is interpreted as neutral.

The fieldwork for the 2017Q1 survey was conducted during the period 30 January and 7 March 2017.

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Breathing new life into Windhoek CBD

Upmarket development in Windhoek's central business district (CBD) is on the rise and has boosted the revival of this inner-city area. Plans to transform the city into a trendy leisure destination after dark have seen an increase in the numbers of cafes, festivals and night markets, to draw professionals who work within the CBD to spend more time in the city after work hours. There's also a growing trend of CBD living.

Mayor Muesee Kazapua has noted that despite numerous challenges, Windhoek has seen significant developments over the past few years, including the construction of FNB's head office and the Hilton Hotel. Addressing a business forum in September last year, he said, "These mixed developments in our central business district area are clear testimony that our business community is positively responding to the City's call to revitalise the CBD area."

Key developments in the area are the mixed-use 77 on Independence Avenue and the multimillion-dollar phased refurbishment of Gustav Voigts shopping centre.

77 on Independence, which offers a combination of retail, residential and office space, links Independence Avenue to the Old Breweries Craft Market, a precinct that already boasts some high-quality retailers, businesses and service providers, a gym and an art gallery.

The three-level Gustav Voigts complex, built in the 1970s and located beneath the four-star Avani Hotel and Casino, was the country's very first mall. It's home to established brands such as Mr Price,

Totalsports, Queenspark, Donna Claire and Pep, as well as a Checkers supermarket and local brands like Wecke & Voigts, Nakara and Safariland. Carel Fourie, CEO of Oryx Properties, the owner of the centre, says, "We've undertaken this refurbishment partly as a result of the growing demand for upscale inner-city shopping, driven by the professionals in the surrounding offices, banks and government buildings."

4th generation Voigts family member and Wecke & Voigts store manager and buyer Adriane Jandrell confirms that there's been an increase in the number of professionals frequenting the department store, which opened its doors 125 years ago and is the oldest in the country. Noting that the store's inventory caters for both tourists and locals, Jandrell says, "Because of the rich history and reputation our store holds in Windhoek, we have experienced visits from clients from around the world."

The Avani Hotel and Casino has similarly seen an increase in patrons over the last year, according to general manager Rudie Putter, who points out that the convenience of the location allows for a healthy mix of tourists, corporate and conference guests.



The hotel's all-day lunch buffet is very popular, while local artists regularly put on entertainment in the Oasis Bar. "We recently completed a revamp of the casino, and now offer a bigger and modern salon privé," Putter adds.

Ronald Uwukhaeb, marketing manager of the Hilton Windhoek, notes, "In 2011, Hilton Windhoek became Namibia's first five-star accommodation establishment, and since then Windhoek has certainly become a hub for retailers and professionals. There are many plans for the revival of the CBD which are greatly supported by locals and retailers alike." The new 180-room Hilton Garden Inn is sited next to the existing Hilton Windhoek.

"Council stands ready to avail land for developments that will make positive impacts in the livelihoods of our people, particularly in the western suburbs of the city," mayor Kazapua said. The City has also committed to upgrades to improve traffic flow and improved park maintenance. ●

Giving SA graduates international head start

The South African Council for the Architectural Profession (SACAP) has just given all those on its register, as well as all architectural students from local Architectural Learning Sites (which it validates), a head start should they wish to register to undertake architectural work in countries represented by the Canberra Accord (CA) signatories.

These countries presently include Canada, China, Korea, Mexico, USA and a further 35 countries represented by the Commonwealth Association of Architects (CAA) which sits alongside SACAP as one of the seven full signatories.

Earlier this month, SACAP became one of seven full signatories current to the CA, during the CA's 6th General Meeting in Sri Lanka. The CA facilitates the portability of educational credentials amongst participating member countries by recognizing the similarity of professional architecture degrees between accreditation agencies.

SACAP was the only applicant to achieve new full signatory status to the Accord at its recent meeting. This followed a thorough

inspection visit by a CA board to SACAP which established that SACAP's validation requirements and processes with regard to Architectural Learning Sites, as well as its organisational systems, records, information systems and registration processes meet the highest international standards.

SACAP has a long standing relationship with the CAA, whose members include those of the South African Development Community (SADC). Architectural practitioners from eastern and southern Africa registered with accrediting bodies that are governed by the CAA can therefore also still apply to SACAP for registration in South Africa. Following to the positive outcome in Sri Lanka, SACAP joined the CAA visiting validation panel at Namibia University of Science and Technology. SACAP falls under the purview of the Department of Public Works and is mandated by an Act of Parliament, The Architectural Profession Act, 2000 (Act No.44 of 2000) to, amongst other things, fulfil the function of controlling the standards of architectural education at tertiary institutions for the purposes of professional registration. It does so through visiting validation boards.

Marella O'Reilly, SACAP's Registrar/CEO explains, "Straight 'Piggybacking' of qualifications is not allowed. CA signatories

Solid financial results

Balwin, South Africa's largest homebuilder focusing on large scale sectional-title residential estates in high-growth, high-density metropolitan nodes in South Africa's major cities, recently announced solid financial results for the year ended 28 February 2017.

Balwin had 13 developments under construction during the period, and in line with its forecast, sold 2 711 apartments at an average selling price of R995 000 per unit. Revenue increased 30% to R2,7-billion and gross margin remained on target at 37% in spite of an increase in construction related costs. Profit for the period improved 18% to R661-million.

Steve Brookes, chief executive officer and founder of Balwin said: "We have delivered an excellent performance underpinned by our high quality, affordable product offering coupled with exceptional project cost management. The fact that we operate in diverse locations across high density urban nodes ensures the sustainability of our business and ability to create shareholder value."

Balwin listed on 15 October 2015 and is differentiated from other JSE listed property companies and REITs as its business strategy is underpinned by generating profits through the development and sale of large-scale residential estates.

These estates average in size between 500 and 1 000 units and offer buyers secure, affordable, high-quality and environmentally friendly one, two and three bedroom apartments ranging in size from 45 m² to 120 m².

Balwin's investment proposition is backed by a robust, proven, business model supported by urbanisation and growth of the middle class. The Company mitigates risk by matching construction to pre-sales and rolling out developments over several phases which are financed per phase.

The company's success is based on a

continuous development approach – selling 20 to 25 units per location, per month in diverse locations in order to maintain price tension in the market as well retain artisanal expertise across sites.

Balwin launched six new developments during the financial year namely; Malakite and Amsterdam in Johannesburg, Grove Lane and The Blyde in Pretoria, The Sandown in the Western Cape and The Polo Fields, Balwin's first development in Waterfall. Pre-sales at Westlake and The Sandown have been pleasing, reaching over 25 and 30 apartments per month respectively. The Polo Fields, which was launched in February 2017, achieved over 300 pre-sales and the first phase is expected to be handed over in August 2017.

A couple of developments were launched just post year end and all have experienced significant demand. The Whisken in Johannesburg North and Kikuyu, Balwin's first development in Waterfall Fields, achieved over 200 pre-sales while the first phase of The Jade in the Western Cape is largely sold out.

"We are continually seeking innovative initiatives to differentiate our product. The latest such innovation is the addition of a Crystal Lagoon to The Blyde, our first development in Riverwalk. This will be the maiden Crystal Lagoon in sub-Saharan Africa and offers buyers a one-of-a-kind lifestyle.

In line with its strategy communicated at listing, Balwin acquired a parcel of land in Ballito, Durban which earmarks its entrance into the KwaZulu-Natal housing market. The land acquired can accommodate over 2 500



Steve Brookes, chief executive officer and founder of Balwin.

apartments which will be developed over a period of eight years with development expected to be launched during the current financial year. KwaZulu-Natal is a strategic growth area for Balwin and the Company aims to acquire further land for development. Balwin has opened an office in Umhlanga in order to commence operations and has appointed Anthony Diepenbroek to manage the division.

"The acquisition of a parcel of land in Ballito, Durban marks Balwin's entrance into the KwaZulu-Natal housing market, a strategic objective identified at the time of listing.

"Our secured development pipeline has been extended to 33 786 apartments to be rolled out over approximately ten years which will sustain our future growth.

"We are mindful of the challenging economic conditions that lie ahead. Balwin's business model allows for flexibility to rapidly adapt to prevailing market conditions and reduce risk.

Leveraging what we have at hand includes varying the rate of construction according to the rate of sales to improve cash preservation and adjusting certain development phases to contain more one- and two-bedroom apartments to maintain sales and margins." ●

recognise the substantial equivalency of fellow signatories' validation systems in architectural education. For instance, architectural graduates wishing to register for accreditation in the United States of America, with its regulatory body called the National Council for Architectural Registration Boards (NCARB) will find that it automatically gives those registered with a CA signatory a substantial number equivalent credits required to pass the NCARB's Education Evaluation Services for Architects (EESA).

It is the first time that SACAP sits at an equal level with all signatories at the CA. Dr Yashaen Luckan, President of SACAP, explains, "We're proud that Council's committed efforts to promote high quality professional qualifications criteria and national syllabi, based on international standards, have been recognised. It follows our achievement last year of entering a Memorandum of Understanding with the Architects' Council of Europe." ●



LEFT: SACAP President, Dr Yashaen Luckan, and the Registrar/CEO of SACAP, Marella O'Reilly.



Global construction COSTS RISE

New York, San Francisco, Zurich, Hong Kong and London top the league table of the most expensive places to build, according to results from the annual research conducted by professional services company Turner & Townsend. Johannesburg is ranked fourth among the top five forecasted construction cost increases.

► In their *International Construction Market Survey 2017*, a data-led study of construction costs in 43 global markets, it is reported that half of the world's construction markets are suffering from skills shortages. Labour costs in leading markets have hit new highs, with construction workers in New York and Zurich paid nearly USD100 per hour.

According to the report, global construction costs are set to rise by 3,5 per cent in 2017, reflecting steady economic growth and increasing skills shortages in over half of the world's markets.

In the light of rising costs and a growing skills crisis, the *International Construction Market Survey 2017 (ICMS)* calls for increased investment in innovative technologies, new construction methods and better use of data to boost productivity in the sector.

The report analyses input costs – such as labour and materials – and charts the average construction cost per square metre for commercial and residential projects in 43 markets around the world. To identify the most expensive places to build, the average build cost in USD of six different types of construction was assessed: apartment high rise, office block prestige, large warehouse distribution centre, general hospital, primary and secondary school, and shopping centre including mall.

New York has overtaken Zurich as the most expensive city in which to build, with an average cost of USD3 807 per m² followed by San Francisco (USD3 549 per m²) and Zurich (USD3 528 per m²), then Hong Kong (USD3 487,82) and London (USD 213,99).

London, which ranked third in 2016's report, has fallen to fifth place behind Hong Kong, despite costs in the city soaring by 5 per cent over the last year. The fall in ranking reflects the depreciation of the UK pound against the US dollar since the UK referendum on European Union membership in June 2016.

About the International Construction Market Survey

Compiling data from Turner & Townsend teams in 43 global markets, the ICMS gives an in-depth snapshot of construction costs – and what's driving them – around the world.

It measures average input costs and calculates the average cost per m² of building a range of construction projects, including high-rise apartments, city centre offices, hospitals, schools, warehouses and shopping malls.

All local construction costs have been converted into US dollars to allow accurate cost comparisons to be made between construction markets in widely diverse economies. The report also uses the Purchasing Power Parity methodology to determine the relative value of different currencies, and location factor approach, which takes into account factors such as labour productivity, market heat and tender margins.

Fifty-eight per cent of cities assessed by the study are identified as 'warm, hot or overheating' – where the market is characterised by a high number of projects and intense competition for physical resources and labour that drives up prices.

The number of cities considered to be hot in 2017 has almost doubled since last year and includes New York, Dublin, London, San Francisco, Tokyo, Amsterdam and Dar es Salaam. Seattle and Bogota are identified by Turner & Townsend to be overheating markets with costs in these cities expected to rise by 5 and 4.4 per cent respectively.

The major exceptions to escalating costs are the commodity-reliant markets of Singapore, Muscat, Kuala Lumpur and Santiago, where the development market has cooled in light of falling global prices for raw materials.

Developing countries

Among developing economies construction costs increased by an average of 5 percent over 2016, with cost inflation in Istanbul and Buenos Aires reaching 12 percent and 27 percent respectively.

Brazil, Russia and South Africa are towards the top of the list as a result of their relatively high rates of inflation of around 5-6 percent, which leads to pressure to increase wages and higher costs of materials and plant equipment.

African costs set to rise

Here in South Africa, Johannesburg is ranked fourth among the top five forecasted construction cost increases by market, following behind Buenos Aires, Istanbul and Dublin. In Johannesburg, building costs per square metre average at USD848,3.

In the report, against a global average of 3,7 percent, cost inflation in Johannesburg was 3,7 percent, Dar es Salaam in Tanzania 5 percent, Kampala in Uganda 4 percent, Kigali in Rwanda and Nairobi in Kenya 1 percent. Construction cost inflation for Johannesburg in 2017 is forecast at 7,5 percent, while Nairobi is reported to be the cheapest city surveyed in which to build.

Skills shortages continue to prevail across the world with over half (24) of the 43 markets analysed reporting labour shortages compared to 20 markets in 2016.

Extreme variations in the cost of labour between regions and skill levels are also prevalent with construction workers in Zurich and New York edging closer to USD100 per hour.

By comparison, workers in Africa and India typically receive hourly wages of USD1-3.

Comments Steve McGuckin, global managing director – real estate, Turner & Townsend: "This year's survey indicates a slowly warming global construction industry suffering from increasing labour shortages in an improving global economy.

"As more markets report skills shortages than ever before in the history of this study, it is clear that construction is not doing nearly enough to tackle this issue, which is contributing to higher costs. Accordingly, there is an urgent need for contractors and clients in many markets to boost productivity – embracing innovative technologies and new methods of construction, and using data analytics and better programme management to unlock efficiencies." ◉

Developer's SOLID RESULTS

Acscion Limited, a specialist commercial, retail and residential property developer and owner, recently announced a solid set of results for the 12 months ended 28 February 2017.

The Company, which is differentiated from traditional Real Estate Investment Trusts (REITs) focusses on delivering superior net asset value (NAV) growth mainly by enhancing existing properties and completing value accretive developments. For the financial year under review, Acscion achieved net asset value (NAV) growth excluding deferred tax, of 19% on the prior year period, representing R16,20 per share.

Kiriakos Anastasiadis, Acscion's chief executive officer commented: "We are pleased to have delivered such an excellent set of results. Rental escalations, new leases concluded, focused cost control and the addition of two new developments to our developed investment portfolio bolstered our performance.

"This demonstrates our in-house ability to develop and manage our assets to deliver superior value for shareholders."

Acscion, one of few development plays in the sector listed on the JSE in December 2014. The eight predominantly retail properties that were developed in-house and from which the Group derives income were valued at R5,1-billion at period end, an increase of 26,6% year-on-year. The portfolio's weighted average lease expiry by gross lettable area (GLA) was 3,58 years and vacancies (including some strategic vacancies) totalled 5,43% for the period.

Revenue rose 16% to R524,8 million while operating expenses were well contained at R205-million (2016: R211-million) despite the addition of two new malls to the portfolio. The installation and commissioning of solar panels at Mall@Reds and Mall@Carnival during the period contributed significantly to a decrease in electricity costs. Profit ended the year up 42,6% at R812,3-million and headline earnings per share was 47 cents for the reporting period (2016: 45,90 cents).

The Company remained largely ungeared, with a loan-to-value ratio of 4,92% (2016:4,13%). In line with the Company's growth in developments, finance costs increased from R18,5-million to R23-million.

This increase was mainly due to the completion and opening of the two new retail developments, the cost of the two solar plants installed and commissioned during the year, as well as the continued

development of Acscionpolis and Mall@55.

"Although Acscion's policy has been to not declare dividends, the Board has proposed a dividend of 12,5 cents per share. This decision was made considering the Company's strong financial position with gearing of just 4,92% and access to a secured R1-billion facility to fund developments," remarked Pieter Scholtz, Acscion's chief financial officer.

During the period, Acscion completed two additional retail developments namely, Mall@Moutsiya and Mall@Mfula. Mall@Mfula which consists of a 18 700 m² shopping centre with a 70% national tenancy opened at the end of November 2016. It provides a complete formal retail offering in Piet Retief, Mpumalanga. Mall@Moutsiya, which opened in August 2016 is a 14 500 m² development. A petrol station of a further 1 300 m² will be built later this year.

Construction of Acscionpolis, Acscion's flagship twenty story mixed use development in Benmore, Sandton progressed according to plan and is set for completion in early 2019. At period end, five parking levels had been completed and the development now exceeds ground level.

The development of phase 1 of Mall@55, a 15 000 m² convenience shopping centre in Monavoni, Gauteng, progressed well during the period with the opening planned for the last quarter of this year. The exceptional location on the intersection of the N14 highway with the R55 provincial route perfectly positions the development for a value/convenience/lifestyle centre which is underrepresented in the catchment area.

In line with its proven track record of township mall development and management, Acscion is extending Mall@Lebo by some 5 000 m² on the back of strong tenant demand. The Group is in the process of finalising certain applications whilst the leasing of the proposed extension is finalised.



Acscion's flagship super regional mall, Mall@Carnival will also undergo a 5 000 m² extension during the current financial year.

Other pipeline development opportunities have been identified. The most recent opportunity is Metropolis Mall@Larnaka, Acscion's first international retail development for which a leasehold over land in Larnaka, Cyprus has been signed. The lease is a 33 year lease with two options to renew of 33 years each. Acscion intends to develop a 40 000 m² retail centre however a number of approvals are required before construction can commence.

The Company trusts that all approvals will have been obtained by the end of 2017. "We are excited about this development which promises to yield returns that at the very least meet our investment criteria," added Anastasiadis.

"Looking forward, we will continue to focus on effectively managing our investment portfolio while completing our secured developments including value accretive projects in our existing portfolio.

"Acscion's development expertise and 'value-engineering' approach makes it possible to achieve above average NAV growth and we are confident that this can be achieved despite the challenging economic and operating environment," concluded Anastasiadis. ●

Nigeria's steady ECONOMIC RECOVERY signals opportunity

While Nigeria's economic downturn created adverse conditions for international companies operating in the country, leading construction and property solutions company, Profica, adopted an astute approach to doing business that enabled them to weather the storm. Now the company is well-situated to take advantage of Nigeria's anticipated economic recovery.

Profica committed to Nigeria five years ago, and has since had a dedicated team on the ground in the country, offering project management, tenant coordination, development management and construction management services.

Prior to setting up shop in Nigeria, Profica had successfully managed projects in Rwanda, Angola, South Africa and the United Kingdom. Chris Titmas, Profica's managing director for West Africa, says of the decision to establish a presence in Nigeria: "We recognised exciting opportunities in the country, but were also well aware of the unique challenges. Many South African companies had already attempted to make their mark here, and failed. We took a long-term view of operations and were committed to investing extensive time and effort to support this view."

Profica's country manager in Nigeria, Malcolm Matanda, speculates that failure to successfully enter Nigeria's market could be arguably due to a dismissive, 'saviour' mentality that premises the importance of advanced economy experience over local knowledge and practice. He says, "At Profica, we knew that in order to succeed we would have to demonstrate cultural

sensitivity, and the most effective way of getting this right would be to develop a truly Nigerian business comprised of local teams that understood the environment."

Offices were set up in Lagos and followed up shortly with the deployment of a team on the ground in Port Harcourt and Abuja. The result has been a Nigerian operation that has quickly grown to become a respected industry leader. And due to a strategy that included building a customer base comprised of both local and international investment, Profica Nigeria was able to weather the economic downturn and the subsequent exit of international investment that the country experienced two years ago.

Currently, a slow recovery of Nigeria's economy is anticipated to a large extent due to oil production and the gradual availability of Forex. Profica Nigeria is already taking advantage of this. Following completion of two highly anticipated shopping complexes towards the end of 2016, this year has kicked off with activity on key projects that includes work on a 7-floor healthcare facility and a 15-storey office development which has just broken ground. Profica Nigeria has also recently been appointed by First Development Investment Company to project manage a mixed-use development in Ilubirin on Lagos Island. The Ilubirin development is part of a major drive, initiated by Lagos State Government, to develop the area into a prime residential, leisure, recreation, and tourism destination. This current activity clearly signals a new wave of opportunity in Nigeria.

In addition, Profica Nigeria is looking at further diversification that includes road infrastructure projects, industrial and logistics plants, and the healthcare sector – where Profica has tried and tested global expertise. Matanda concludes, "For Profica it is important that our work has residual impact, and that what we do is able to contribute to Nigeria's economic recovery, one project at a time." ●



Profica's country manager in Nigeria, Malcolm Matanda.

A welcome for premium car manufacturer

Attacq welcomes BMW Group South Africa to Waterfall, where a new Regional Distribution Facility (RDC) will be developed by Attacq for the luxury German vehicle maker in Waterfall Distribution Campus.

Waterfall is a mixed-use development situated along the N1 between Pretoria and Midrand with diverse tenant and business opportunities to facilitate 1 300 000 m² of commercial, retail and light industrial use. Sound urbanism principals as well as environmental sustainability is a priority in the planning and implementation of this integrated lifestyle city.

Construction on the 32 000 m² BMW Group South Africa RDC facility will start in March 2017. Distribution from the purpose-built facility is expected to start by mid-2018, for an initial 10-year lease period.

The location of the RDC 7 km from the BMW Group South Africa headquarters in Midrand, provides a strategic advantage in servicing the region – within a 5 km radius from the main regional arterial routes (the N1, M1 and N3 highways) and 32 km from OR Tambo International Airport.

"Attacq is delighted to welcome a leading international brand like BMW Group to Waterfall," says Attacq chief executive officer Morné Wilken.

"Improved warehousing and distribution is a key success factor, as we keep upping our game in customer service delivery," comments Tim Abbott, CEO BMW Group South Africa and Sub-Saharan Africa. "Space limitations restricts the expansion of the warehouse in our current location in Midrand. By moving the warehouse to a larger site, we also free up space on our campus to create state-of-the-art power hub," he adds.

"Waterfall is Gauteng's new lifestyle city, offering world-class business and accessible distribution facilities. Waterfall is one of South Africa's largest mixed use developments, which is attracting top international companies such as BMW Group," explains Pete Mackenzie, head of development at Attacq. ●



ABOVE: *Thusanane Construction Suppliers supplied EPS polystyrene and polyethylene joint formers to the Time Square project in Menlyn.*

Towards repeat business

Construction World spoke to Thusanane Construction Suppliers about its operations and the products that it supplies to major developers.

When was Thusanane Construction Suppliers established?

Thusanane Construction Suppliers was registered on 27 May 2011, yet only started operating on 1 August 2011.

Who are the main role players?

The founding member of Thusanane is Lukia Svoronos.

How big is the company?

The company is a small entity with the emphasis on empowering women in the industry to become role models for other young women wanting to get into construction.

What is your BBBEE status?

Thusanane is a Level 4 company as we are an EME.

What is the company's core business?

It supplies expansion joint formers, polystyrene sealer strips and insulation to the construction industries. We also provide other consumables as required by our customers.

What is the company's unique selling point?

Thusanane values customers and is customer centric with the customers' success at heart. Our professional and personal

approach with our customers affords us their repeat business as we value their confidence in our products and services which we provide without exception.

Who are your major clients?

WBHO/Group Five/Steffanutti Stocks/Mota-Engil/MT Developments/Barrow Construction are just a few of our clients and our focus is to grow this list to incorporate the developing construction companies which are being groomed within the BBBEE sphere.

What are some of the projects that you have recently worked on?

Projects include: Standard Bank Rosebank, Discovery building in Sandton, Time Square in Menlyn, Pretoria, Fourways Mall, Oxglen Office Park and Eastgate Shopping Centre.

What did you supply for these projects?

Expansion joint formers and EPS Polystyrene, the alternative to softboard sealerstrip.

Do you offer 'green products'?

We offer green product which is manufactured to the EPSASA specification and is locally manufactured and proudly South African.

What products did you supply for the Times Square Casino project?

EPS polystyrene and polyethylene joint formers. The project is currently in progress. ●

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SUSTAINABLE CONSTRUCTION

for the world's largest concentrated solar plant

Stage one of the three-phase construction project of the Noor solar complex was set in motion in February 2016. Innovative solutions based on the BASF Construction Chemicals division's global knowledge and experience are used in the construction of the concentrated solar power system – a more complicated process to install than the widely used photovoltaic panels.

Several BASF products were used in the construction of this project such as concrete admixtures, grout, mortars, sealants, and joint water-resistant sealants.

"We are proud that we are able to contribute our innovative solutions and know-how to help our customers master the challenges of this complex construction project," says Andres Monroy, managing director, BASF Northwest Africa.

Better structural stability

The requirements for the construction of the world's largest solar plant were varied and very specific. The material had to conform to construction specifications and provide high early strength development. It was also necessary to take into consideration the desert area where the complex is being built, namely sand, clay, and high temperatures.



Additionally, and taking safety into consideration, it was necessary to comply with strict criteria in terms of final strength and durability of the concrete in its hardened state. "These challenges can be mastered extremely effectively using the broad product portfolio and flexible solutions of Master Builders Solutions designed by BASF's Construction Chemicals division, products that have proven to be beneficial for complex projects all over the world," affirms Christophe Xavier Chucho, director of BASF Construction Chemicals Morocco.

With solutions tailored to the requirements of the Noor project, the BASF Construction Chemicals division proposed high performance concrete products as well as grouting. BASF MasterGlenium® Sky 671 superplasticiser provides a new generation of concrete with extended

workability at high temperatures and ensures high strength and stability of the mirrors' structure. Due to the product's good stability and resistance to exterior conditions and reaction to sand, it maintains the high mechanical performance of the concentrated solar power system.

BASF MasterFlow® 765 grout solutions protect the base of the solar panel from vibration and

any harsh conditions, providing ultra-high strength, fatigue-resistant cement, making solar energy projects more cost effective during installation, and more durable and secure over the entire lifetime of the solar complex.

In co-operation with BASF, special tests were performed resulting in the selection of the most

effective type of concrete and grout as well as the suitable application method for the products used in the construction of the solar complex. "For most of the big projects, customers benefit from the broad experience and connectedness of our experts in Africa and Europe, and they receive a comprehensive package of services and advice. This simplifies the construction process and ensures timely completion even of time-critical projects," says Adil El Maaiche, BASF's admixture systems manager in Morocco.

BASF offers unique solutions for the construction of the largest concentrated solar complex in the world in the Moroccan desert and proactively participates in producing enough energy to power over one million homes by 2018 whilst at the same time lowering carbon emissions. By the end of its construction the complex will cover an area of about 30 km² and produce energy of roughly 500 Megawatt.

Construction Chemicals division

BASF's Construction Chemicals division offers advanced chemical solutions under the global umbrella brand Master Builders Solutions for the construction, maintenance, repair and renovation of structures. The brand is built on more than 100 years of experience in the construction industry. Our comprehensive portfolio encompasses concrete admixtures, cement additives, chemical solutions for underground construction, waterproofing systems, sealants, concrete repair & protection systems, performance grouts, performance flooring systems, tile-fixing systems, expansion joints & control systems and wood protection solutions.

The Construction Chemicals division's approximately 6 000 employees form a global community of building experts. To solve our customers' specific construction challenges from conception through to completion of a project, we draw on our specialist know-how, regional expertise and the experience gained in countless constructions projects worldwide.

We leverage global BASF technologies and our in-depth knowledge of local building needs to develop innovations that help make our customers more successful and drive sustainable construction. The division operates production sites and sales offices in more than 60 countries and achieved sales of about €2,3-billion in 2016. ●





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FRANKI'S INNOVATIVE SOLUTIONS

help to bridge KZN community

The tiny town known as Tugela Ferry (named after the ferry that used to connect the two halves of the town) in the local Municipality of Msinga, part of the Umzinyathi District Municipality in central KwaZulu-Natal is part of one of South Africa's most impoverished areas.

People struggle to make a living in Tugela Ferry and the harsh conditions were, for many years, exacerbated by the town being split by the Tugela River and connected only by an inadequate single-lane bridge, the Tugela Ferry Bridge, which has significantly slowed the local economy by hampering vehicular movement and has been a threat to the lives of the multitude of pedestrians that have had to share the bridge with cars, tractors, bakkies, trucks and more.

Franki's geotechnical solution

The KZN Department of Transport therefore embarked on a project to widen the bridge to two lanes by constructing a new,

reinforced concrete bridge adjacent to the existing steel structure. "This was a good solution," says Paul Pearce Franki Africa KZN branch manager, "as it meant that use of the existing bridge has not been interrupted during construction."

Pearce says that the Tugela Ferry area has historically been a political hot-spot and, as a result, the award of the main contract was a lengthy process which involved extensive consultation with all the relevant local parties on their involvement in the project. Ultimately, in June 2016, Franki was appointed specialist subcontractor for the piling works for the new bridge.

"The prolonged award of the contract

and subsequent further consultation after our appointment, crucially meant that the works started towards the beginning of the wet season rather than, as had been expected, at the beginning of the dry season," Pearce says.

This turned out to be one of the central challenges of the project. "The timing of the commencement of the works has caused major access problems for main contractor, Group Five, which has had to contend with the mighty Tugela River regularly flooding the access causeway during the wet season – even during the current 'drought' in South Africa," says Pearce. "The access causeway has been washed away several times with equipment having to be moved off position each time in anticipation. Fortunately, there have been no injuries and no major equipment has been lost because of these precautionary measures."

Franki's scope of work includes the installation of 48 no. 1 100 mm diameter permanently cased oscillator piles. The bridge deck is approximately 165 m long and piles are required to support both the north and south abutment and all 5 no. intermediate piers with 6 no. piles per pier raked at 1 in 6 and 6 no. vertical and 3 no. raked piles per abutment.

The geotechnical data available indicated typical river bed conditions with gravels, sands and boulders up to 1,5 m in diameter in layers above soft to medium rock overlying hard to very hard rock. Fractures in the rock resulted in the tender design requiring 1,4 m rock sockets and dowelling into the rock below every pile.

"Historically, river bridge piles requiring sockets are slow to construct using driven or screwed-in casings and 'smash and grab' techniques to form piles and sockets in rock. The slow pace not only increases costs but also increases the risks associated with working in a river. We therefore opted for oscillating casings down to rock level and then using a cluster drill – a multi-headed percussion hammer – for the rock drilling. This solution has reduced construction time by over 50%," Pearce says.

He adds that the increased performance of the cluster drill has enabled Franki to use a longer socket length in lieu of the dowels, saving further time and cost.

Both the oscillator and cluster drill are mounted on Franki's Bauer BG28 piling rig, which has an operating weight of about



Installation of raked pile temporary casing through gravel, sand and boulder layers.



Pier 2 piles trimmed in preparation for pile cap construction.

Franki Africa is part of the Keller group, the largest independent geotechnical contractor in the world.

90 tons and is ideally suited for the Tugela Ferry piling solution.

“We owe a lot to the BG28 which has enabled Franki to implement many cost-efficient solutions to a wide range of clients since it first arrived in this country from Germany in 2012,” Pearce says.

Another time-saving solution used by Franki was the construction of a movable ramp to create the required 1 in 6 rake, meaning that it is not necessary to modify the platform earthworks for each pile. “With all six pier piles raking in different directions this represents a major cost and time saving solution,” Pearce says.

Dealing with the unexpected

The necessary raised platform and variable rock levels, resulted in suitable founding rock only being encountered at depths of over 25 m for some piles – 10 m deeper than the average expected – but piling production has still met expectations. “The BG28 has comfortably dealt with deep boulder layers and, as expected, the cluster drill has formed sockets in vastly reduced time,” Pearce says.

It was not all plain sailing, however, and one operational disadvantage has been that the hard boulders and rock have caused extreme wear on cutting teeth and bits, which have required regular maintenance and replacement.

Another disadvantage has been that when forming the socket with the cluster drill, the rock in which the socket is created is reduced to small chips and dust. This means that the rock quality is more difficult to assess post-drilling and a thorough geotechnical investigation is essential prior to construction. “As with most geotechnical works, the cost of a thorough geotechnical investigation is easily recovered during construction through design and construction cost savings, for the ultimate client,” Pearce says.

Conclusion

With several lengthy work stoppages due to flooding of the access causeway, the piling is expected to be completed in mid-July 2017.

Following on, the main contractor will complete the abutments and bridge piers and place the precast beams supporting the new deck providing a safe, dual lane link between the north and south banks of the Tugela River and helping to uplift Tugela Ferry and the entire surrounding area. ●



Piling for the bridge piers on the new Tugela Ferry River Bridge.

NAME CHANGE, BUT SOLID FOUNDATION at SA's construction icon

There is a 'new' name on South Africa's construction landscape, as Concor Infrastructure raises its flag over the edifice of Murray & Roberts Infrastructure, following the recent acquisition of the Murray & Roberts Infrastructure and Building Platform by a consortium led by the Southern Palace Group.

▶ The name, of course, is not new at all, with the history of the Concor business dating back nearly 70 years to its establishment in 1948. The remarkable success of Concor – initially specialising in concrete construction and expanding into civil construction and building – was clearly evident from its growth; in its last year as a listed entity on the JSE over 10 years ago, its turnover was R1,6-billion. In 2006, Concor was acquired by Murray & Roberts, whose own heritage in the construction sector goes back 115 years.

Now, the name Concor lives once more as a construction brand, and as the proud mantle for the heritage, skills and

Construction on the Mlalazi River bridge on Concor Infrastructure's contract on the N2 highway in KwaZulu-Natal.



experience that have continued to grow in the nurturing environment of Murray & Roberts Infrastructure over the past decade.

Much to look forward to

Concor Infrastructure managing director, Eric Wisse says there is much to look forward to as this new chapter opens for the business and its committed staff.

"Our new ownership will give yet another boost to our past efforts in developing a strong and transformed business to serve South Africa and markets beyond our borders," says Wisse. "We have a proven management team and a depth of skills and experience in our ranks that positions us well for growth."

Equity

Already operating on a strong Level 2 BBBEE basis before the acquisition by Southern Palace, Concor Infrastructure has a solid scorecard position reflecting its historical commitment to employment equity and skills development as well as supplier and enterprise development. He says the involvement of the new shareholders is certainly going to create valuable leverage for the business to apply its expertise in ever-widening markets.

Wisse says the company aims to confirm its position as the leading black owned Tier 1 infrastructure player in South Africa and sub-Saharan Africa; it is already active in all nine provinces locally, and regularly performs contracts in Southern African Development Community (SADC) countries.

"One highly successful aspect of our operating model is to follow our established customers wherever they have work," he says. "This approach means that we have been engaged in projects all over Africa; we still have registered companies in many African countries, and are ready to open more in any countries where we find work."

Concor Infrastructure is confident that it will play a growing role in infrastructure development throughout Africa, especially where South Africa-based development



Eric Wisse, managing director of Concor Infrastructure.

finance institutions like the Development Bank of Southern Africa (DBSA) are involved in the funding.

"The need for and potential impact of new infrastructure in Africa is enormous," says Wisse, "and we stand ready to commit our considerable resources and expertise to ensuring world class facilities anywhere in Africa where we have the opportunity."

Public infrastructure

He says that Concor Infrastructure has been an active participant in the arena of public infrastructure, with its 'base-load' work in the transport sector – mainly focused on national and provincial road projects. Current projects underway include contracts from the South African National Roads Agency SOC Limited (SANRAL) and provincial public works departments in the North West and Eastern Cape provinces as well as the toll road concession companies.

"Our flagship road project currently is on the N2 highway between Mtunzini and Empangeni in KwaZulu-Natal, where we are building a new carriageway involving extensive road works and bridges," says Wisse. "In the Eastern Cape, we are busy with a contract to widen and improve a section of the R72 between East London

"We have continued to build our experience in this field, and today stand as the preferred civil contractor on a number of wind projects that form part of bid window 4 of the REIPP programme led by the Department of Energy."



Concor Infrastructure was involved in a number of wind farms including Loeriesfontein and Khobab in the Northern Cape where 122 wind turbine generator foundations were constructed.

and Port Alfred. We are also upgrading the R61 route between Bizana and Magusheni in that province.”

In the North West, Concor Infrastructure is constructing what was previously a gravel road between the small towns of Ganyesa and Vragas, while on another SANRAL project work is underway upgrading the R67 Queenstown-Whittlesea road.

Energy

The company has played an important role over the years in the energy sector, and continues to be involved in power station construction. An exciting and more recent segment opening up for opportunity has been renewable energy, in particular the growth of wind-generated power.

“We were involved in South Africa’s first large wind farm, between Jeffreys Bay and Humansdorp in the Eastern Cape, as early as 2012, where we provided site access roads as well as foundations and hard stands for 60 turbines,” Wisse says.

“We have continued to build our experience in this field, and today stand as the preferred civil contractor on a number of wind projects that form part of bid window 4 of the REIPP programme led by the Department of Energy.”

Past projects in this sector include the 35 turbine wind farm near Noupoort in the Northern Cape, completed in March 2016, and a wind farm near De Aar comprising 67 turbines where Concor Infrastructure finished its work early this year.

Most recently, Concor Infrastructure was responsible for the substantial

completion of the Loeriesfontein and Khobab Wind Farm. This contract comprises the construction of all 122 wind turbine generator foundations as well as the adjoining hard stands and all internal roads.

Water

The water sector – mainly bulk supply and large dams – is another important area of expertise built up over decades in the business.

The company was a vital partner in the recently completed Ingula pumped storage scheme in KwaZulu-Natal, building both the upper and lower dams. More recent work includes the completion of a large reservoir at Orange Farm south of Johannesburg, and a water tower and reservoir in the Lanseria area of Gauteng.

Mining

A fourth significant sector of Concor Infrastructure’s involvement has been mining. Despite the downturn in the fortunes of this sector in recent years, the company is currently busy with civil works to expand the important Grootegeluk coal mine for Exxaro and expects the mining market to recover soon.

The traditional focus in this segment includes all civil mining infrastructure including haul roads, platform and foundations for process plants, rail load-out sidings, box-cuts for incline shafts and other related surface infrastructure.

With its new ownership credentials, Concor Infrastructure is poised for an exciting expansion phase, says Wisse. ●

Namibia’s Diaz Wind Farm

WSP Africa – one of the largest multi-disciplinary engineering consultancies on the continent – has played a pivotal role in bringing about the development of the Diaz Wind Farm in Namibia. The wind farm aims to bring an additional 44 MW to Namibia’s national grid, which will also alleviate some of the pressure on the Southern African grid.

Developed by Diaz Wind Power, and a joint venture between the United Africa Group and Quantum Power, the wind farm will be located in Lüderitz, a harbour town in southwest Namibia that lies on what is known as one of the least hospitable coasts in Africa. The Diaz Wind Farm will also be the country’s first clean energy project and a major step to harness the full potential of wind resources for the country.

WSP served as the technical advisory to Diaz Wind Power for the development of the wind farm, where the consulting company’s power team of experts were involved in preparing the minimum functional specifications and tender documents for the Engineering, Procurement, and Construction (EPC) contractor, as well as the Operations and Maintenance (O&M) agreement at the start of the project. Thereafter, the team was responsible for reviewing and evaluating the EPC contract and O&M agreement proposals, to optimise on and finalise them with the nominated contractors for this project.

The company’s experts compiled the due diligence review report, supported the review and development of the project agreement’s technical aspects and undertook a thorough review of the environmental impact assessment – where their transmission line and substation specifications review services played a vital role in ensuring the project achieved its goals. Further to this, the company’s experts negotiated the power-purchase agreement (PPA) and general services agreement documentation, while providing stability studies and services to financial close on the project.

WSP has since also performed a detailed grid study, which determined that the capacity on the connecting grid infrastructure is up to 90 MW – this means the wind resource is so good in the location that there is excess capacity to upsize and increase the project capacity at the earliest opportunity. →

HOLISTIC WASTE MANAGEMENT SOLU

All types of waste material could provide a business opportunity, but success is dependent upon sound planning and the correct approach, as all waste management projects are unique.

► The growing move in South Africa towards the beneficial use of solid waste, as a means of diverting waste from landfills, relies extensively upon specialist companies that have the skills and capabilities to provide an integrated solution.

Project developers are looking for a single supplier of a multitude of engineering skills. These are supported by experienced and knowledgeable in-house environmental scientists who work within the framework of onerous environmental legal requirements, to ensure the smooth implementation of projects.

Complex waste management

Richard Emery, an executive associate and specialist in integrated waste management at JG Afrika, says the company's involvement in a host of complex integrated waste management projects has established it as a leader in this field in South Africa and neighbouring countries.

This includes in Namibia where JG Afrika is providing expertise to help develop a large biomass waste-to-power project, following its participation in the largest such initiative in Africa that started operating in Athlone, Western Cape, earlier this year.

In addition, Emery and his team are working closely with Zimbabwean municipalities to develop a bespoke landfill diversion strategy for the country that takes into consideration existing limitations that inhibit the successful implementation of important projects.

"We have developed extensive capabilities over the years that have become extremely sought-after as projects continue to evolve to the point where even traditional landfill engineering skills now also need to be complemented by an integrated engineering unit," he says.

This acknowledged expert and his team also worked alongside RWA, a UK-based specialist waste consultancy, to complete a pilot project that will help six selected South African municipalities adopt strategies geared at diverting organic waste from their landfill sites and make a noticeable impact on emission reduction.

JG Afrika and RWA were acting on behalf of the South African National Department of Environmental Affairs (DEA), the coordinating body implementing the programme at a national level, and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

Capability and depth

Not only does it serve as a sound example of the extent of the capability and depth of understanding the firm brings to project developers and the professional teams working on related projects, but also its approach that starts at the waste source.

As Emery points out, "projects are best developed when they are based on a thorough understanding of the characteristics and consistencies of the waste streams involved, before moving on to "best-fit" solutions. This, alone, highlights the need for expert opinion and solutions from an objective engineering and environmental consultancy," he says.

It was only once JG Afrika and RWA had a thorough understanding of the characteristics of the various waste streams and their consistencies could they then commence with the second phase of the DEA project. This involved the selection of the best suited scenarios and the drafting of practical and feasible business and implementation plans for the various municipalities.

During the actual implementation cycles, JG Afrika's extensive engineering and design capabilities meet the onerous requirements of the developers and teams involved in these modern projects.

In South Africa, most of these projects are being undertaken by the private sector under public-private partnerships, such as the build, own, operate and transfer (Boot) model.

Alternatively, turnkey varieties, including engineer, procure, construct and manage (EPCM), or engineer, procure and construct (EPC) have been adopted due to the intricacies of the projects.

JG Afrika's offering to these professional teams span civil and

→ Added to this, the tariff Diaz will be charging will deliver energy at lower rates than any of the existing generation plants in the country – aside from Ruacana – or power imports; which in turn will deliver excellent value for money for Namibian consumers.

Although there has been a marked increase in interest in wind generation across Africa, in truth, Africa hosts a few areas that lend themselves to this form of power generation.

Dinesh Buldoo, director, transmission and distribution, WSP, Africa, says: "NamPower, the national power utility company in Namibia, started exploring wind power capability in 1998. At the time the Ministry of Mines and Energy installed wind measurements stationed at Walvis Bay and Lüderitz – and in the same year, a feasibility study was launched to assess the viability of developing wind farms in these towns. While the Diaz Wind Farm will be the first in the country, Namibia offers some of the highest

wind potential in Africa, considering it is located in the more extreme latitudes away from the negative impacts of atmospheric heating and the earth's rotation."

Both Lüderitz and Walvis Bay, an important deep water harbour town north of Lüderitz, experience wind speeds of about 7 m/s. Measurements at 85,7 m high, undertaken in Lüderitz, have predicted a yearly wind speed average reaching 10 m/s, with a stable wind direction. Other areas around Namibia's coastline that also offer good wind potential include, Henties Bay, Terrace Bay and Mowe Bay.

"Namibia intends on growing this form of renewable energy generation capacity within the country. It is estimated that the country's potential is 27 201 MW and 36TW/h a year with a relative land use of 824 268 km². Diaz Wind Farm is certainly a bold step towards embracing wind generation technology.

And, while the Namibia's renewable energy policy is in its final stages, we

expect to see a growing number of wind farm projects increasing in size at a utility level coming to ground – especially as the country pursues its ambitions of a 70% renewable energy scenario by 2030," concludes Buldoo. ◀



Dinesh Buldoo, director, transmission and distribution, WSP, Africa.



The JG Afrika team undertake waste characterisation and opportunity assessments at the City of Mbombela. Richard Emery is second from the left.

structural engineering and design through to the important transport and traffic expertise that is essential to ensuring cost-effective, optimal and safe transport of waste streams to where they will be benefited.

In-house experienced geotechnical engineers, geohydrologists and wastewater-treatment engineers provide essential services required to also help develop these projects, especially those based upon the increasingly popular anaerobic digester technology that produces a biogas for the generation of electricity.

These skills are essential in water-stressed regions of the country, such as the Western Cape, Limpopo and Mpumalanga. This is considering that projects have to be planned close to a consistent supply of water that is used to generate electricity.

Emery says that, in some instances, projects will even require their own wastewater treatment facilities that allow water to be reused by the facility.

These large biomass projects are also taking longer to implement in most cases. This is considering the complexities surrounding power-purchase agreements in the country and slower roll-out of the next round of projects under the Renewable Energy Independent Power Producer Procurement (REIPPP) programme.

Off the grid

However, Emery notes that there is a growing interest in smaller related initiatives by property developers as it allows them to reduce their own draw on energy from the national grid, while 'greening' their assets in line with the 'green' building movement.

JG Afrika was involved in such a project at the Bayside Mall in Cape Town, Western Cape, where, together with a rooftop solar project and waste generated from the facility it is used for digestion-to-electricity. The project has helped the owner reduce reliance on conventional grid electricity and lower its overall carbon footprint and operating costs.

He says these smaller biomass projects are easier to implement as they are not always exposed to the same political challenges as their utility-scale counterparts.

"In such projects, electricity generated by the facility is for its own use and not evacuated into the national grid. We do foresee more of these projects from property developers and owners, considering the increasing emphasis on sustainability," says Emery.

"However, the planning and skilled opportunity assessment needs to be done. This can be reasonably quick to ensure return on investment; that is where JG Afrika can step in."

Other technologies that are also growing in prominence include composting – both open windrow and in-vessel varieties – as well as the recycling of white paper, metals, including aluminium, and glass.

Set to complement the company's impressive portfolio of waste management initiatives is its imminent involvement in two biomass projects under the REIPPP programme that involve woody residues generated from the forestry and sawmilling industries.

Emery concludes that these bode well for the future of biomass projects and integrated waste management strategies in the country, and notes that JG Afrika has proved that there is a ready source of technical capability on hand to facilitate their implementation. ●

SENSITIVE BUILT ENVIRONMENT

A trend of merging developments with ecologically sensitive building best practice is fast taking root across the country, as businesses see the long-term benefits of going green against a backdrop of rising energy costs and dwindling water supplies.

Green-rated buildings are putting companies on the map in terms of both physical presence and eco-friendly footprint, while eco-aware architecture is rapidly becoming en vogue, according to one of South Africa's oldest architectural firms, SVA International.

Public and industry perceptions aside, the trend has real financial implications for investors too. Analysts point to the long-term financial savings, saying the average five to 20% greater capital outlay for such developments must be considered against the landscape of electricity scarcity and the energy savings the building will make over time.

Additionally, research shows that the developments tend to attract higher-end tenants, and are more pleasant to work in, operate from or live in.

According to Ann-Mari Malan of green building consultancy firm AGAMA Energy, the sustainability aspects implemented in green building projects have a positive environmental and financial impact.

"Given the high energy costs and water scarcity in South Africa, implementing green building practices sends out a strong message about an organisation's commitment to sustainability whilst promoting a positive image with stakeholders, customers and employees," she said.

Case study

A recent example of the trend is a three-storey ecologically sensitive development located on the banks of a 32 000 m² rehabilitated wetland.

Set against the backdrop of Somerset West's Helderberg Mountains with sweeping ocean views, The Sanctuary is a workshop-play, mixed-use retail and office development. Opened in October last year by Abacus Development Company, it was brought to life by SVA International's Cape Town office. Aptly named, The Sanctuary aims to minimise the impact of its presence on the environment, while gently encircling the storm water retention pond that lies at its heart.



"Architecturally speaking, the centre combines a contemporary aesthetic with the highly textured building materials synonymous with the Cape Winelands," said SVA International associate, Bruce Wilson. "The form of the building was largely determined by the mix of uses required of the site and their relation to the natural elements of water, sun, wind and mountains."

Shedding (natural) light on the topic

Natural light is becoming an integral component for new developments, too – not just to save on spiralling electricity costs, but also because research has shown it adds to the wellbeing of the tenants.

The triple-volume central atrium and three-storey mall at The Sanctuary make maximum use of daylight and fresh air, with opaque roof lights on the perimeter of these spaces diffusing natural light throughout the interior, while controlling for glare and solar heat gain, said Wilson.

"The design concept was entirely focused on providing users with a generous, well-lit, comfortable and convenient place to shop, work, eat and exercise (at the two-storey Virgin Active)," he said.

Environmental rehabilitation

The featured pond is the result of a team effort by a botanist,



Project members

- **Project:** The Sanctuary, Somerset West
- **Project manager:** Abacus Development Company
- **Architect:** SVA International
- **Quantity surveyor:** IQS
- **Civil engineer:** Icon Consulting Engineers
- **Structural engineer:** KLS Consulting Engineers
- **Mechanical engineer:** Ekcon Consulting Engineers
- **Landscape architect:** CnDV Landscape Architects
- **Principal contractor:** NMC
- **Electrical engineer:** KLS Consulting Engineers
- **Fire consultant:** Ekcon Consulting Engineers

Eco-aware developments, such as Somerset West's mix-use centre, The Sanctuary, are becoming en vogue among developers and investors alike, as energy costs spiral and water becomes increasingly scarce.



freshwater specialist, landscape architect and civil engineer to design a habitat rich in biodiversity potential, while meeting regional and site-specific stormwater drainage requirements.

Formerly a polluted water body, with typically degraded flora and fauna, the pond has been subjected to an extensive water and landscaping maintenance programme, which included the removal of more than 5 000 m³ of polluted soil. The programme is already showing signs of success as the pond teems with frogs, fish and insects, and the birdlife is steadily returning.

Sustainable elements

"Because water is at the heart of this development, it is also a key element of the sustainability features. Rooftop water tanks have been installed on every block to supplement the fresh water supply, while water-efficient sanitary systems have been used throughout.

Grey water and rainwater is recycled for sanitation and irrigation purposes," said Wilson.

"The careful management of energy consumption within legislated requirements is another green building intervention, with a number of active systems installed, such as waste heat reclamation systems and tenant heat pumps to meet the demand for hot water."

Winning recipe

The Sanctuary's retail anchor tenants and several of the restaurants are currently trading above expectation, indicating a positive public response to the development, said Wilson.

"Its success lies in the confluence of several factors, such as the growth in the adjacent residential market, the physical situation of the development, and the environmentally sensitive architectural response to it," he said. ●

Heineken SA Sedibeng Brewery contract secured

Aveng Grinaker-LTA's Building division has been awarded a contract by Heineken South Africa for Project Harvest phases one and two at their Sedibeng Brewery in Midvaal, Gauteng.

The scope of work for the first phase of the contract entails the civil and concrete rafts for the yeast plant, cider base tank (CBT) and bright beer tank (BBT). Phase II requires the completion of the yeast propagation plant, CBT, BBT, flavour room, as well as the cold and dry storages. The project includes the expansion of the cider production facilities by extending the existing facilities for cider processing and manufacturing with new cider base tanks and the construction of a flavouring plant with cold storage facilities, dissolved sugar tanks with dry storage facilities, a yeast propagation plant and bright beer tanks.

Chris Botha, managing director of Aveng Grinaker-LTA, says: "The expansion of the Sedibeng Brewery plant is in line

with Heineken South Africa's strategic optimisation for planning, networking and operations, and must be executed with minimum impact to current service levels at the plant. We are confident we can deliver to this requirement."

The first phase of the project will take two months to complete. The expected duration for the second phase of the project is four and a half months.

Aveng Grinaker-LTA Building offers extensive experience and expertise in construction management, from affordable housing to state-of-the-art medical and science facilities, airports and land-



mark skyscrapers that have shaped South Africa's skyline.

The business unit prides itself on its tailor-made, turnkey solutions that incorporate design, building and construction management services that cater for the needs and risk profiles of all clients. ●

BRIDGING THE DIVIDE in Ga-Ntata

A highly-anticipated bridge construction programme promises to bring critical relief to poor rural communities in Limpopo's Mopani District.

► The two new all-weather structures are being built on roads D3212 and D3213 at Ga-Ntata. They will replace an inadequate crossing over the Molototsi River that left people stranded for days on end during high rainfall periods before it collapsed in late 2016 as a result of heavy flooding in the area.

This intervention is being driven by the Roads Agency of Limpopo (RAL), which has appointed engineering firm, Nyeleti Consulting, and Axton Matrix, the main contractor, to help deliver the infrastructure.

Corestruc and Coreslab join the team of professionals, and are tasked with manufacturing and installing the high quality bridge beams that form part of the superstructures.

Corestruc has earned a solid reputation in the South African construction industry for being a leading designer and builder of pre-cast concrete structures, ranging from complex civil infrastructure through to luxury private property developments.

Both companies' bridge beams are associated with a number of

A bespoke dolly-bogie system is used to transport the items to site and offloading is undertaken using a special a side loader



The two new all-weather structures are being built on roads D3212 and D3213 at Ga-Ntata.



milestone projects, for which they have manufactured and installed all types of M, I and F-type bridge barriers, or parapets, since their participation in the Lawton Bridge build in Polokwane.

Their teams arrived at Ga-Ntata earlier this year to start surveying activities once Axton Matrix had completed the abutments and piers, and installed the bearing pads upon which the bridge beams rest.

This ensured accurate alignment and rapid installation of the high quality inverted I-beams.

Corestruc's Russell Hobbs says that a total of 86 items were manufactured at Corestruc and Coreslab's state-of-the art batching plant in Limpopo and installed at the two construction faces.

"A total of 48 precast concrete beams were manufactured and placed to support the deck of the main 96 m-long structure and 48 were installed at the other 76 m-long bridge. Most of the bridge beams are 24 m long with some 27 m, and they vary between 50 MPa and 60 MPa," he says.

Based on Nyeleti Consulting's design requirements, the elements were pre-formed with holes through which transverse reinforcement has been installed to brace the structures. The main contractor then fills the spaces between each pre-cast concrete unit to produce a robust concrete slab.

The consulting engineer also specified an extremely slender profile for the bridge beams, and Hobbs says this was achieved by paying meticulous attention to the detail of the design of the pre-stressed cables prior to manufacturing.

However, RAL is not only relying on the companies' solid track record in pre-cast bridge beam manufacture and installation, but also heavily upon Corestruc and Coreslab's logistical planning capabilities to ensure the project stays on its critical path.

This expertise remains yet another major value proposition that the companies bring to all of their projects, considering that many of them are situated in remote and inaccessible areas, or where space is at a premium.

These skills have ensured the timely delivery of the pre-cast concrete beams to this remote site, with the project relying heavily on in-house technologies that were developed to improve the delivery and handling of these heavy items.

A bespoke dolly-bogie system is used to transport the items to site and offloading is undertaken using a special a side loader.

The latter system has done away with the need for two mobile cranes just to offload and place each item at the laydown stations, with cranes only deployed in the actual installation phases.

Corestruc and Coreslab's impressive production rate on site certainly mirrors the success of this approach.

"Using a 160 ton crane, the largest unit in our mobile crane fleet, we were able to maintain a steady production rate by placing up to six beams a day. However, we have almost doubled production at other related projects using this method, where site conditions have been much more favourable," he says.

It is clear why both companies remain closely associated with so many social development projects in Limpopo, and Hobbs looks forward to continued involvement in more construction activity in a province that is in dire need of infrastructure. ●

Based on Nyeleti Consulting's design requirements, the elements were pre-formed with holes through which transverse reinforcement has been installed to brace the structures.

The paradigm shift

“Owners of facilities should be more involved in the quality control and quality assurance of geosynthetic installations,” says geosynthetics expert, Nadia Minnaar of NGQ Consulting. “Who proposes that the best possible solution usually lies in employing a reliable independent 3rd party company who can be their eyes and ears on the floor during the installation process.

She explains: “The differences between quality control and quality assurance is vast. Quality Assurance (QA) is a process orientated exercise that ensures the installation of geosynthetic material is in line with the SANS 10409 national standard, manufacturers installation instructions, industry best practice and project specifications. Quality Control (QC) by comparison is a product orientated exercise and therefore this includes all the testing that must be carried out by the installer to ensure the quality of the seaming installation is correct.

Testing, is a product orientated process and thus falls in the QC domain. Testing for quality therefore is not assuring quality, it is controlling quality. In short:

- Quality Assurance makes sure you are doing the right things, the right way.
- Quality Control makes sure the results of what you've done are what you expected.

Taking control

“The independent 3rd party company will therefore be responsible for the quality assurance of the geosynthetic installation and can also play a vital role in different stages of a project. For example, they can be involved when the project specification is compiled prior to tender stage, can be involved during tender stage to assess the quality assurance and quality control processes of the installer and to be a communication channel between all the parties during construction namely the owner, engineer, earthworks contractor and installer.

“It is common practice in other industries to make use of an independent 3rd party company but it is a new concept in the geosynthetic installation industry in South Africa and should become the norm for new installations to provide peace of mind to owners of facilities.

“The independent 3rd party company can serve different purposes during installation and act on behalf of the owner, the design engineer or the earthworks contractor since the installer is usually a subcontractor to the earthworks contractor,” says Nadia.

Correct credentials

NGQ Consulting is an independent 3rd party company who specialises in quality assurance. They have vast experience in the geosynthetic installation process with a state of the art software programme to capture QC information and provide the owner with a detailed project pack after completion.

Nadia also recently completed a Liner Integrity Survey Assessment (LISA), Construction QA/QC for Geosynthetic Installation, Construction QA/QC for Compaction Clay Liners and Geosynthetic Certification Institute Inspector Certification Programme course presented by the Texas Research Institute and is now certified by the Geosynthetic Institute as a Quality Assurance Inspector for Geosynthetic Material and compacted clay liners.

It is a known fact that when a leak occurs in the geosynthetic liner system it is usually due to other external factors and rarely as a result of poor workmanship of the



Capturing real-time data on site during the installation process.

Nadia Minnaar of NGQ Consulting witnessing non-destructive testing of T-joints.



installer. This is why it is so critical to have an independent person on site to prevent material damage or report if damage has occurred. Also, to resolve the problem and take preventive actions to ensure damage is limited.

“Yes, it is possible to build a facility with a zero leak rate – the secret to success is Quality Assurance,” concludes Nadia. ●



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R100-million CAN FACTORY contract tests mettle

The newly-formed civils division of the Motheo Construction Group is cutting its teeth on a R100-million project to build a 14 000 m² factory in Germiston, Johannesburg for Gayatri Cans, part of the Golden Era Group.

Encompassing bulk earthworks, sewer and stormwater drainage, piling, steel and concrete work, building and roadworks, the maiden project is utilising all of the skills and experience of Motheo Civils.

The project is being carried out in partnership with M3 Construction. The professional team includes Calibre Consulting (design engineer), SNA Civil & Structural Engineers (traffic), Creative Axis Architects (design), Tass Engineering (structural steelwork), and AQS Consultants (quantity surveying).

The overall project is for the construction of a new can-manufacturing factory for Gayatri Cans. The factory will consist of a manufacturing facility, paint and printing facility and product storage warehouse, all of which will be about 14 000 m² under roof.

Motheo's portion of the works encompassed all civil, structural concrete and building works, with the structural steel and cladding contract having been awarded separately.

The project began in November 2015, and is scheduled for completion by year end. It is thought to be one of the largest construction projects currently underway in the Germiston industrial area.

M3 Construction director Gary Talbot describes it as a 'build-and-design' project. "The requirement by the client to have the plant in production by a specific date meant the civil contractor had to start work on-site before the final process design had been finalised."



LEFT: The Motheo Construction Group was established in 1997 by Dr. Thandi Ndlovu, currently the CEO. RIGHT: Motheo Construction Group's managing director, Archie Rutherford.



Rutherford comments that this has become the 'norm' in fast-track industrial projects. "Motheo is well-versed in such requirements. We have found that the best solution to accommodate such requirements, and still ensure a successful conclusion to a project, is to work towards all stakeholders – the client, project manager, professional team and contractor – having the same commitment to this goal."

Apart from the tight timeframe, a major challenge was that the site is in a previously utilised industrial site in the congested Germiston industrial area. Competent founding material varied in depth from 4 m to 20 m, and thus the founding solution varied across the site.

One third of the factory area was shallow enough to allow for excavation to competent material to found the structure on spread footings, while the remainder required 750 to 900 diameter piles, varying in length up to 20 m, with pile caps and ground beams. A further complication was that the whole site consisted of

previously-filled mine tailings material.

Large areas of the factory had high floor loadings from the storage of heavy material, and on-site fill material did not have suitable bearing capacity to carry these loads. This necessitated the excavation of all of the on-site material to spoil in these areas, with the importation of G5 material to fill the resultant void. Large quantities of this G5 fill beneath the machine bases needed cement stabilisation.

In addition, the entire site fell within a fully operational can factory precinct. Hence the construction of new works in 'brownfield' conditions required careful planning and co-ordination to accommodate the existing ongoing operations. The site also covered previously abandoned and buried factory and mining works.

Unforeseen physical obstructions, which had to be demolished and removed, were encountered throughout the excavation and construction of the foundations. These included heavy-reinforced concrete machine bases, mining works and, in one instance,

The overall project is for the construction of a new can manufacturing factory.



About Motheo Construction Group

The Motheo Construction Group was established in 1997 by Dr Thandi Ndlovu. Motheo is a founder member of South African Women in Construction (SAWIC). During its 19-year history, the Group has developed into South Africa's leading, mainly black female-owned and managed construction company. Today it boasts six black female shareholders who have a 52% stake in the Group. Motheo is currently registered with the CIDB as Level 9 GBPE and 9 CEPE. A leading provider of social housing, it has been registered with the NHBRC since its inception.

This factory will consist of a manufacturing facility paint and printing facility and product storage.



an abandoned concrete-encased railway line traversing the site.

The newly-formed civils division of Motheo, which itself has focused traditionally on the housing sector, has been established under managing director Archie Rutherford.

The Motheo Construction Group was established in 1997 by Dr. Thandi Ndlovu. "We are overseeing the group's transformation into a truly empowered, all-encompassing, black-owned and diversified construction group, covering civils, building and housing," Dr Ndlovu comments.

The civils division specialises in construction of roads and earthworks, as well as installation of services such as water, sewer and stormwater reticulation. It has also established a formidable concrete division specialising in all forms of structural concrete work. ●

Software to consolidate and grow business

Western Cape based construction company, Haw & Inglis, has gone live with its Sage X3 and X3 People implementation with platinum Sage reseller, Parity Software.

Specialising in projects of significant size and complex scope, the company, which operates throughout South Africa and neighbouring states, needed a consolidated ERP reporting and HR system, and selected Sage ERP X3 and X3 People.

Duane Chemaly, IT manager, Haw & Inglis, said that the construction giant's ERP system was incapable of providing consolidated reporting across the Group. In addition, the HR and payroll systems did not synchronise, resulting in a manual updating process: "Aside from the vital consolidation features missing, the system lacked mobility because it only worked within Internet Explorer and was also unable to support multiple devices due to old ActiveX technology. Numerous updates had to be done due to poor software quality assurance on patches." He says that there were no customisation capabilities, resulting in external custom developed systems that needed to be separately maintained. This was extremely time consuming and took hours to create a simple custom report, according to Chemaly.

In selecting Sage ERP X3, Chemaly says that Haw and Inglis is now able to monitor data in real time across all companies and set access rights on a field and document level. BEE reports can be produced from the Sage X3 system linked to the accounts,

which was not possible in its previous ERP system.

Mario Engelbrecht, senior Sage X3 consultant, Parity Software, says that Haw & Inglis made a very strategic decision by opting for one solution that manages all the financial intricacies in the construction industry, but also addressing the challenging people perspective: "By implementing Sage X3 and X3 People, Haw & Inglis has instant real-time costing and data analysis capabilities. Using modules like Parity Cashbook, Enterprise Asset Management (EAM) and Project and Job costing, has given the operations a toolkit to manage divisions in real time, and in turn assures the finance department always has an up to date view of business health."

He says that industry specific developments have given Haw & Inglis' operational users the ability to track sub-contract agreements and spending timeously, ensuring cash flow accuracy and giving project managers the tools needed to manage projects more efficiently.

The complex HR process of on-boarding labourers is now tracked, ensuring accurate organisational development and planning. Employee training course attendance and medicals are also tracked through the Sage X3 People system, and aids management in the performance management process as well as ensuring that construction regulations are adhered to.

Chemaly says that Sage X3 has enabled Haw & Inglis to successfully expand into international markets due to its multi-legislation and multiple currency solution set. The power of its consolidated reports



Duane Chemaly, IT manager, Haw & Inglis.

across the group in local currency is also a big benefit: "Sage X3 is operational in each department, accounts, plant, payroll, HR and operations. This enables us to analyse information and produce management reports more effectively and in real time."

Keith Fenner, VP Sage Enterprise Africa and VP Sage Middle East, says that the full end-to-end business management implementation done by Parity Software will ensure that Haw & Inglis' is able to expand its operations, safe in the knowledge that they have the business tools to support their vision: "This implementation has been one of the most successful and has achieved some of the fastest benchmark tests in a virtual environment. It went live on 1 March and is still going strong without any downtime."

Acknowledging that ERP system implementations are always a complex process, Chemaly says Haw & Inglis selected Parity because it is a recognised, multi award-winning implementation specialist and Sage because of its customisation ability as well as being designed on a web 2.0 interface." ●

Gauteng to roll out the GREEN CARPET for urban development

By Matthew Thornton-Dibb | Associate and Environmental lawyer at Norton Rose Fulbright

Development in Gauteng is co-ordinated around its Environmental Management Framework, 2014. The Framework is a strategic document designed to guide sustainable land use management within the province. Its function is to identify geographical areas where certain development activities can be excluded from the environmental impact assessment and the prior environmental authorisation process provided for in the National Environmental Management Act, 1998 (NEMA).

On 13 April 2017, a draft notice identifying excluded activities within two geographically defined zones was published for public comment. The notice provides for mandatory standards according to which the excluded activities can be undertaken without prior environmental authorisation. Should the notice come into force, it will fast-track non-polluting urban development in pre-identified areas within Gauteng.

Developers rightly bemoan the inflexibility of the environmental authorisation application process. Where a development triggers any of the listed activities published under NEMA, the proponent of the development is required to obtain prior environmental authorisation. The application process may take 197 days for a basic assessment (activities having less significant impact) and 300 days for scoping and environmental impact assessment (for activities having more significant impact).

Brownfields developments, residential, and commercial developments usually have little material environmental impact, and those impacts attributable to dust and stormwater emissions, and waste management can

be managed through compliance with general standards. However, the inflexible process currently in force does not allow for exemption from prior environmental authorisation where a listed activity is triggered. This leads to unnecessary time and costs spent on obtaining environmental authorisation as a check-box exercise. The proposed exclusion of developments triggering certain listed activities within pre-determined geographic zones will address this issue.

These exclusions include the development of bulk liquid transportation pipelines and electricity transmission and distribution infrastructure; the clearance of land for developments associated with various land uses (ie retail, residential, industrial, and commercial); and developments requiring the storage and handling of dangerous goods such as retail fuel stations. Exclusions will only apply in respect of Zones 1 and 5 (as indicated in the Framework).

- Zone 1, known as the Urban Development Zone, comprises those areas of Gauteng where streamlining of urban development activities is necessary to promote infill development, densification, and concentration.
- Zone 5, known as the Industrial and Commercial Focus Zones, comprises those areas of Gauteng where streamlining of non-polluting industrial and large-scale commercial activities is required.



Matthew Thornton-Dibb.

This will result in significant time and cost savings for affected projects, and will open up Zones 1 and 5 as preferred development areas within the Gauteng province. The exclusions will not apply to developments extending outside the boundary of Zones 1 or 5, or to any activity that is directly related to prospecting and mining.

While the exclusions will do away with the need to obtain prior environmental authorisation, it does not completely de-regulate affected developments. Proponents of affected developments would need to apply to register the developments with the Gauteng Department of Agriculture and Rural Development. When requesting registration, a developer must undertake to comply with the prescribed environmental management standards. These standards operate as a non-negotiable environmental management programme for affected developments, and relate to environmental management issues such as the protection of air quality, storm water management, hazardous substances management, and the protection of water resources and biodiversity. Developers will be obliged to design, construct and operate affected developments in compliance with the minimum prescribed standards.

The notice, should it come into force, will be a welcome relief to developers looking to reduce development costs in the current economic climate. ●





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Hydraform International, the leading alternative building technology company in the developing world since 1988, is well known for its unique interlocking building system which eliminates the use of mortar in 70% of the building structure.

Thanks to its mobility, the system has global appeal in developing communities and serious buy-in from both public and private entities committed to economic empowerment.

Making use of the oldest known building material, earth, to produce interlocking soil-cement blocks, Hydraform's innovative and sustainable building technology is used to build a wide range of buildings, including upmarket housing, low-cost housing, estates, schools, universities, clinics and commercial structures across the world.

Production and construction benefits

This Alternative Building Technology (ABT) makes use of natural raw material (earth) to manufacture a building block stabilised with just 10% cement. The blocks are interlocking, eliminating the need for mortar joints in 70% of the structure. This innovation in construction has resulted in an extremely competitive building system suitable for any type of construction and has been approved and used by relevant authorities in South Africa.

The blocks are manufactured by mobile or static blockmaking machines. The added advantage these machines bring to the Hydraform value proposition is that the blocks can be produced on site, resulting in reduced transport costs. The use of local soils also helps reduce costs and increases local impact.

The system differs from conventional bricks in that it replaces the traditional 'brick and mortar' type building with interlocking, dry-stacked blocks. With the potential to save up to 30% on general

construction costs, the Hydraform system is simple enough to be used by unskilled persons.

The Hydraform interlocking block making system comes with a host of construction benefits that make it well positioned to serve communities in the developing world.

A win for the block yard entrepreneur

A block yard can easily be established on any suitable land space, making block production using Hydraform technology a viable and potentially lucrative entrepreneurial endeavour. More so, an active block yard using the system has the potential to make a significant socio-economic impact on the surrounding community which stands to benefit from job opportunities and skills development; approximately 30 to 40 direct jobs in block and paving production are possible through a commercial or community-driven block yard.

A block yard powered by Hydraform technology is capable of producing 3 000 blocks per day using the Hydraform M7MI Super Auto, which translates to nearly 500 000 blocks manufactured annually. Even more impressively, 5 000 interlocking pavers can be manufactured daily using the Hydraform V3SE, which is roughly over 1 million pavers produced per year.

Job creation and empowerment

Hydraform technology is a catalyst for economic empowerment across Africa and the rest of the developing world. The impact of the Hydraform ABT helps provide the building blocks for houses, schools, community buildings and hospitals, the technology leaves a profound legacy of skills development and economic upliftment in its wake.

The Hydraform Building System has the potential through its many benefits to empower unskilled men and women to become active participants and agents for change in their own communities by gaining practical skills and experience in brick and block making as well as construction. These new skills and job opportunities have

far reaching consequences in the line of contributing towards housing delivery and the stimulation of the local economy. Small business and craftsmen who supply services to the new industry, such as roofing, construction labour, cement supply, food, etc. also benefit.

Hydraform prides itself on providing world-class training either on site or at their Training Academy in Johannesburg, South Africa. Vital to ensuring skills development and transfer, Hydraform's training covers quality brick and block production as well as construction.

Technical assistance is also available whenever and wherever it is needed. ●



AFFORDABLE housing solutions using PREFABRICATION

While in-roads into the supply of affordable housing in South Africa have been made, there is still a long way to go in the delivery of the quantity of housing required for the vast amount of people in need across the country.

► This, coupled with the requirement to be cost effective in the current economic downturn, is where prefabricated walls, floors, frames and foundations can offer as much as a 30% saving on material usage amongst other benefits.

Elematic from Finland, a world leader in the manufacture of precast concrete plants and production lines, recently showcased the benefits of prefabrication in the affordable housing sector at the African Construction and Totally Concrete Expo, at Gallagher Estate in Johannesburg.

Addressing Expo delegates, Elematic's area director, Curt Lindroth said "Prefabrication in the concrete industry has been around since the 1970s, it offers many positives such as reduced costs, design efficiencies, housing longevity, a reduction in manpower, time and materials as well as greater safety on site. Using local raw materials it offers a faster construction speed as shown by a recent project in India, where using conventional construction methods supplied 15 x 1 000 sq ft apartments in a month. The prefabricated structure supplied 45 apartments of the same size in the same period of time".

"At our technical training workshop at the Expo, we highlighted the benefits of prefabrication, particularly in affordable housing projects and how Africa can benefit from this technology were highlighted. Over the years, advances in precast technology and design have opened a myriad of possibilities for housing and the planning of urban environments, something that South Africa, and other developing cities can make good use of in the supply of a greater number of houses, more quickly while still making financial savings," Lindroth said.

Benefits of prefabrication

Prefabrication removes the need for shuttering and scaffolding and requires less transportation to site and less materials and equipment. Prefabricated elements are easily installed with cranes, and offer better quality control and create safer working conditions. No brickwork is needed, less steel is consumed and prefabrication

offers a longer building lifespan with less maintenance.

The construction site becomes dry and clean with no curing required at site, which makes water and energy savings achievable.

Even in extreme weather conditions no waterproofing is required for the prefabricated structures. A major positive is the simplicity of assembly, which requires the minimum amount of joints.

Precast concrete's components make it a natural choice in achieving sustainability in new buildings. The structures need no chemical treatment which eliminates fumes. The solid and secure structure offers security as the prefabricated concrete panel is impact resistant and difficult to break or cut through. Prefabricated concrete is also fire proof, rot proof and rust proof.

Termites, rats, mice and other vermin will not threaten the precast structure, as they do with more traditional building materials, as the components of the precast concrete make it inedible.

"Precast is a modular building system based on ready-made, factory manufactured components and intelligent connections.



Elematic's area director, Curt Lindroth.

"It is a smart and industrialised way to construct cost-efficient buildings," commented Prakash Shah, head of technical support at Elematic. "Modern plants are scaled to meet the precast need. The same production line allows the manufacture of precast products from affordable to high-end housing, as well as for factories and office complexes," said Shah.

"Many large cities in Africa, South America and India are experiencing rapid population growth. In Kenya for example, the Kenyan Government is committed to ensuring every citizen has access to affordable housing. The Indian Government has announced a 'Housing for All' smart cities programme. The South African Government believes the supply of adequate housing is a basic human right. These are big challenges that face government. We believe that prefabrication is a cost-effective way forward towards quickly solving this enormous demand," said Lindroth. ●

Recent projects supported with Elematic Technologies

- Naya Raipur, India – 4 000 housing units
- Bismayah New City Project, Iraq – 100 000 housing units
- Arabian Ranches, UAE – 1 041 villas



Award-winning first MICRO-TUNNELLING project

AECOM, the City of Cape Town and CSV Construction have been awarded the annual Joop Van Wamelen Award of Excellence for 2016 by the Southern African Society for Trenchless Technology (SASTT).

The combined submission was for the construction of Phase 2 of the Cape Flats 3 Bulk Sewer, which included micro-tunnelling on a scale not yet previously executed for bulk infrastructure pipelines in South Africa.

The award was presented at an official ceremony as part of the SASTT AGM in Sandton, in February. Joop van Wamelen was a key founder of SASTT 25 years ago, serving on the board until he passed away in 2015.

The award commemorating his contribution to the industry has been running for a number of years. "AECOM has submitted some very strong entries for the award over the last number of years, taking top honours in 2011, 2014, and now again with the 2016 entry," Isak Malherbe, executive for civil infrastructure, Africa, comments.

"Prior to the award ceremony we were able to present the project to a group of about 40 SASTT members, with very positive feedback. I believe our record makes us a preferred consultant among many of our municipal clients in South Africa."

The award was shared with CSV Construction as main contractor and the City of Cape Town as the client. "Without the effective co-operation between these parties, I doubt the project would have been the success that it has been," Timothy Hotchkiss, project engineer adds.

While the micro-tunnelling work was completed during the course of 2016, other aspects of the construction work are ongoing. "There have not been any significant unforeseen delays on the project thus far, which means that final testing and trial runs of the new bulk sewer are on track to commence in May 2017. Hand-over to the City of Cape Town will take place in August 2017," Hotchkiss confirms.

Commenting on the challenges posed by the project, Hotchkiss stresses that finding a feasible pipeline route through a densely-developed urban area is always difficult. As part of the design process, 12 route options were evaluated in detail, and given a weighted score, with preference to highest. Some of the routes were not feasible due to clashes with existing major services such as high-voltage electrical cables. Even

the highest scoring route traversed some challenging areas that were unavoidable.

Although micro-tunnelling was considered early on during the design phase, the cost compared to conventional pipe jacking and open trench pipe installation was at that stage estimated to be too high, Hotchkiss highlights.

Following extensive technical and financial evaluations, it was found that micro-tunnelling some sections of the Cape Flats 3 Bulk Sewer rising main would not only mitigate social and environmental impacts, but also offer the City of Cape Town a cost-effective alternative at reduced risk and higher end-product quality.

A contributing factor making the micro-tunnelling method more technically favourable was the recent introduction of ductile iron jacking pipes to the market, which are pressure pipes that can be jacked directly into the ground behind a tunnel boring machine (TBM). Therefore this offered a more cost-effective and operationally sustainable system compared to the conventional system, whereby the pressure pipe would be installed through a micro-tunnelled concrete 'sleeve'.

"Technically, micro-tunnelling was an obvious choice, but we had to ensure that available budgets would not be exceeded before we were able to contractually approve the micro-tunnelling proposal. Following the successful completion of the micro-tunnelling work, the City of Cape Town is now convinced that this technology is the best solution for the installation of other bulk pipelines in the City. The work went ahead without any unforeseen incidents and, importantly no unforeseen costs," Hotchkiss elaborates.

The micro-tunnelling undertaken as part of Cape Flats 3 Bulk Sewer project is a specialised pipe jacking operation making use of a TBM that mechanically cuts and removes soil from the jacking face by means of a rotating cutting head and pumped slurry conveyance system.

The TBM can be operated remotely from a control centre on the ground surface, and is monitored constantly in terms of its position with a laser system. After the TBM has entered the ground from the jacking



ABOVE: The TBM deployed by CSV Construction was the Herrenknecht AVN 800 XC TBM.

shaft, special jacking pipes are inserted behind the TBM, and also jacked into the ground one after the other, until the pipeline reaches the receiving shaft where the TBM can be retrieved.

There have been a number of tunnelling projects undertaken around South Africa in the past. For example, tunnels for water transfer schemes, railways, and roads through mountains. However, this is possibly only the second micro-tunnelling operation of its kind in an urban area in South Africa, and the first in Cape Town.

"What makes this project exciting is that the technology was not used out of necessity, but rather a conscious choice to reduce impacts and risks to the community, as well as providing a high-quality final product to the client," Hotchkiss points out. Internationally, AECOM is well known for tunnelling expertise, and has been involved in many large tunnelling projects around the world.

The TBM deployed by CSV Construction was the Herrenknecht AVN 800 XC TBM, the first of its kind to be owned and operated by a Southern African company. The micro-tunnelling project was undertaken with the support of a specialist technician from Herrenknecht of Germany.

AECOM acted as the employer's agent and engineer on the contract, and was therefore involved from the beginning, with technical and financial analyses to ensure that the micro-tunnelling construction method was the best option for the City of Cape Town.

"Our role on-site was to manage the contract on behalf of the client, and ensure that construction took place strictly



After the TBM has entered the ground from the jacking shaft, special jacking pipes are inserted behind the TBM.

according to the contract specifications," Hotchkiss concludes.

Going into construction, Tim Pollard was appointed as the Engineer. Hotchkiss conducted all the day-to-day contract administration and as the engineer's representative, was responsible for the quality control on-site, assisted by Sibusiso Mahlangeni and Franco Taljaard. AECOM's technical team was supported by Nicole Bates, the Environmental Control Officer, and Gillian du Plooy, the Health and Safety Officer. ●

New close-coupled pump

KSB Pumps and Valves new Etabloc pump.

KSB Pumps and Valves recently added the new generation Etabloc close-coupled pump range to its line-up of efficient water pumps.



The newly enhanced series comprises 43 pump sizes, which can be driven by either 2-pole or 4-pole motors. With further additions to the selection chart, the pump size can now be selected even closer to the best efficiency point.

KSB close-coupled pumps have applications in a wide range of industries including agriculture, industrial and municipal water pumping. Different material types and seal and nozzle types available for the range also extends its usage into other materials ranging from foodstuffs, to chemical, waste and a number of other usages.

More versatile

According to KSB Pumps and Valves regional sales manager, David Jones, the discharge nozzles are fitted with more connection options for pressure gauges as standard, so several measurements can be conducted at the same time. The flanges of suction and discharge nozzles are optionally drilled to EN 1092 or ASME dimensions, for all materials.

A large variety of nozzle positions and installation options enables maximum flexibility. Confined gaskets ensure reliable sealing between pump casing and casing cover, even in highly varying operating conditions.

Another feature of the updated type series is its particularly service-friendly design. The conical seal chamber, for example, allows easy access and provides more space for maintenance work. The new, spacious design facilitates dismantling and reassembly of the mechanical seals. Forcing screws provided at the lantern make dismantling of the drive train much easier. Easy-to-replace casing wear rings protect the impeller and the casing cover from wear.

Low energy

The drive lantern comes in standardised mating dimensions, offering the operator maximum choice in selecting an electric motor. In line with KSB's common practice for industrial pumps, every pump will be supplied to the customer with the impeller diameter trimmed exactly to the duty point. Impeller trimming combined with the large range of pump sizes available for selection is the only way of keeping the pump set's energy consumption to the minimum necessary.

The latest generation of the Etabloc type series meets strict global standards including the EU requirements of Commission Regulation 547/2012/EU for water pumps. ●

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Curbing delays in licencing

Recent regulations from the Department of Water and Sanitation (DWS) will hopefully overcome the long delays in securing water use licences, and allow more streamlined implementation of projects.

Water use licences are required by a range of water users from mines and industry to property developers and farmers; even public sector organisations like local authorities, provincial authorities and road agencies may need authorisation for projects.

According to Manda Hinsch, partner and principal water and environmental scientists at SRK Consulting, the new regulations are a positive step that aligns the timelines for Water Use Licence Authorisations (WULAs) with those already applying for environmental authorisations as required by the National Environmental Management Act (NEMA).

"Both processes now promise authorisations within 300 calendar days, if all documents and studies are in order," said Hinsch. "In the past, receiving water use authorisation could take up to three to five years." She said these delays often led to applicants simply starting project construction without the necessary authorisation, since the positive socio-economic impact of proceeding was deemed to outweigh the negative environmental impacts.

"Also, assessment processes within the department were not always well-monitored, so it was difficult to track the stage which an application had reached within the process," she said.

Hinsch said the process will now begin with a pre-application meeting with the water authority, followed by the submission of the application within five days. A date for a site visit then needs to be finalised within five days after that, and the visit itself must take place within 30 days.

The authority is then expected to respond within five days of the site visit, outlining the exact requirements for the WULA. The applicant then has 105 days to prepare and submit the necessary technical reports, as well as conduct the public participation processes.

Following submission, the authority has 10 days to acknowledge receipt of the application, and 139 days to consider the documentation and make a decision – after which it has five days to actually issue the decision.

"The new regulations also formalise the public participation requirements, which were neglected in the past – particularly if a WULA was required without the need for an environmental authorisation," said Hinsch.

"These regulated timelines are tight, and place pressure on both the department and applicants to work quickly and efficiently," she said, adding that SRK also makes use of in-house specialists

to undertake the hydrological and geo-hydrological studies, often required for WULAs, further simplifying and speeding up the process. ●



Manda Hinsch, partner and principal water and environmental scientists at SRK Consulting.



AECOM recently worked on the Eastern Basin Acid Mine Drainage (AMD) treatment plant. Acid mine drainage is generated when ore and other sulphide-containing mining waste is exposed to oxygen and water.

Water and sanitation strategy

Recently, South Africa held its first National Water and Sanitation Dialogue. It gathered stakeholders from the agriculture, manufacturing, energy and mining sectors amongst others.

The aim of the dialogue was to provide input into the conceptualisation of the country's new master plan on water and sanitation. This plan is expected to be finalised as early as the end of the year. Speaking at the dialogue, Deputy Minister of Water and Sanitation, Pamela Tshwete, challenged stakeholders in particular big business, to assist with the development and implementation of the master plan.

In response, Eskom's water management lead, Nandha Govender, presented private sector initiatives the public utility is implementing together with corporate partners, the Department of Water and Sanitation and civil society through the Strategic Water Partners Network (SWPN). SWPN is a multi-stakeholder partnership aimed at helping close South Africa's 17% demand-supply water deficit gap, by 2030. For example, the partnership has worked to address some of the water resource management challenges affecting South Africa's mining industry.

Although mining companies currently treat their effluent in accordance with national regulations, the continued installation of energy and capital intensive mine water treatment facilities is unlikely sustainable in the long run. While a relevant regional approach for an entire mining area is ideal, it requires agreement on actionable solutions, as well as how costs are partitioned among mining companies – with respect to operational mines, and the state – with respect to non-operational mines as required by law.

To address this challenge, the SWPN helped establish a mine water coordinating body in the Emalahleni (formerly Witbank) coal mining area, which begins approximately 100 km east of the capital city, Pretoria and runs mostly along the Olifants River catchment. The mine water coordinating body brings together area stakeholders from the public and private sectors and civil society to address some of the mine's most pressing challenges.

Over the next 30 years, several mines are expected to close in the Emalahleni region. At present, area stakeholders must determine who will manage, operate, maintain and finance post closure discharge water treatment facilities, already built by mining companies. Given that costs will not be recovered by selling treated water to municipalities alone, even when initial capital costs are subtracted, another solution must be found. ●

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2 BEST PROJECTS 17

Construction World's Best Projects showcases excellence in the South African building, civil engineering and project management sectors.

In its 15th year, the aim of *Construction World's* Best Projects is to recognise projects across the entire construction industry: from civil and building projects to professional services to specialist suppliers and contracts.

There are six categories in which to enter. Projects may be entered in several categories, provided they meet the prerequisites for entering each one, as well as meet the entry criteria.

Judging

A panel of independent judges from the construction industry has been appointed. These judges represent ECSA, SAICE, MBA and CIOB. They are Trueman Goba, chairman of Hatch Goba and former ECSA and SAICE president; Nico Maas, chairman of Gauteng Piling and former president of the Master Builders' Association; and Rob Newberry, managing director of Newberry Development and founding president of the Chartered Institute of Building.

Each criterion as set out for the various categories will be scored out of 10 – with 10 being the highest score and one being the lowest – it is therefore VERY important that entries address the criteria for the particular category it is entering.

In each category an Overall Winner Award and one or two Highly Commended Award(s) will be made. A 'Special Mention' award may be given.

Awards evening

The awards ceremony will be held on **Wednesday, 8 November 2017** at the Royal and Kensington Golf Club in Johannesburg.

Entry criteria for each category

- Construction innovation technology
- Corporate social investment
- Design innovation *
- Environmental impact consideration
- Health and safety
- Quantifiable time, cost and quality *
- Risk management *
- Motivating facts about the project

(*The same criteria pertain to all categories except for 'Category B: Specialist Contractors or Suppliers' where the following do not apply: Design innovation; Quantifiable time, cost and quality; Risk management.)

Category A1: Civil Engineering Contractors

Prerequisites for entries

- Only South African construction and civil projects executed by locally based companies.
- Projects are eligible during the execution of the project and up to 12 months after completion.
- Projects must be 50% complete at time of entry.

REFER TO ENTRY CRITERIA

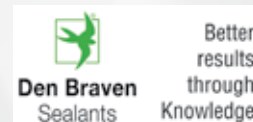
Category A2: Building Contractors

Prerequisites for entries

- Only South African construction and civil projects executed by locally based companies.
- Projects are eligible during the execution of the project and up to 12 months after completion.
- Projects must be 50% complete at time of entry.

REFER TO ENTRY CRITERIA

Bronze sponsor:



Category A3: Civil Engineering and Building Contractors (outside South Africa)

Prerequisites for entries

- Projects outside South Africa, executed by a South African contractor.
- Projects are eligible during the execution of the project and up to 12 months after completion.
- Projects must be 50% complete at time of entry.

REFER TO ENTRY CRITERIA

CALL FOR ENTRIES

Submitting entries

- Each entry must be accompanied by the completed entry form; available on www.constructionworldmagazine.co.za or by requesting it from constr@crowm.co.za.
- The maximum length for submissions is 2 000 words
- Each submission must clearly state which category is entered for*
- IMPORTANT It is to the entrants' own advantage to address ALL the criteria as set out in the category being entered. If a criterium fell outside the scope of the contract, please state this.
- The written submission must be accompanied by up to six high resolution photographs with applicable captions.
- The photographs and copy must be submitted separately – NOT in PDF format.
- The submission must also contain a summary list of important project information such as client, main contractor etc. – i.e. the professional team involved in the project.
- Electronic submissions are acceptable – entrants do not need to produce hard copies of entries.

* *Construction World* retains the right to move entries into a more appropriate category.

Deadlines

Deadline for entries is
Friday, 8 September 2017 at 17:00.

Contact

For further information contact the editor, Wilhelm du Plessis on 011-622-4770 or constr@crowm.co.za

Special issue

The December issue of *Construction World* is dedicated to the various winners and entries and is thus an overview of activity in the built environment during the past year.

Category B: Specialist Contractors or Suppliers

Prerequisites for entries

- Only South African construction and civil projects executed by locally based companies.
- Projects are eligible during the execution of the project and up to 12 months after completion.
- Projects must be 50% complete at time of entry.

Criteria for category B

- Construction technology innovation
- Corporate social investment
- Environmental impact consideration
- Health and safety
- Motivating facts about the project

Silver sponsor:



Category C: Professional Services*

Prerequisites for entries

- Only South African construction and civil projects executed by locally based companies.
- Projects are eligible during the execution of the project and up to 12 months after completion.
- Projects must be 50% complete at time of entry.

REFER TO ENTRY CRITERIA

***Depending on the entries received, an award for both consulting engineers AND architects will be made.**

Category D: The AfriSam Innovation Award for Sustainable Construction

Description of category: Working with the community on a project that has socio-economic impact.

Prerequisites for entries

- Only South African construction and civil projects executed by locally based companies.
- Projects are eligible during the execution of the project and up to 12 months after completion.
- Projects must be 50% complete at time of entry.

This category will be judged on the project's

- change and transferability
- ethical standards and social equity
- ecological quality and energy conservation
- economic performance and compatibility
- contextual and aesthetic impact

REFER TO ENTRY CRITERIA

Main sponsor:



Giving garage **FIRST-CLASS FINISH**

When the owner of a truck repair workshop sought advice on first class protection for newly placed concrete floors, Sika's Mervyn Naidoo recommended three products that conform to multiple international testing standards.

The site of the project was F&M Salvage Contractors, a Pietermaritzburg business in whose panel shop heavy-duty vehicles are repaired. For this reason it was imperative that a robust, dust resistant environment was created. F&M Salvage contracted Westside Trading to apply the specified Sika products. Preparations included diamond

grinding the concrete floor area in order to create a smooth surface prior to the application of Sikafloor-161, a two-part, low viscosity, multi-purpose epoxy resin. Designed for priming concrete floors, cement screeds and epoxy mortars with low to medium absorbent surfaces, Sikafloor-161 is easy to apply with short waiting times and provides good penetration

LEFT: *FlowSport was applied in Yegin Industries' gym room to encourage employees to get active.*
RIGHT: *The antimicrobial system Flowfresh MF in a light grey colour was chosen for hygiene critical areas of the building such as the canteen, thanks to its understated aesthetics and superior cleanliness properties.*



FLOOR SCORES employee satisfaction

Flowcrete has created a floor that will help Yegin Industries bounce, dribble, volley and dunk its way to success.

The sports ball manufacturer Yegin Industries specified a selection of high performance resin flooring solutions from Flowcrete to install a creative and unique floor finish throughout its brand new office in the Long Giang Industrial Park, which is situated in Tien Giang Province, Vietnam.

The office was part of a large-scale, multifaceted facility that included an administrative centre, production factory and chemical warehouse as well as utilities areas, a canteen, car park, swimming pool and green spaces.

The plan for the new site was to incorporate the theme of sports into the very fabric of the building itself. The dual purpose of this design scheme was to provide employees with a fun and enjoyable atmosphere while also creating the ideal environment to showcase its products to prospective clients.

This interior design ethos was exemplified in the office's showroom – which came with a built-in basketball court! Across the building staff areas were also designed to emulate sports courts and gyms to give employees the space and motivation to get active.

The appearance and functionality of the floor in the basketball court style showroom was a priority, as the floor would need to impress clients and provide an engaging space for Yegin Industries to demonstrate its products.

To achieve this appearance as well as ensure that the floor would withstand people running, jumping and playing across the surface, Flowcrete supplied a flooring build-up, formulated to be robust and able to maintain its visuals for an extended period of time.

Some 1 750 m² of Isocrete K-Screed was first applied in a 50 mm layer so that the substrate would deliver a high-strength platform for the resin coating. Isocrete K-Screed is a semi-dry cementitious screed that incorporates a proprietary additive to produce an early drying, high strength screed.

To showcase the company's 'work hard, play hard' attitude, the designer specified 100 m² of FlowSport with Deckshield UV Linemarker. This was applied in the showroom and gym room, as it would provide the bright colours and clear patterns necessary to create sports-court style finishes. The resilience of FlowSport's polyurethane technology was perfect for the gym room, where employees would be exercising during the working hours.

FlowSport is a composite surface that creates a synthetic and flexible sports floor. This system delivers a resilient and uniform surface with a cushioned effect for added spring as well as the easy to clean advantage of a completely seamless surface.

A total of 1 650 m² of the antimicrobial system Flowfresh MF in a light grey colour was also chosen for hygiene critical areas of the building, such as the office, canteen and dormitory areas. This system was specified thanks to its understated aesthetics and superior cleanliness properties.

Floors in the Flowfresh range incorporate the Polygiene® antimicrobial additive, which inhibits the growth of bacteria on the floor surface by up to 99,9%. ●



and excellent bond strength. It is suitable for use as an intermediate layer or as a binder for leveling mortars and mortar screeds.

Sikafloor-263 SL ZA, can be used as a self-smoothing or broadcast system for concrete and cement screeds with normal to medium heavy wear. As a self-smoothing wearing course on the floors of the panel shop, Sikafloor-263 SL ZA (Colour RAL 7035), was applied over the primer. To act as filler for bulking up and giving body to the epoxy Sikafloor-263 SL ZA was mixed with Sikafloor Quartsand SS2, a C Component.

Sikafloor-263 SL ZA is easy to apply and provides a liquid-proof, gloss finish with good chemical and mechanical resistance.

Besides the floors needing a durable, dust-resistant surface, Sika recommended coating the walls with a textured system to help camouflage dirt and imperfections. Priming the walls was achieved using Sikafloor Garage (Light Grey – Extender T-0,44 kg), a two-part, water dispersed, coating that is easily applied, water vapour permeable and provides good chemical and mechanical resistance.

Sikafloor-263 SL ZA and Sikafloor Garage not only meet multiple international standards, but conform to the requirements of LEED (Leadership in Energy and Environmental Design), a rating system devised by the United States Green Building Council (USGBC) to evaluate the environmental performance of a building.

Due to the high quality of the Sika products, the project was completed timeously allowing F&M Salvage to promptly resume its precision business in a world-class workshop. ●



The decorative solutions from Sika allow the creation of an almost unlimited combination of functional and aesthetic requirements. The results of this flexibility in design are rooms so unique and distinctive that people really like and appreciate living and working there.

Low VOC - Cleanroom suitable.

www.sika.co.za

BUILDING TRUST



SMOOTH & LEVEL UNDERLAYMENT

Screedmaster will produce a smooth, flexible and hard-wearing floor surface prior to the fixing of floorcoverings.



Key components to flagship hospital project

Construction and tile adhesive specialist TAL has supplied flooring products to the flagship Netcare Christian Barnard Memorial Hospital, constructed by WBHO in the Foreshore area of Cape Town.

The flagship construction project in the Cape Town CBD is built on the tract of land formerly used as a parking area by Media24, between the Artscape Theatre and the CTICC. The flooring project began in May 2016, and was completed in December 2016.

"We supplied flooring underlayment materials through Penta Flooring and Kalley Flooring, who were the appointed installers of the vinyl floor finish. These two contractors levelled several thousand meters of floor, to achieve the smooth and level surface required for the installation of the Polyflor Vinyl Sheetting," comments TAL technical consultant, Matthew Medhurst. Key components to the flooring installation's success was the use of specific TAL products, namely TAL's VaporStop HB vapour barrier and TAL Screedmaster. TAL VaporStop HB was recommended due to the suspected high moisture levels within the concrete slabs. "This would've hugely impacted the success and longevity of the vinyl finish," comments Medhurst. High moisture levels in the substrate will adversely affect the performance and integrity of polymer-modified underlayments and vinyl overlayers.

TAL's VaporStop HB vapour barrier is a moisture tolerant, 100% solids epoxy barrier coat that prevents the passage of water vapour and moisture through concrete slabs into the underlayment compound and vinyl sheeting layers.

For this particular project, two coats of VaporStop HB were applied, each coat at a rate of 200-micron thickness (5 m²/ℓ). The wet VaporStop HB installation was fully blinded with TAL Primer Aggregate SQ2 and then left to dry for 24 hours, before the floor was swept and vacuumed to remove any loose aggregate particles.

TAL Screedmaster was then installed onto the prepared floors. Manufactured from rapid-setting shrinkage-compensated cement and selected aggregates, the self-levelling characteristics of this material ensure a totally smooth and level surface. Another advantage of the compound is that the installation time is minimal, which ensures a fast turn-around on the project. "This was important for this project, as waiting for the slabs to properly hydrate during the Cape winter can prove challenging," explains Medhurst.

"TAL is a well-respected supplier of tile adhesives, flooring underlayments, and construction products to the South African construction industry, and we are proud to be associated with this iconic project," Medhurst adds.

The new hospital complex boasts 250 beds, state-of-the-art theatres, doctors' surgeries and consulting rooms, linked retail, a gym, and a parkade. ●



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FOR MORE INFO

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A new backhoe loader makes its debut

Manitou Group, a world leader in all-terrain material handling, is taking part in the Intermat ASEAN trade show for construction and infrastructure. For the inaugural edition of Intermat in Southeast Asia, the group presents its new backhoe loader model, following the recent acquisition of the subsidiary Terex in India, and reaffirms its intention to win new market shares in the region.

Intermat and the Manitou Group

For almost 30 years, Manitou Group has been participating in the Intermat France trade show, exhibiting its models that are designed to facilitate people lifting and material handling on construction sites. The group's appeal at Intermat has grown with each edition, and it has enjoyed ever-greater success. It is considered by professionals to be one of the world's biggest trade shows for the sector, so it makes sense for Manitou to support the first edition of Intermat in Asia. The recent acquisition of Terex Equipment Private Limited in India strengthens the group's presence even more at this show, where new products will be introduced.

The TLB-844S in Thailand

The launch of the new TLB-844S backhoe loader aims to provide a specific response to the region's current and future requirements. Thailand is predicted to become the world's number one construction market in the coming years, with an estimated potential of

USD\$35-billion. With its major infrastructure projects, the country organising the trade show wants to expand its machine fleet, incorporating more and more technology, with the aim of improving site productivity. The TLB-844S enables these requirements to be met, using a wide bucket on the front of the machine and a backhoe on the back. This allows the operator to dig and load without changing machines, resulting in lower energy consumption, and at the same time increasing productivity. ●



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REAL HARD LABOUR

Excavator-mounted rock breakers from Furukawa are proving to be extra-durable in the field which is driving contractors to reexamine their long-held belief that rock hammers be regarded as 'consumables' with only a relatively short life span.

Thanks to Furukawa's unique Monoblock construction with no through-bolts, as well as less moving and wear points, these tough breakers can last for years in the hardest labour conditions. In addition, the lighter weight and harder hitting power of the Monoblock system means that smaller breakers are required to do the same work as bulkier counterparts from other manufacturers.

"The power-to-weight ratio of the Furukawa FXJ-range has a hammer weight to joules output that is unmatched in the industry (Construction and Industrial Manufacturers Association rated tests). For the contractor, this means saving money on operating costs, diesel and in many instances, it frees-up larger excavators for production work.

"Our breakers also transfer less shock to the excavator due to larger slip-buffer plates that eliminate impact recoil shock on the excavator's boom," says national product manager, James Linton of ELB Equipment, the exclusive distributor of Furukawa rock breakers in Southern Africa. "That means the Furukawa design is far more robust and reliable with considerably less maintenance

required, as well as being smaller and less of a burden on the excavator."

ELB Equipment has a comprehensive range of Furukawa Rock Breakers and attachments for almost any application. In addition, the company has the highly convenient F6-BHL breaker that has been specially designed for use on backhoe loaders (TLBs) to provide solutions in construction type environments, road building, demolitions etc.

"In today's tough market it is important that contractors realise that a rock breaker need not only last the duration of a contract and then be discarded. This has misguided some to settle for cheap hammers that cost 20% less, but at the same time give them 40% less availability. Furukawa's, by comparison, have been running on many of our customer's sites for more than 10 years and will work all day every day.

"They are also comprehensively supported through ELB Equipment's dealer network that extends across southern Africa. Why buy breakers that are built to last the duration of just one contract when you can buy a Furukawa and complete many more," concludes Linton. ●



James Linton of ELB Equipment.

Furukawa Rock Breakers are designed for use in a wide range of applications including plant hire, high productivity mining applications, demolitions, as well as primary and secondary rock breaking applications.

The Furukawa range includes:

- Excavator-mounted hydraulic breakers
- Backhoe Loader-mounted hydraulic breakers
- Combination cutter crushers for demolition
- Lifting grabs
- Excavator mounted compactors.

BELOW: FXJ 275 rock breaker from Furukawa.



Latest crawler boom lift from France

In terms of versatile and adaptable access, nothing beats the crawler boom lift, which can cater for various ground conditions and workplace restrictions. Goscor Access Rental has just acquired its first Mygale 23 crawler boom lift from ATN Platforms of France, one of the most advanced of its kind available on the market today.

The Mygale 23 adds to Goscor Access Rental's existing fleet of Teupen crawler booms, which have seen great success locally, reports Sales Manager Marcus Gartside. Tracked crawler booms are also known as 'spider lifts', which is why ATN Platforms named its first crawler after the Mygale, a large and powerful spider related to the North American tarantula or South American bird spider.

This unit has a 23 m working height through a double articulated boom set-up, both of which are telescopic for compact storage, without sacrificing maximum reach. For up and over capability, 11 m horizontal outreach is achievable at a height of 11,25 m, with no impact on its 230 kg lift capacity.

Equipped with a powerful 12,5 kW Kubota engine, the Mygale 23 tackles slopes of up

to 32% with ease. It can lift to full height in under a minute, and offers a full 360° rotation of booms and 180° of the basket for pinpoint positioning – all of this in a compact package weighing under 3,5 t.

Safety features include load-and-tilt sensors, and automatic levelling via outriggers. In addition, the Mygale 23 offers a remote mobile control station, whereby the operator can drive the unit from outside the basket, restrictive 'slewing' (rotation) when in narrow outrigger mode, auxiliary emergency lowering from the platform and ground controls, and dual-speed controls.

Additional available from Goscor Access Rental includes Pifaf electric mast lifts, and a smaller Zebra 12 boom lift. The new Zebra 16 has just been added to the range as well, in both standard (without outriggers) and STAB platforms.



The Zebra 16 STAB is a 16 m articulated boom lift with a working height of 16.8 m, a 9.3 m horizontal outreach, 45% gradeability, a Kubota drive, and 40 cm ground clearance. A full-colour LCD diagnostic system, also incorporated on the Mygale 23, makes maintenance and fault-finding that much easier and faster. ●

Unveiling cab design

Tower crane manufacturer used Vertikal Days show in the UK to display for the first time its new cabin.

"The squared shape is new and ideal"; "It's very spacious and bright"; "Uses flat glass, to avoid distortion and be able to easily replace it if necessary."

These were some of the comments heard at the Vertikal Days show regarding Linden Comansa's new cab, shown to the public for the first time. The presence of this new design at the UK's most important show for the cranes & lifting business (Silverstone, May 24 and 25) was due a special request by Linden Comansa's dealer City Lifting.

"We already had the chance to see the prototype of the new cab at the beginning of the year in Linden Comansa's premises in Spain, along with other customers and dealers", says Trevor Jepson, owner of City Lifting.

"Our initial reaction was of surprise due to the absence of curved lines, quite common in the cab of most manufacturers. But we loved it right away, even before seeing the inside, which is very bright and spacious.

"We wanted to show it at Vertikal Days to see the reaction of our customers ourselves,



and the truth is that we are very satisfied as they were all delighted with this new cabin". ●



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New variable horsepower graders

Global construction equipment brand SDLG (Shandong Lingong Construction Machinery Co. Ltd.) has launched variable horsepower versions of two of its biggest selling motor graders for Middle Eastern and African markets.

The new G9190 & G9220 VHP (automatic variable horsepower) motor graders provide an automatic mode for transmission, allowing operators to shift seamlessly between manual to automatic transmission. This gives them greater control over the grading process while optimising fuel efficiency.

The finest grade

"The new VHP models give the operator greater control over the grading process, with the freedom to shift from manual to automatic transmission when they choose," says Shahir El Essawy, SDLG's business manager for Hub South. "They are also fitted with a piston pump hydraulic system that delivers the optimum oil flow to the hydraulic functions, regardless of engine speed. In this way, VHP allows the operator to concentrate on grading with greater precision for superior results, while the machine focuses fuel efficiency"

The standard versions of the G9190 & G9220 motor graders were launched in 2015 and have been well-received in the market. Just last year, SDLG sold 28 G9220s – as well as 30 LG958L wheel loaders – to a Saudi Arabian customer to facilitate a large-scale road maintenance initiative.

The graders are well-balanced with good traction and excellent blade down force. The G9190 features a blade width of 13 feet with a blade pull of 9 990 kg, while the G9220 has a blade width of 14 feet with a blade pull of 10 530 kg.



The unique SDLG circle drive system comes with three support shoes and non-greasing slide bushings for better grading and easier maintenance. SDLG graders also feature an asymmetric drawbar ball stud that can be rotated 180° to keep the drawbar in horizontal level position – vital when performing fine grading.

The cab is designed to offer exceptional all-round visibility; with easy-to-use industry-standard controls, comfortable seating and air conditioning as standard.

What's more, maintenance access is made easy with large side and rear doors. Greasing points are quickly accessible for efficient daily maintenance.

"We are always looking for new ways to help our customers get the most out of their equipment," concludes El Essawy. "By taking some of our most popular machines and improving fuel-efficiency and operator control, we are demonstrating our continued commitment to those customers." ●

Best in class crawler excavator

HPE Africa's new 20 Ton class crawler excavator in the Hyundai R200LC-9S – which was recently launched in South Africa, offers the best in its class in fuel efficiency, improved productivity and reduced maintenance requirements.

The Hyundai R200LC-9S excavator - with an operating weight of 19,1 Tons and a heavy duty 0,90 m³ bucket – has been specifically designed to meet the demanding requirements of the plant hire, civil engineering, construction, agriculture and scrap handling industries.

According to Alex Ackron, managing director of HPE Africa, "Feedback from

HPE Africa has recently launched the new fuel efficient Hyundai R200LC-9S crawler excavator series in South Africa.

the local market highlighted a demand for fuel efficient equipment and Hyundai Construction Equipment has responded to this need, with the launch of the new R200LC-9S. Due to improved fuel efficiency, when compared to competitors' offerings in this class, customers can save up to 80% of their capital expenditure in diesel costs over 12 000 hours of a machine's service.

"Users are also impressed with the long undercarriage design, which ensures greater stability in arduous operating conditions. Customers also appreciate the low maintenance requirements of this series and are impressed by the Hyundai factory offering of a two year/3 000 hour warranty as standard on the series."

As part of the launch process, HPE Africa placed an R200LC-9S demonstration unit on site with one of the largest fleet owners of water and earth moving equipment in South Africa. Over a 14 day period, the machine built gravel stockpiles and loaded this material into tipper trucks. The operator

commented that he was impressed with the machine's speed and smooth operation. Fuel consumption was carefully monitored by HPE Africa's technical staff and verified by the client. At the end of this 14 day period, the R200LC-9S achieved an average fuel consumption significantly below the expected nine litres an hour.

The R200LC-9S excavator also comes standard with Hyundai's computer aided power optimisation (CAPO) system, which allows the operator to select preferences for boom or swing priority, power mode and optional work tools. Variable operating modes are : P – Power Max mode, which maximises machine speed and power; S – standard mode, which provides a reduced, fixed rpm and E – economy mode, which provides precise hydraulic flow and engine power based on load demand.

HPE Africa - exclusive distributors in Southern Africa for Hyundai Construction Equipment – distributes Hyundai wheel loaders, wheeled and tracked excavators, backhoe loaders and Skid Steer Loaders, as well as Doosan hydraulic hammers. It operates a countrywide network of a well-equipped spares and workshop outlets. ●



BUILDING TRUST with Scania used vehicles

The uncertainty associated with the purchase of a used-vehicle in especially the construction industry where it would have operated in harsh conditions before it was sold, is an inhibiting factor for potential buyers.

Construction Customers that are in the market to buy a used vehicle often ask themselves how to avoid the pitfalls of buying second hand. The keyword is trust. Scania Used Vehicles alleviates any obstruction and hesitancy and offers trusted used vehicle solutions to customers.

Construction World spoke to Ronald Melville, National Used Vehicle Sales Manager at Scania South Africa about Scania's offering of a trusted partnership when purchasing a used vehicle for the construction sector.

When asked who would rather opt for a used vehicle, Melville explains that a used vehicle can be more economical for small and start-up construction operations and can be far more cost effective on the initial purchase.

In addition, he says, warranties and service plans can be provided, giving longevity and peace of mind. "You buy a Scania used vehicle for the same reasons you will buy a new one – built-in toughness, durability, reliability and low operating costs which all contribute to maximum uptime," maintains Melville.

In terms of the number of used vehicles sold, Melville says that in 2016 Scania sold approximately 65% and this number is climbing. "Before year-end I believe it will be around 75% to 80% as the trade-in ratio

seems to be getting higher every year as customers restructure rather than grow their fleets.

"There has been a steady growth in Used Vehicle uptake with the purpose of use in the construction sector," Melville states.

Achieving Scania Approved status

Melville explains that all Scania Approved vehicles need to have had a full repair and maintenance contract. "When a vehicle is traded in, it must be in a roadworthy condition, be in decent mechanical order and cosmetically clean before our workshops start the check and repair process," Melville elaborates.

The same specific requirements such as maximum uptime and optimal fuel consumption that a customer would expect when a new Scania is purchased, are qualitative points when a customer is in the market for a used vehicle – both play an important role in any business and Scania is renowned for this globally.

"Construction vehicles need maximum uptime, this is obtained by our thoroughly pre-inspected and maintained vehicles – when down-time does occur, we have our 24/7 Scania Assist on hand for any unforeseen inconveniences," he explains.

"In brief, Scania Approved status means that the customer gets peace of mind with the knowledge that no aftermarket parts were fitted to the vehicle. A Scania Approved vehicle has been thoroughly assessed and rated by our technicians – just as new ones are. Knowing that the trucks have been thoroughly checked by our experienced technicians, builds trust in what can be a very uncertain decision," he adds.

Melville says there is no major difference in warranty terms for a new or used vehicle. It is, however, dependant on the age of the



Ronald Melville, National Used Vehicle Sales Manager at Scania South Africa.

vehicle. Scania offers a Drive Line Warranty that is honoured provided the vehicle is serviced at a Scania approved centre.

Repair and maintenance (R&M) contracts are available on a used vehicle provided it has been on a R&M package before – or has a low mileage with a full service history. In addition, R&M contracts are determined by the mileage that the vehicle accumulates in a month, and the application that the vehicle will be used for. "The Scania repair and maintenance programme provides a comprehensive support package that's inclusive in our total solutions offering that is available to all construction customers wanting to buy a used vehicle."

Melville concludes: "Our solutions offering for used vehicles ensure that the construction customer can expect to minimise the costs of their operation and get the highest levels of uptime." ●



Scania Used Vehicles

Finance option

Melville explains that the finance option available for used vehicles is a Financial Lease which can be anything from 24 to 36 months depending on how hard the vehicle works in a month. "We do however prefer the vehicle to do no more than 12 0000 km within a single month."

SMART LEVELLING with two new laser levels

Bosch has introduced the concept of 'smart' levelling with its launch of the GCL 2-50 C (red laser technology) and GCL 2-50 CG Professional (green laser technology), which allows hands-free remote control via smartphone, in addition to a motorised mount for precise positioning of the laser lines.



► An innovative Bluetooth® connection means that these combi lasers can be controlled not only hands-free via a smartphone, but also remotely over longer distances. In addition, both combi lasers can be combined with the RM 3 Professional multifunctional mount. This motorised mount enables the laser lines to be precisely positioned, explains Sebastian Johannes, Bosch Measuring Tools Brand Manager.

"The GCL 2-50 CG Professional allows for supreme visibility, as well as an array of 'smart' functions to enhance its connectivity," Johannes comments. Features include horizontal and vertical laser lines, and two centred plumb points with optimal visibility.

Precise positioning of the laser lines around the plumb points is possible via motorised positioning with the optional RM 3 Professional, using an app or remote

control, or manual positioning with the RC2 Professional infrared remote control. This has the option of three available speeds, namely normal, fast, and step-by-step.

"You simply press and hold to rotate the tool, and then release button to stop the rotation," Johannes explains. He stresses it is important to point the device at the RM 3 when doing this, due to the infrared function.

While traditional green laser products used colour-conversion technology to generate the green laser beam from a red laser diode, Bosch's latest GCL line-up boasts a genuine green laser diode, which not only increases effectiveness and robustness, but offers the best visibility possible.

"The green laser light has 100% visibility by human eye, while red laser light only has about 24%," Johannes points out. This makes the GCL 2-50 CG Professional the best laser level for use in adverse light

conditions, compared to products based on red laser beam technology. The longer battery runtime also equates to reduced power consumption, as well as less heat emission, which extends the operational lifespan of the laser level.

The high visibility of the green horizontal and vertical laser lines ensures a working range of 20 m, without a receiver, while a working range of 50 m is possible with the optional LR 6 or LR 7 Professional receiver. A pendulum lock ensures safe transport, while there is an added benefit of a dual power source in the form of either 12 V-Li-ion battery or standard alkaline batteries.

The GCL 2-50 C has a working range of 20 m, increased to 50 m with an optional receiver, and an accuracy of $\pm 0,3$ mm/m. It features red laser beam technology, projecting horizontal and vertical laser lines, and two centred plumb points for optimal visibility. This laser level is exceptionally versatile to use, due to the addition of a rotating multifunctional mount for a variety of mounting possibilities.

"The user benefits associated with the connectivity in particular effectively means contactless control of all laser functions," Johannes highlights. This means an end to shaky laser lines, precision at all times, and full control even in hard-to-reach areas. An added advantage is three power settings, namely full visibility, balanced mode, or battery-saving mode, depending on the application at hand.

In addition, the motorised RM 3 means that the laser lines can be positioned with pinpoint accuracy wherever needed, even over longer distances. The RM 3, in turn, is powered by the battery pack of the GCL 2-50 C when attached, meaning that an independent power source is not required. Each foot of the RM 3 has a fine-adjustment rotational button for stability on uneven surfaces. Manual adjustment is also possible if required.

Dry-wall installation is made that much quicker due to a vertical alignment with a long overshoot of almost 360°. Interior finishing tasks such as transfer applications are enhanced due to easy positioning on given reference marks. A slope function with LED indication is ideal for installation of pipes, handrails, and staircase construction.

"The latest technological innovations from Bosch offer a complete laser-levelling solution for construction professionals; guaranteed to improve productivity and accuracy for most indoor levelling applications," Johannes concludes. ●

The green laser light has 100% visibility by the human eye.



100 YEARS OF EXCELLENCE

This year Rocla, one of South Africa's leading manufacturers of precast concrete products, celebrates 100 years of excellence in the supply of products to the infrastructure, building and construction industries.

The Infrastructure Specialist Group (ISG) was formed in 2013 when Rocla, Technicrete, and Ocon Brick were acquired by a consortium consisting of private equity firm Capitalworks, RMB Ventures, Pan African Group and senior executives within the companies. *Construction World* talked to Albert Weber, ISG's CEO why Rocla has survived for a 100 years.

What gives Rocla the longevity that it has had?

We are extremely proud to be a Southern African company. This fuels our devotion to the sustainable development of our region and its people. By ensuring that our infrastructure and high-quality products make a meaningful contribution to the lives of the people of Southern Africa, we continue to play our part in creating a better future.

Some things never change, like the rock-solid commitment of Rocla to supply the highest-quality products and service excellence. We understand our customers' requirements and we strive to deliver to their expectations.

What is Rocla's unique selling proposition?

Our extended footprint of manufacturing facilities in South Africa* as well as Botswana and Namibia position us well to deliver large volumes of product to our customers' demand. Furthermore our technical expertise and know-how gained over many years, enable us to create innovative new products of high standard. Our technical expertise allows us to assist clients with the selection of product range, processes, installation techniques as well as unique information requirements.

(*Rocla has factories in Gauteng, Polokwane, Nelspruit, Virginia, Newcastle, De Aar, Port Elizabeth and Cape Town)

What does the Rocla brand stand for?

Rocla has a proven track record of operational excellence and it delivers on its key promises of quality and product service. The brand has a high degree of respect for these offerings.

What portion of your sales is for customised precast products and what portion is for standard precast products?

Research and developments has always been a cornerstone of Rocla precast concrete since its inception. Rocla is one of the few companies that specialises in the design and development of high quality customised products for clients. Currently 10% of products manufactured are customised precast products – the balance is standard products. Our design division consist of six technical competent employees that include civil engineers, concrete technologists and draftsmen.

How important is quality and what standards do you adhere to?

Quality is an integral ingredient in our business. Rocla totally embraces, and is committed to, the principle of Total Quality Management. The company has a sophisticated Quality Management System which is considered key to everything the company stands for and everything it will do in future.

A brief history

- Rocla, through its association with Hume and Superconcrete, have been leaders in the manufacture and supply of concrete products since 1917.
- In 1957, Rocla, an Australian concrete pipe company entered the South African market with an operation in Welkom and funded by General Mining. The 'Rocla Process' was a manufacturing process of reinforced concrete pipes by compaction on a spindle known as the roller suspension method.
- In 1971, due to equity by General Mining in both Rocla and Superconcrete, the two companies were merged under the name Superocla. The name was later changed back to Rocla as we know it today.



Albert Weber, ISG's CEO.



The system is continuously monitored and upgraded to ensure its effectiveness. Rocla products carry the South African Bureau of Standards mark and completely adhere to the ISO 9001:2008 Quality Management System. The company is a member of the CMA (Concrete Manufacturers Association), and has actively contributed to the growth and development of the industry through its association with the forum.

How important is training and what kinds of training are offered?

Training is key to the sustainability and enhancement of our company. Rocla is committed to the empowerment of its staff in the workplace.

Training is conducted for safety, quality and technical. Since inception, Rocla has been committed to continue professional development within the concrete manufacturing industry. It has achieved this through the provision of seminars, practical training and educational visits.

In addition, Rocla provides training for external individuals through the 'Rocla Academy' where consulting engineers, civil engineers, architects, project managers and civil contractors are educated on the technical design, selection and installation of precast concrete pipes and culverts.

What is your operating philosophy?

Rocla has old fashioned values coupled with innovation and a real feel for the business. It offers value in terms of service excellence, innovation and product quality and is committed to deliver personalised service geared to meet the customers' requirements and needs.

What developments will there be at Rocla in the next few years?

In the years to come, Rocla will strive to enhance the current service offering and, with our customers, advance the boundaries of precast concrete through innovation, creativity and technology to improve the future. In addition, we will always explore opportunities in Africa to further enhance our footprint on the continent.



iMist applications include being used as an additive to dust mist systems, dust cannons and sprayers, and also for road-dust suppression.

Firefighting and dust suppression enhanced

Innovative surfactants developed by I-CAT boost the fire-extinguishing and dust-suppression capability and effectiveness of water. Known as iFire and iMist respectively, these new products are the end result of extensive research and development.

The macromolecules function as an active surface agent to lower the surface tension of water and other liquids, Lourens Jansen van Rensburg, Marketing Director, explains. The properties of the liquid in question are effectively manipulated in order to reduce the magnetic charge of the constituent particles, thereby reducing the surface tension.

"iFire is an ideal water-treatment agent to improve the wetting capability of water which, in turn, enhances its firefighting capability," Jansen van Rensburg stresses. It also results in a dramatic reduction in the quantity of water used, thereby contributing to the conservation of this scarce resource.

On the other hand, iMist results in water being adsorbed faster by substrates. This significantly improves the dust-suppression capabilities of water, as well as reducing the quantity of water needed for effective dust suppression.

The application of wet dust suppression requires the formation of liquid films to increase the adhesion of dust particles by means of hydrogen bonding. The resultant large surface area adsorbs on the dust particles spontaneously and efficiently. Applications include iMist being used as an additive to dust mist systems, dust cannons and sprayers, and also for road-dust suppression. ●

Rocla's innovation

An example of Rocla's innovation is the recent launch of the Rocla Thuthukisa Sanitation Initiative (TSI). Its 'Community Cast' system which has been established to empower local communities, entrepreneurs, contractors and SMME's to become manufacturers and suppliers of the most innovative and highest quality concrete toilet structures in Africa. Thuthukisa means 'to share' and it is with this philosophy in mind, that Rocla developed the 'Community Cast' toilet unit that can be simply manufactured and be ready for use within two weeks. The resulting waste material can be recycled into practical items for everyday use.

A recent example of innovation through collaboration was the development of a precast solution through the use of steel components for an international diamond mine based in Gauteng. Apart from designing and manufacturing precast components the project also required the development of underground installation manual and lifting equipment with handling equipment specialist Manitou. Research was conducted as far away as the Codelco Mine in Chile. While the project is still in the feasibility stage, it showcased Rocla's ability to develop and manufacture a bespoke and unique solution to stringent client requirements.

Moving ahead in the field of hybrid technology

Polyurethane and silicone sealants or adhesives deliver significant adhesion, good movement capability and durability. However, these high-performance products have some limitations. Through research and technological advancement in hybrid technology, Den Braven has now modified these and produced a range of new high performance sealants and adhesives.



Michael Berg, national sales and marketing manager at Den Braven.

Michael Berg, national sales and marketing manager at Den Braven, points out that new technology, silylated urethane-based hybrid adhesives, brings with it exceptional performance characteristics beyond those of conventional polyurethane sealants.

"The new breed adhesives have increased chemical resistance as well as high and instant tack properties" says Berg. "Hybrid polymers have better weathering characteristics than conventional polyurethane sealants. These new generation hybrid sealants and adhesives provide better adhesion, abrasion resistance and low temperature extrudability," Berg adds.

Sustainability and the harmful effect of VOCs are top of mind in the built environment today and Den Braven's Hybrid product range has a very low VOC content allowing for conformation to the South African Green Building Council Standards.

Den Braven recently held a hands-on workshop at their head office in Randburg, Gauteng, to highlight and educate their clients from many different market sectors on the advantages of hybrid technology.

Some of the products demonstrated at the workshop were:

- Hybriflex-540 for sealing building joints: expansion and connection joint sealing to precast concrete, brickwork and masonry as well as for weather and perimeter sealing.
- Fire Protect (FP) Hybrid Sealant: provides up to four hours of fire resistance in linear and horizontal joints between walls and floors or ceilings to contribute to the overall fire protection design
- Crystalflex-530: a transparent adhesive for interior use on many different construction and building applications.
- Mirrorfix-MS: especially developed for bonding mirrors and decorative and acoustic tiles on all classic building substrates.
- High Tack: a unique adhesive with extremely high initial grab bond for use on many building materials without the use of clamps and or fixing tape. ●

In April 2016 Rocla's locally manufactured concrete cabins for use at photovoltaic farms located in the Northern Cape and the Free State, were awarded the Concrete Manufacturers Association (CMA) Award for Excellence for the Innovation Category.

Rocla's technical executive, Gerhard Rossouw, an engineer with 40 years design and application experience said: "We work with municipal and consulting engineers regularly to develop solutions for projects that are not only cost efficient but that are safe as well. Rocla, for example, designed and manufactured many of the precast poles required by Eskom, for their electrification projects across the country in the 1990s. A large spun concrete pole for 132 kV distribution networks and double poles for specific power transmission requirements were also manufactured and designed by Rocla". ●



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