

# Construction WORLD

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## MAMMOTH EXCAVATION

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**Overcoming challenges at the BALLITO INTERCHANGE**

**The quarrying industry's PUSH FOR AUTONOMY**

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## 22 COVER STORY

Franki Africa has dominated the geotechnical industry in the plethora of major developments that have been taking place in Sandton in the recent past. Perhaps the largest basement project undertaken ever in South Africa, the mammoth 600 000 m<sup>3</sup> excavation and 15 500 m<sup>2</sup> of lateral support basement for the new Discovery head office, has been a prime example not only of Franki's ability to work under pressure, but also to find the right solution in the face of challenging geological conditions.

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# EDITOR'S

## COMMENT



Earlier this year I alluded to the '360° business-to-business publishing solution' that will benefit both our advertisers and readers.

### What is the 360° business-to-business publishing solution?

Apart from the print edition that reaches a carefully managed target audience every month, the *Construction World* offering also includes:

#### [Constructionworldmagazine.co.za](http://Constructionworldmagazine.co.za)

With its rapidly increasing unique visitors since its launch in March 2015, [www.constructionworldmagazine.co.za](http://www.constructionworldmagazine.co.za), is a valuable extension to the conventional printed *Construction World* offering. Its offering is two-fold: the online edition of the current magazine and a fully-fledged website.

#### Online edition

Those who do not receive the physical magazine can read the magazine online. This is an online replica of the magazine with enhanced online functionality. It is powered by Flipping-Book Publisher, a software application that allows the user to turn pages, zoom in, print and email articles. This version of the magazine is especially popular with readers who do not receive or do not want to wait for the latest issue of *Construction World* in the mail.

All advertisers in the print edition of the

magazine receive a hyperlink in the online version to their websites.

#### Website

The website, with the sections Marketplace, Environment & Sustainability, Property, Projects & Contracts, Equipment and Products & Services, is updated daily. It carries up-to-date news, in-depth articles, product and equipment announcements and project news. This reaches a wider audience than the print edition, but has an equally targeted audience – a new market that does not always have the time to read the magazine or who does not necessarily receive the magazine. This is beneficial to both parties in the market that *Construction World* serves: advertisers who use the brand as a vehicle to reach a targeted market, and readers who receive targeted content.

News and announcements are shared with our large Twitter and LinkedIn following.

#### eConstruction World

*Construction World* has a growing mailing list (in excess of 4 000) that receive our bi-monthly *eConstruction World* newsletter. It informs our targeted readership of news relevant to their industry.

The newsletter directs recipients to the print edition and the website. It is therefore a very targeted advertising and editorial vehicle.

#### Construction World's Best Project Awards

*Construction World* hosts its prestigious Best Projects Awards annually, now in its 14<sup>th</sup> year. This is the only award in South Africa that recognises excellence across the entire construction industry (civil, building, professional services, and specialist contractors) and ensures that projects are not only celebrated by the entrants' own institutions, but receive far wider appreciation.

The December issue is dedicated to the winners and entrants. As such it is an overview of activity in the construction world for that year and is the ideal vehicle to associate your brand with excellence.

(The deadline for entries is 11 September – visit [www.constructionworldmagazine.co.za](http://www.constructionworldmagazine.co.za) for information on how to enter).

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# Key to **BUILDING** within **BUDGET**

Doing the due diligence Building Cost Analysis and choosing the right building contractor are key to building a new home within budget, and without nasty surprises.

“The value of a proper budget combined with the expertise, efficiency and materials supply contacts of a professional contractor cannot be overemphasized,” stresses Mohau Mphomela, executive director of the Master Builders Association North (MBA North).

“It is not uncommon for consumers to find themselves over budget on a building project. In fact it happens so frequently that friends at the braai-side will joke about doubling the estimated costs and taking out a loan to make sure the job is finished. At the crux of it is a poor understanding of the costs involved in building projects. Building costs should take into account, amongst others, variables such as labour, material, equipment, building codes, job-site conditions and standard markups applicable to the area.”

Going over budget can place the homeowner in a financial predicament. It comes with the risk of having their building bond frozen by their bank until the extra money is furnished, lead to the building project grinding to a halt and the contractor walking off site. On the flip side, having the costs of a building project accurately calculated through a Business Costs Analysis before starting the project can save thousands of rands.

A Building Costs Analysis, says Mphomela, is the only financial risk mitigation tool available in the country. “If you haven’t had your budget drawn up or committed to by a registered builder, you can be almost sure that all sorts of costs have been overlooked. For instance, have the costs of connecting wires and plumbing points or fittings and fixtures been considered?”

## Hidden costs

Aside from including the full costs of labour and materials, a Building Costs Analysis will help to reveal hidden costs associated with a build as well as enable the homeowner to compare apples with apples when considering different contractors as their markups will not be included. Additionally, a Building Costs Analysis will help to ensure that contractors have an accurate picture of the costs involved in the project and prevent them from under quoting in order to secure a job.

A Building Costs Analysis affords the homeowner with a crucial level of protection against being over charged and going over budget. It is also a helpful tool for them to use for project managing their own building process.

With a plethora of consultants and contractors offering Building Costs Analyses as a service, Mphomela cautions homeowners against picking just anybody.

“Check their credentials, ensure that they are registered with the NHBRC, and a member of the Master Builders Association. Also remember that a Building Costs Analysis does in no way obligate you to use the same contractor to undertake the building project,” he advises.

Choosing the right building contract to undertake the project is the next important step towards getting the job done properly, soundly and within budget. Consumers are offered some degree of protection by the NHBRC and their financial institution if the project is financed via a Building Bond.

All contractors who work in the residential market must be registered with the NHBRC, as should the project itself. The NHBRC though, only provides ‘insurance’ for defects in the work up to the value

of R500 000. If the project is financed via a Building Bond, the bank’s inspectors will visit the site five to six times during the project to check that work is adequately completed before releasing the funds to the homeowner to pay the contractor. The reality is however that even if a contract has been entered into and signed, the homeowner is alone in dispute resolution and arbitration as neither the bank nor the NHBRC will get involved.

## The right contractor

Mphomela recommends choosing a contractor who is a member of the Master Builders Association North for additional peace of mind.

“Members are continuously vetted by the Master Builders Association North which provides stringent mechanisms for ensuring homeowner’s satisfaction and protection. Our members are expected to satisfy the building requirements of their clients and are held accountable to the association’s code of ethics.

“This means that homeowners can expect them to stick to the budget and deliver on their promises. In the unlikely event that they don’t, the Master Builders Association has a dispute resolution and complaints forum for people to turn to,” he explains.

“Building your dream home should be an exciting experience. You should have to worry that the project will end up costing more than you budgeted for, or can afford. Knowing upfront what the costs will be, instead of relying on optimistic costings, and choosing a qualified and responsible contractor will help to ensure that you meet your budget and see your dream home come to fruition,” concludes Mphomela.

The Master Builders Association North represents contractors and employers operating in the building industry in Gauteng, North West, Mpumalanga and Limpopo. The association provides support services on industrial and labour relations matters; legal and contractual matter; mediation and dispute resolution, and skills development and training programmes. A list of member contractors is available on the association’s website. [▶](#)

*“If you haven’t had your budget drawn up or committed to by a registered builder, you can be almost sure that all sorts of costs have been overlooked. For instance, have the costs of connecting wires and plumbing points or fittings and fixtures been considered?”*

**Mohau Mphomela, executive director of the Master Builders Association North.**





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# STRATEGIC BOARD restructure



**Morné Wilken, CEO of Attacq.**

Attacq recently announced a strategic restructure of its board with Louis van der Watt becoming a non-executive director of the company, having previously acted as an executive director. In addition, Brett Nagle joins the board as non-executive director, representing significant Attacq shareholder Royal Bafokeng Holdings and Wilhelm Nauta is now considered to be an independent non-executive director.



**Brett Nagle joins the board as non-executive director, representing significant Attacq shareholder Royal Bafokeng Holdings.**



**Wilhelm Nauta, independent non-executive director.**

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> These changes to its board enhance Attacq's corporate governance and leadership structure.

Morné Wilken, CEO of Attacq, comments: "Our new board structure furthers our commitment to excellent corporate governance and compliance, and ensures our strong position for the future."

As part of the Attacq listing on the JSE in October 2013, Van der Watt, who is CEO of Atterbury Property Holdings, committed to serve as an executive director of Attacq until 30 June 2015.

Wilken says: "Van der Watt played a central role in the growth and listing of Attacq on the JSE. We thank him for his invaluable contribution to establishing Attacq and his commitment to ensuring continuity of management and the transfer of knowledge and skills in an executive capacity during our early years."

Joining the Attacq board from 1 July 2015, Brett Nagle is a chartered accountant with extensive experience in investment banking, corporate finance and mining. Nagle is the head of investments at RBH and also serves as a non-executive director of Impala Platinum.

"We welcome Nagle and believe he will add significant value to Attacq," says Wilken.

In addition, Wilken notes that Attacq's board now considers Wilhelm Nauta an independent non-executive director, because

he is no longer a representative of RBH.

Attacq is a leading JSE-listed property capital growth fund. Its business has two focus areas: investments and developments. Its investments comprise completed buildings held directly and indirectly.

Its developments comprise land, greenfields development of land or brownfields development by refurbishment of existing buildings. Attacq's investments provide stable income and balance sheet strength to responsibly secure and fund high-growth opportunities within developments.

## Impressive pipeline

Attacq's assets comprise landmark commercial and retail property assets and developments. Its portfolio of properties is geographically diverse across South Africa and includes a growing representation of international investments in sub-Saharan Africa with a 31,25% shareholding in Att Africa, and exposure to property investment in Germany, Switzerland and the United Kingdom via a strategic 45,4% shareholding in JSE-listed MAS Real Estate Inc.

Attacq's prestigious Waterfall development continues to expand and provides Attacq with an attractive 15 year pipeline. The new CBD of Waterfall, Waterfall City would be anchored by the 131 000 m<sup>2</sup> Mall of Africa due to open in April 2016. A number of corporates have already committed to

Waterfall, including Massmart, PwC, Novartis, Cummins, Schneider, Cipla, Honda, Cell C, Group Five, Premier Foods, Covidien, Westcon, Altech and Servest.

"The fantastic location of Waterfall and our ability to provide the space for corporates to consolidate their premises into a single regional office has been a strong driver behind the growth of Waterfall's office portfolio," says Wilken. <





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## MOOTED TRAFFIC REGULATIONS OBJECTIONABLE

Associations representing the country's largest construction material suppliers have formally objected to draft amendments to the National Road Traffic Act dealing with renewal of driving licence cards, persons carried on goods vehicles, speed limits and the prohibition of large vehicles travelling on public roads during certain times of the working day.

The Aggregate and Sand Producers Association of Southern Africa (Aspasa) and Southern Africa Readymix Association (Sarma), who together account for far more than 50% of the building materials used in this country, say that the draft changes gazetted in May this year will have a negative impact on individual businesses, as well as the entire construction industry and the country's economy.

According to Nico Pienaar, who serves as a director of both associations, says that the amendments mooted by the Department of Transport will undermine the Government's National Development Plan (NDP) as it will inhibit growth in the main sectors where jobs can be created, namely, mining, manufacturing and construction. In some instances it will further corruption and encourage dishonesty.

### Heart of the problem

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In terms of the objection, Draft Regulation 107D which requires applicants to be evaluated and given a practical test by an examiner is not feasible and may open a hornets' nest of problems including the encouragement of corruption and misuse of power. It is suggested rather that attention be paid to ensuring that cards are not fake and the cloning and forgery of licences is prevented.

The Draft Regulation 247 dealing with people being carried in goods vehicles also needs to be relooked according to the objection. The associations agree with the regulations as far as heavy type trucks are concerned with limited cab space, but disagree strongly if the same legislation is meant to cover lighter vehicles. It also seeks clarity on how occupants should be seated on the rear of vehicles and seeks better definitions of 'Scope of

... continued on page 10



## A NEW LEADER FOR A NEW WORLD



LafargeHolcim officially launched the new Group around the world and announced key elements of its ambitions for the future. Following the successful completion of the merger between Lafarge and Holcim and the listing of the new LafargeHolcim shares in Zurich and Paris, the new Group will now work towards creating the highest performing company in the building materials industry.

**>** LafargeHolcim CEO Eric Olsen says: "Now as LafargeHolcim, we will step into the next phase of our transformation to become the leader in every respect – a company that has a positive impact on the world and can make a real difference for its customers, its employees, its shareholders and society."

### New ambition supported by five key focus areas

The company is initiating a strategic transformation by building on the best of both Lafarge and Holcim. The Group will now focus on five areas in the first integration phase:

- Synergies: delivering on EUR1,4-billion synergy target within three years
- Capital allocation: rigorous approach to capital allocation and overall reduction of capital spending
- Commercial transformation: creating differentiation through innovative products and solutions
- Integration: creating one new group and culture
- Health and Safety: putting Health and Safety at the center of the organisation.

LafargeHolcim will be organised along a new operating model oriented to serve the local customers, while leveraging the Group's size, footprint, and capabilities at global scale. It combines empowered countries, regional management platforms and expertise-driven group functions.

LafargeHolcim will present the financial results of Lafarge and Holcim as standalone companies for the first half of this year on 29 July 2015. The first combined interim results of the new Group will be presented for the 9 months results of 2015. ■

### About LafargeHolcim

With a well-balanced presence in 90 countries and a focus on cement, aggregates and concrete, LafargeHolcim (SIX Swiss Exchange, Euronext Paris: LHN) is the world leader in the building materials industry. The Group has 115 000 employees around the world and combined net sales of CHF33-billion (EUR27-billion) in 2014. LafargeHolcim is the industry benchmark in R&D and serves from the individual home-builder to the largest and most complex project with the widest range of value-adding products, innovative services and comprehensive building solutions. With a commitment to drive sustainable solutions for better building and infrastructure and to contribute to a higher quality of life, the Group is best positioned to meet the challenges of increasing urbanisation.





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# CREATING LEARNING POSSIBILITIES

Leading construction materials company AfriSam, in partnership with the Mining Qualification Authority (MQA) and Media Works, has joined forces with community members in Rustenburg to create learning possibilities through the Adult Basic Education and Training (ABET) Programme.

On 29 May 2015, AfriSam honoured community members who successfully completed the ABET programme at a ceremony held at Tlhage Primary School in Rustenburg. Out of the 24 community members who started training in January, 11 successfully graduated and were awarded with certificates by AfriSam. The graduates also received a stipend from MQA, a Sector Education and Training Authority (SETA), responsible for the administration of skills development programmes for the mining and minerals sector in South Africa.

Learning and development manager at AfriSam, Johan du Toit said, "We hope that the graduates are more than motivated and encouraged to continue learning, with the vision of a better future for themselves and their communities. Our role as AfriSam is to create possibilities and uphold our legacy of building communities by making it possible for our people to realise their dreams for the future benefit of our country."

AfriSam's commitment to the programme is in line with the company's overall community involvement mission, which is to understand the needs of society and communities in areas where it does business, and make meaningful and sustainable contributions to their upliftment.

The company is involved in various educational projects nationwide, with the objective of empowering and equipping communities with the knowledge and skills, as well as providing them with the tools and facilities to become self-reliant and sustainable.

Traditional Councillor of the Royal Bafokeng Nation, Khutsafalo Tsebe said, "The Royal Bafokeng Nation is proud of AfriSam's commitment and passion towards the development of education for our people. Education is the key to success, and our mission and vision as the Bafokeng Nation is to invest in upgrading the standard of our country's education. We thank AfriSam for joining us in this mission, and we hope they keep up this excellent standard."

The ABET programme has also been extended to KwaZulu-Natal where 62 community members enrolled for training in January, 59 successfully graduated and were awarded with certificates by AfriSam. ❏



Smiling faces all around from the 2015 ABET graduates.



ABET Programme top learner Goitseona Kwele is congratulated by community leader Martin Mothata, Tlhage Primary School principal David Molefe, and AfriSam Rustenburg branch manager, Gerhard Maree.

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Continued from page 8...

employment' as outlined by the regulation. How people may be carried and who may be carried needs to be spelled out.

Regulation 292 in which speed limits will be reduced to 40 km/h in urban areas, 80 km/h outside urban and 100 km/h on highways where they pass through urban areas is also being challenged. According to the objection heavy vehicles do not operate within their optimal efficiency at 40 km/h



with a load and tend to overheat. In addition the time taken to travel over distances will be much increased and will require more vehicles to be put on the road in order to make the same amount of deliveries. In addition they remind the Department of Transport that speed limits are not properly enforced on our roads at present and that decreasing the speed limits will have no change on road deaths.

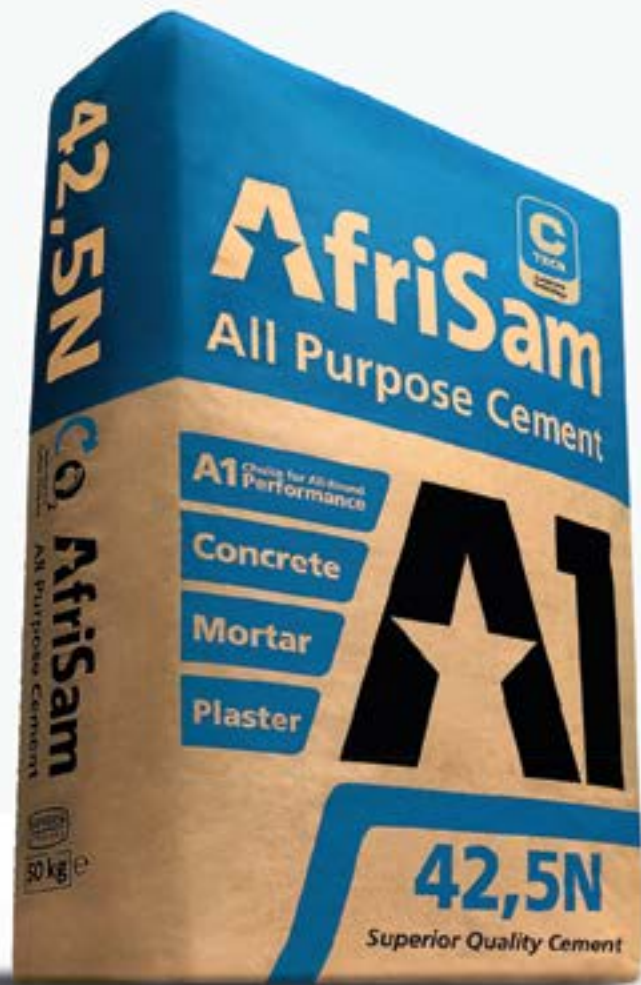
## After-hours ban

In terms of Draft Regulation 318A, in which vehicles with a gross mass of more than 9 000 kg may not operate in urban areas at peak times during week days, Aspasa and Sarma caution strongly against this regulation being passed as it will have a serious effect on both industries and will negatively impact infrastructure development.

Among others, building material deliveries need to be scheduled in work hours when labour forces are present and the feasibility of smaller trucks is limited as many more trucks will need to be put on the road. In addition, large trucks that are accidentally caught in the curfew time will have to pull over and this will create even bigger problems as large parking areas will be needed. Transport costs will increase dramatically and this will push up the price of construction. Readymix concrete has a "shelf time of +- 3 hours while in the back of the truck.

Nico concludes that businesses will suffer serious financial losses as a result of these regulations being passed and has strongly urged the Department of Transport to revise the regulations so that they are in line with the NDP. "We are happy to work with Government and law enforcers to make our roads safer without leading to the detriment of any person, company or the economy as a whole." ❏





HARD FACT #5 OF 6:

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## BUSINESS LAUNCHED IN SUB-SAHARAN AFRICA

WorleyParsons, one of South Africa's largest engineering contractors, launched its new global advisory business, Advisian, into its local South African structure in October 2014.

➤ Advisian provides high-level strategic and management consulting services and has been supported by the strong engineering and technical expertise that resided within the WorleyParsons group. Building on from this, WorleyParsons recently announced further changes to enhance the Advisian offering, by formally transitioning their technical consultants and industry specialists into the Advisian business.

The new entity is based on a successful model already well established in Australia, Asia, the Americas, Europe and the Middle East.

Advisian in sub-Saharan Africa will work alongside the existing business units of Minerals, Metals & Chemicals (MM&C); Hydrocarbons, Resource Infrastructure, Power (HRIP); Public Infrastructure (PI); and Improve.

Advisian's Global CEO, Dennis Finn, recruited from consulting firm PwC, explained that "Advisian's main point of difference is its ability to offer expert strategic and management advisory services coupled with broader technical engineering consulting capabilities. This is all backed by real-world experience across a wide range of industries and asset portfolios. We believe we are now the first truly global consulting advisory business to be able to provide this integrated offering to our clients".

The local Advisian business is led by regional executive manager, Adam Boughton, who has been with the RSA operation for the past two years. Initially Boughton led the Rail Department and more recently, the Resource Infrastructure Division of HRIP. Prior to his move to Africa, Boughton spent a number of years working within the Group's Australian business.

"Advisian will be a strong driver of growth in our African operations," said Boughton. "We have established local teams with significant experience across all engineering sectors which are supported by our global capabilities. Advisian will focus on harnessing this expertise to provide our clients with access to a world-best capability that will deliver significant value to their businesses. All of our specialist capabilities are backed by credible, full-range, project delivery experience."

Advisian can be engaged at any time of the project lifecycle, either in a stand-alone manner or as part of the overall project, adding value from the early phases of project development through to decommissioning and post-closure. Consulting services include Strategic and Management Consulting Services (such as strategic decision making to investment portfolio optimisation); Mining Studies; Transportation; Ports, Marine and Terminals; Envi-



The local Advisian business is led by regional executive manager, Adam Boughton.

ronmental and Social Services; Restoration Services; Power Advisory; Master Planning and Geotechnical Sciences.

WorleyParsons sub-Saharan Africa business grew rapidly through the acquisition of TWP in 2013 and has been undergoing a period of integration with the existing African business. With this integration drawing to a close, Boughton says the timing was perfect to introduce Advisian as a dedicated strategic, management and technical consulting business line. ■

## CLIMATE GOALS NOTED

Atlas Copco, a leading provider of sustainable productivity solutions, has been recognised by the United Nations at the agency's major conference on climate change for the Group's goals to cut carbon dioxide from its products and operations.

➤ The UN hosted its Business and Climate Summit in Paris, France, a unique forum for business and government leaders to demonstrate innovative and ambitious strategies for climate change. This summit



plays an important role ahead of the UN Climate Change Conference in December 2015 because it will identify solutions with potential for global impact and forward-looking strategies needed for effective change. Atlas Copco's goals to impact emissions through innovative energy-efficient products as well as by decreasing the footprint of its operations are now being recognised by the UN.

"A small carbon footprint is the sign of big innovation, and the biggest impact we can make is by creating energy-efficient products," said Mala Chakraborti, Atlas Copco's vice president corporate responsibility. "We are honoured that the UN is highlighting our environmental targets which drive our business, create operational excellence and reduce the impact on the environment."

Atlas Copco's innovative, energy-saving products include its variable-speed compressors, a technology that the Group pioneered in 1994 that enables compressors to run only at the speed necessary, cutting energy consumption.

In 2013, Atlas Copco launched the patented VSD+ technology, which cuts energy use by more than half compared with traditional compressors. Another example is within the Group's road construction equipment, where the new rollers cut fuel consumption and CO<sub>2</sub> emissions by ensuring that only the amount of power necessary at any given point is used.

Earlier this year, Atlas Copco was recognised as one of the world's most sustainable companies in the annual Global 100 list. The list, presented at the World Economic Forum in Davos, Switzerland, ranks companies that prove they are increasing productivity while using less resources. Atlas Copco is ranked 23<sup>rd</sup> overall, up from 46<sup>th</sup> last year, and is number one in the machinery industry. ■





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# ENDING ON HIGH NOTE

The fourth edition of the Architectural Futsal Tournament ended on an exciting high with SAOTA taking the top spot from former two-time champions, VIVID Architects.

> Corobrik, Hans Grohe and Prominent Paint are sponsors of this competitive yet friendly football league, which allows a maximum of 10 teams per league with five players a side, and five reserves.

Tournament organiser, Bruno Lopes of KMH Architects, explained that the event is open to all architectural firms, permitted they have at least one woman per team. However, the limited spaces are quickly snapped up by eager architects looking to compete.

Commenting on the formation of the league, Lopes said he was looking to create a platform for fun socialising with a competitive edge.

“Football was an automatic choice since it’s the most viewed sport in the world,” said Lopes. “My thought was to name it Futsal after the Brazilian Futsal league, a modified form of soccer placed with five players per side. The only difference is that we play on an outdoor pitch.”

The tournament follows a round-robin format with teams playing 15 minutes per half. “It’s a great way for players and supporters to socialise and network with architects from other firms and industry suppliers,” explained Lopes. The teams meet on Fridays at Hellenic Club, Greenpoint in Cape Town for three months of the year.

Werner Oelofse, Corobrik’s Architectural Representative, explained that each team contributed R1 500 which went towards the final prize money. “Corobrik came on as sponsors for final event prizes in 2014 and have continued their relationship this year,” explained Oelofse.

For the winners, Corobrik sponsored 10 tickets to a Super Rugby match at Newlands, in the Corobrik Suite, as well as funds for a bar tab for the final event day. Corobrik also sponsored one third of the venue fees and energy bars for the Corobrik-hosted game days.

“The event attracts architects, friends and family and is a really fun, social event,” said Oelofse. “Although the matches can get very intense and competitive, we are all friends at the end. It really allows architectural firms to socialise and make long-lasting connections while building team spirit.”

Kean Pearce of VIVID Architects said the level of competition has increased year-on-year. “As the teams get accustomed to the rules and skills increase, the competition gets stronger,” said Pearce. Echoing Oelofse’s sentiment, Pearce said the friendly competition formed wonderful camaraderie between firms.

“It’s great to get out of the office on a Friday afternoon and compete against people from other practices that are in the same professional field, which would otherwise never happen.” Enslin Joubert from this year’s winning team, SAOTA, agreed that the competition this year was fierce. <



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Pictured at the prize giving are:

**Back row:** Stefan Antoni, Werner Oelofse, Rem Maraga-Tshivhase, Nicholas Jackson, Wade Nelsen, Enslin Joubert, Leigh Daniels, Nicolai Kotze, Chad Brander, Lauren Lottering, Moegamat Sambo, and Theresa Brander.

**Front row:** Thaaabe Rambina, Duke Williams, William Neli, Melissa de Freitas, and Phillipe Fouche.



**VIVID Architects was placed second.**

**Standing:** Nic Cloete, Marcus van’t Hof, Brian Cotzee, Werner Oelofse of Corobrik, Ansel Engel, Botha Pretorius, and Kean Pearce.

**Sitting:** Matthew Dasneves, Clare Grindrod, Peter Bruyns, and Nomfundo Dlamini.



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# 2 BEST PROJECTS 15

## CALL FOR ENTRIES

First held in 2002, *Construction World's* Best Projects showcases excellence in the South African building, civil engineering and project management sectors. 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.

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### **A1** Civil Engineering Contractors

#### Prerequisites for entries

- Only South African construction and civil projects.
- 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 A1

- Construction innovation technology
- Corporate social investment
- Design innovation
- Environmental impact consideration
- Health and safety
- Quantifiable time, cost and quality
- Risk management

### **A2** Building Contractors

#### Prerequisites for entries

- Only South African construction and civil projects.
- 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 A2

- Construction innovation technology
- Corporate social investment
- Design innovation
- Environmental impact consideration
- Health and safety
- Quantifiable time, cost and quality
- Risk management

### **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.

#### Criteria for category A3 (As per category A1 and A2)

### **B** Specialist Contractors or Suppliers

#### Prerequisites for entries

- Only South African construction and civil projects.
- 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

### 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.

### Awards evening

The awards evening, in the form of a cocktail function, will be held on **Wednesday, 4 November 2015** at the Royal Johannesburg and Kensington Golf Club, Johannesburg.





## Professional Services\*

### Prerequisites for entries

- Only South African construction and civil projects.
- 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 C

- Construction innovation technology
- Corporate social investment
- Design
- Environmental impact consideration
- Health and safety
- Quantifiable time cost and quality
- Risk management

\*An award for both consulting engineering AND architects will be made.



## Public Private Partnerships

### Prerequisites for entries

- Only South African construction and civil projects
- 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 D

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

### Submitting entries

- Each entry must be accompanied by the completed entry form; available on [www.constructionworldmagazine.co.za](http://www.constructionworldmagazine.co.za) or by requesting it from [constr@crowm.co.za](mailto: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.
- The written submission must be accompanied by up to six high resolution photographs with applicable captions.
- 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.



## 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
- 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

### Criteria for category E

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

### Judging

A panel of independent judges from the construction industry has been appointed. They are Trueman Goba, chairman of Hatch Goba; Naude Klopper, former president of Building Industries Federation of SA; and Rob Newberry, managing director of Newberry Development (past president of the Chartered Institute of Building).

Each criterion as set out for the various categories will be scored out of 10. (10 being the highest score and one being the lowest). **It is VERY important that entries address the criteria for the particular category it is entering. Not every criterion may be applicable to the contract and obviously need not be addressed.**

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

### Deadlines

Deadline for entries is **Friday, 11 September 2015** at 17:00.

### Contact

For further information contact the editor, Wilhelm du Plessis on 011-622-4770 or [constr@crowm.co.za](mailto:constr@crowm.co.za)

### Main sponsor:



# Boost to metro's FRESH WATER SUPPLY

An innovative system to utilise return effluent from the Cape Recife Waste Water Treatment Works (WWTW), designed by leading local firm, AfriCoast Consulting Engineers, will significantly increase the water available for industrial and irrigation use – and, in turn, reduce demand on Port Elizabeth's precious fresh water supply.

**>** Return effluent is treated, purified sewage water that, instead of being released back into nature or the ocean, is returned for industrial utilisation, irrigation and other uses. The water quality conforms to standards set by the Department of Water Affairs.

AfriCoast Consulting Engineers project manager Gerrie van de Merwe said the firm's professional responsibilities, aside from construction monitoring and project management, include "the physical designs of the pump station, rising main, balancing reservoir, gravity irrigation feeder pipeline, irrigation reticulation systems and measurement of usage.

"Cape Recife WWTW's upgrade is currently under design. Once completed, the capacity of the treatment works will increase from a current maximum daily production

of treated effluent of around 9 megalitres to a daily average of 18 megalitres, effectively meeting the demand for reclaimed irrigation water," he said.

"Currently, gardens and sports fields across the city are being irrigated with expensive, potable (drinking) water – an invaluable resource in the water-scarce Nelson Mandela Bay Metropolitan area. Borehole water is used to augment the supply of irrigation water, but that has negative environmental outcomes, including lowering the water table.

"Yet in the meantime, thousands of litres of useable, treated effluent are being discharged every day through a wetland system and into the ocean, in the vicinity of the Noordhoek Lighthouse."

The Cape Recife Return Effluent Scheme aims to utilise this currently wasted return effluent in lieu of the potable and bore-

hole water used to irrigate the beachfront gardens and sports fields within economically viable reach.

The concept was initiated with the NMBM Parks Department and Beach Managers. The beachfront, Port Elizabeth's primary tourist attraction, currently uses potable water in flower beds but the grassed areas are not irrigated, leaving them less appealing than they could be.

## Increased demand

Van de Merwe said a lack of funding and other priorities had slowed the project, which was initially designed and proposed by AfriCoast in 2006 and again re-examined in 2011, however work on the Return Effluent Scheme was now being implemented in parallel with the expansion of the Cape Recife WWTW.

He said approval for the proposal, as well as the environmental impact assessment, was expected to be obtained by the first half of 2016, with construction taking approximately one year.

"Water supply is a critical priority for the municipality and its stakeholders. There is increased demand on the available water sources due to expansion and densification of areas within the metropolitan area.

"If all goes according to plan, returned irrigation water should be available to consumers by 2018," he said. "The beachfront, golf course, schools and NMMU will benefit through the availability of irrigation water from return effluent at a substantially reduced price than that of potable water.

"An existing return effluent scheme has been supplying the NMMU North and South Campuses and the Humewood Golf Course with irrigation water since the early eighties. The water is extracted from the primary holding pond at the treatment works and pumped up to supply reservoirs and ponds at the university and the golf course via metered connections," said Van de Merwe.

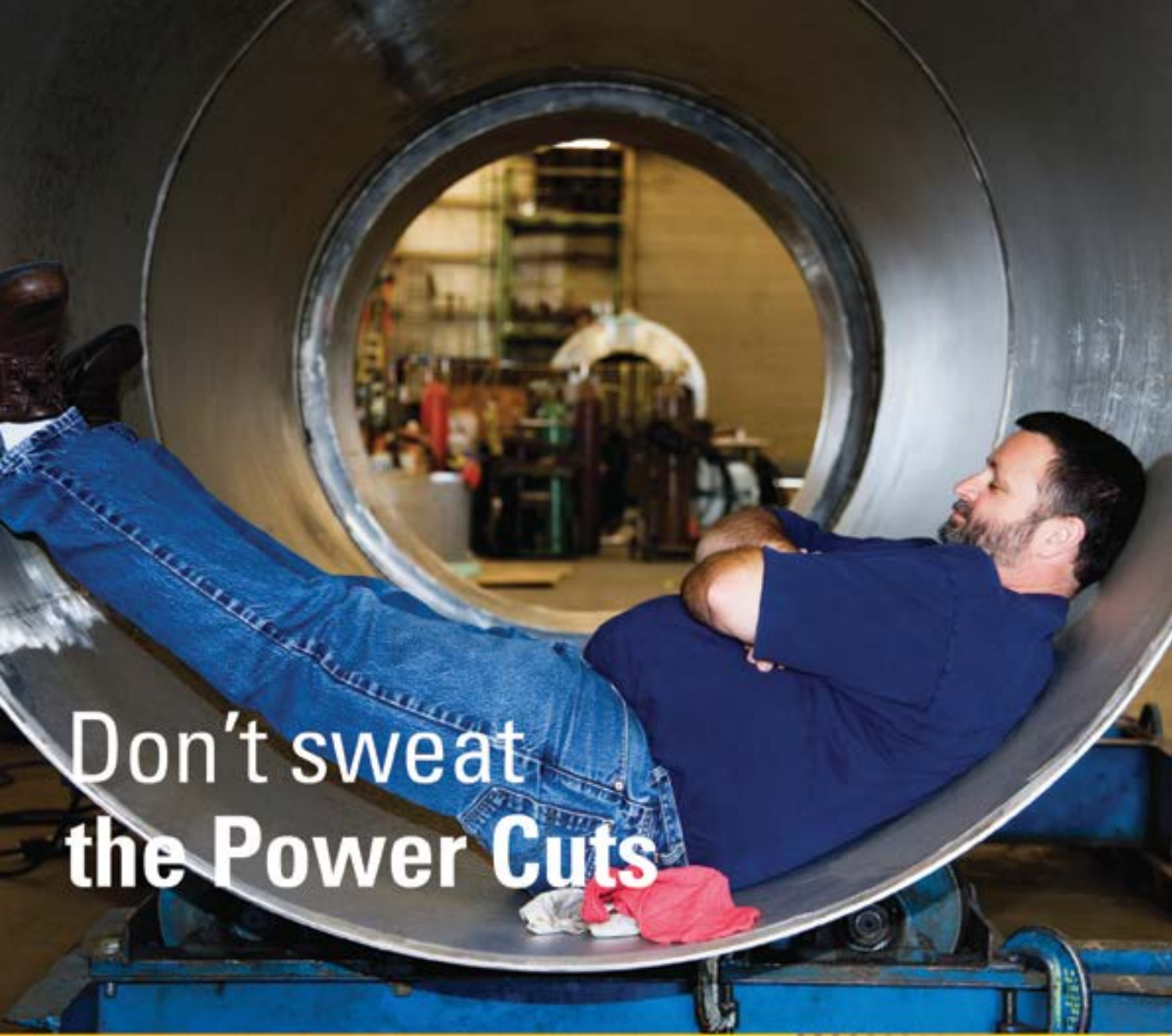
"However, the system is over 30 years old and in very bad shape. It will eventually be abandoned and replaced with the more comprehensive and sustainable proposed Cape Recife Return Effluent Scheme."

Port Elizabeth-based AfriCoast is a national leader in the field of water sanitation engineering and is the lead consultant for the return effluent scheme between the Fish Water Flats WWTW and the Coega Industrial Development Zone (IDZ). The firm also recently made headlines as lead engineering consultancy for the multimillion Nooitgedacht WTW project, which recently received financial input from government in its promise to provide a long term fresh water solution for the Nelson Mandela Bay area. <

The Cape Recife WWTW holding pond.







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## COEGA'S SOLAR ROOF-TOP PANELS

Coega Development Corporation announced recently that the roofs of about 15 of its buildings within the Coega Industrial Development Zone (IDZ) will be fitted with solar panels.

> These CDC buildings have a collective roof space of 127 000 m<sup>2</sup>. A request for proposals for the solar panel rooftop solution has already been issued by the CDC. The project forms part of the organisation's commitment to renewable energy as an important source of energy security.

"Existing buildings lend themselves well to rooftop solar panel installations. This project entails retrofitting roofs of the industrial buildings in the Coega IDZ," said Sandisiwe Ncemane CDC business development manager: energy.

"We are also building a number of new industrial facilities, which will be designed to enable the implementation of solar power solutions on the roofs. CDC facilities to be built for investors are projected to provide a further 125 000 m<sup>2</sup> of industrial space over the next five years."

Eskom announced that the electricity supply to the country will be highly constrained for at least the next five years, due to drastic deterioration of power stations. Load shedding, which has been implemented since the beginning of 2008 to relieve the national grid, also presents a hidden cost to society because frequent disruptions can slow down economic progress.

Bloomberg New Energy Finance is an agency which gives potential investors a specific breakdown of the renewable energy investment opportunities in 55 countries, including 19 in Africa. Last year they conducted research that confirmed that South Africa ranked third in the world after China and Brazil and first among African countries for clean energy investment.

Ncemane added that due to the energy and climate change crisis in South Africa, the creation of power through solar harvesting is an important priority and opportunity for the country.

"Electricity generated from the sun is a significant contributor to the needs of sustainable electricity output solutions, and can deliver economic benefits to the country."

The CDC has been mandated by the South African Government to advance the Coega project as an integrated and holistic development, in the shortest possible timeframe. The investment will indirectly contribute to job creation and economic development in the Eastern Cape.

"The CDC has also built momentum on its Renewable Energy (RE) strategy by attracting and sustaining domestic and foreign direct investment in energy projects, which to date includes several 'green' energy components manufacturing industries in wind power generation, solar energy harvesting and bioenergy."

Dr Ayanda Vilakazi, CDC head of marketing and communications said, "Investment in solar energy will position the Coega IDZ as a green IDZ with efficient energy at lower costs. This is also aimed at creating further value for the CDC investors as Energy has been key to economic development world-wide." ❏

**The Coega Development Corporation (CDC) is getting ready to install solar panels on rooftops of buildings located in the Industrial Development Zone (IDZ) in Nelson Mandela Bay.**



## WORLD GREEN BUILDING COUNCIL APPOINTMENT

Rudolf Pienaar, Growthpoint Properties Divisional Director: Offices, has been appointed to the World Green Building Council's (WorldGBC's) Board of Directors. Pienaar is deputy chairman of the Green Building Council South Africa (GBCSA), a member of the WorldGBC.

> The WorldGBC connects a global coalition of more than 100 national Green Building Councils and their 27 000 member companies with a single mission: to transform the building industry and ensure our buildings and cities are sustainable, healthy, efficient, and productive. Its Board includes representation from five regions: Africa, the Americas, Asia-Pacific, Europe, and the Middle East and North Africa.

Pienaar was one of seven leaders in the global green building movement to be recently appointed to the WorldGBC's Board.

WorldGBC chairman, Bruce Kerswill, also from South Africa, comments: "Pienaar brings with him regional knowledge and expertise that will be valuable in helping WorldGBC increase our impact as we work through our member GBCs to accelerate sustainability in the built environment around the globe. We are fortunate to have such experienced and passionate individuals on board, as the environmental challenges our planet faces are daunting and we have a full agenda with some ambitious projects".

Brian Wilkinson, CEO of the GBCSA, adds: "We'd like to congratulate Pienaar on his appointment to the WorldGBC board. Pienaar has been a dedicated and active member of the GBCSA board and is a committed advocate of green building practices. His appointment is richly deserved. He is a valuable member of our team and will undoubtedly serve as an asset in his new role."

Growthpoint Properties is South Africa's largest JSE-listed REIT and a JSE ALSI 40 company, which has property assets valued at nearly R100-billion. Growthpoint is a Platinum Founding Member of the GBCSA, a JSE Socially Responsible Investment (SRI) Index company and a Dow Jones Sustainability Index company. It is a top performer in the CDP Climate Performance Index.

Growthpoint owns or co-owns the largest portfolio of green buildings of any company in South Africa. It co-sponsored the GBCSA's Energy and Water Benchmarking Tool and is taking part in the pilot programmes for the Green Star SA Existing Building Performance Tool and the Socio-Economic Category. It has also partnered with GBCSA for the Greenovate Awards pilot which encourages students of the built environment to find ways to live more sustainably and helps link environmental challenges to innovative thinking.

Pienaar has been at the forefront of South Africa's movement for a sustainable built environment since 2008 and has championed many of Growthpoint's green building achievements. He has 30 years of experience in the property industry and is an avid advocate for green building. Pienaar has been a member of the GBCSA board since 2010, chairs its Marketing Committee and sits on its Exco.

Commenting on his appointment, Pienaar says he is looking forward to the opportunity to exchange information and learn valuable lessons from around the globe.

"By freely sharing information on a global scale, about both our successes and failures in green building, we have more positive and meaningful impacts on our cities, environment and societies. I am extremely proud to be representing our country and our continent in the effort to drive green building forward with greater pace and results," says Pienaar. ❏



**Rudolf Pienaar has been appointed to the World Green Building Council's board of directors.**





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# STRENGTHENING ITS PORTFOLIO

Emira Property Fund is enhancing its portfolio of assets by investing in strategic acquisitions, redevelopments and expansions to its properties, which increase both the quality of its portfolio and its exposure to the retail sector.

> In October 2014 Emira acquired a 60% undivided share in Ben Fleur Boulevard, a neighbourhood shopping centre in Witbank (Emalahleni), Mpumalanga, which serves a rapidly growing, upmarket suburb. It benefits from an excellent retail mix, anchored by Checkers and Woolworths, with strong lease covenants from its 79% national retailer base.

The R93,35-million acquisition includes the existing centre of 8 573 m<sup>2</sup>, as well as a 60% share in two potential future phases, which could eventually see the centre fully developed to in excess of 15 000 m<sup>2</sup>.

In November 2014, the newly constructed Woolworths began trading, so successfully that they exercised their option to expand their store as early as May 2015. The second phase includes the expansion of Woolworths at the centre, as well as more fashion retailers being introduced.

James Templeton, CEO of Emira Property Fund, comments: "This earnings enhancing transaction, which has a projected blended yield of 9,1%, supports Emira's objective to increase its exposure to quality retail property with higher values. Its strong retailers also improve Emira's tenant profile. Ben Fleur Boulevard is in an exciting growth area, which supports above average income growth in the medium term."

Emira is also investing a combined R41,4-million in the redevelopment, refurbishment and conversion of two of its existing B-grade office buildings into retail showroom premises. The redeveloped Sandgate Park and CRB House, in Kramerville, Sandton – which will now be collectively known as Kramerville Corner – have already started attracting prominent names in the design and décor industry who are not currently represented in the node.

This investment enhances a long term asset for Emira in a prime location in a sought-after node, at the same time improving the quality of its asset base and boosting its retail exposure. An incremental 991 m<sup>2</sup> of available bulk will be utilised for a brand new two-level showroom for Bakos Brothers who have committed to a five year lease.

Together these two buildings will grow to around 18 500 m<sup>2</sup>. Both buildings will receive new shopfronts, walkways and entrance features in line with the rejuvenation that has become a feature of Kramerville.



**ABOVE:** Ben Fleur Boulevard, a neighbourhood shopping centre in Witbank (Emalahleni), Mpumalanga. **BELOW:** An artist's impression of Kramerville Corner.



## About Emira

Emira is a JSE-listed SA REIT (real estate investment trust) invested in a quality diversified portfolio of office, retail and industrial properties. Its assets comprise 148 properties valued at R12,5-billion. Emira is also internationally diversified through its direct interest in ASX-listed Growthpoint Properties Australia (GOZ), valued over R700-million, with Emira's total assets now at R13,5-billion.

The upgrades will significantly increase the buildings' retail and showroom space and reduce office space to 14% of gross lettable area. The Kramerville Corner redevelopment is anticipated to be complete in February 2016.

Templeton says: "The improvements and changes to Kramerville Corner will support its strong market position and ensure it remains competitive in the marketplace and attractive to businesses." ■

# HEIDELBERG MALL INCREASINGLY POPULAR

Less than a year since opening, Heidelberg Mall in southern Gauteng, has swiftly established favourable shopping patterns and behaviour from a growing customer base.

> This underscores Heidelberg as a key regional node next to the N3, SA's busiest national highway which connects Johannesburg and Durban.

Research undertaken by Urban Studies has revealed some exciting insights about Heidelberg Mall and its shoppers, showing that it has rapidly grown in popularity, and is also attracting highly desirable consumers with strong spending power, since opening in October 2014. While Heidelberg Mall broadly appeals to the LSM 6 to LSM 10+ profile, it is dominated by an upper-income shoppers with most of its customers falling in the LSM 9 band.

## Importance of research

"This kind of research is important to us," explains Michelle Amorim, general manager of Heidelberg Mall. "With the insight we gain from the customer feedback obtained in our research, we are able to make the Heidelberg Mall shopping experience even better for them."

The 35 000 m<sup>2</sup> regional shopping centre features 120 retail stores, restaurants and services. Developed at a cost of R600-million by Flanagan & Gerard Property Development and Investment in a joint venture with Dissilio Investments, Heidelberg Mall is home to many big-name national retailers. It is anchored by Game, Checkers, Woolworths, Edgars and Dis-Chem.

The research on Heidelberg Mall reveals some 65% of shoppers come from Heidelberg and Ratanda, while a further 4% of its shoppers live on farms around Heidelberg. Showing real regional attraction, especially for consumers from areas to its east, 31% of its support comes from people living in surrounding towns, most notably Nigel and Balfour. It also has noteworthy appeal to shoppers from Vosloorus, Grootvlei and Meyerton.

Over half of the mall's shoppers travel for 10 minutes or less to the centre, showing strong support from its primary trade area. A 10 to 20-minute drive is typical for an established regional mall, and 31% of Heidelberg Mall's shoppers spend this amount of time to reach the centre. In addition, 7% of its shoppers drive for longer than 30 minutes to visit the centre.

Heidelberg Mall has settled very quickly with loyal, local support. Some 63% of its shoppers visit the centre weekly. This already compares favourably with other small regional shopping centres in South Africa. "This is very impressive, considering the centre had only been opened five months when the research was undertaken," notes Amorim. ■







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# PROPERTY SOLUTIONS SERVICES LAUNCHED

Excellerate Property Services has launched a new company, Excellerate Brand Management, which is set to take shopping malls, and our entire retail experience as consumers, into the future.

Excellerate Property Services is Africa's premier provider of fully integrated, self-performing property solutions. Excellerate Brand Management will complement its quality, cost-effective services by offering brand management in alternative income streams.

Marna van der Walt, CEO of Excellerate Property Services, comments: "Introducing Excellerate Brand Management to our group increases the full-spectrum of services we offer to retail property owners. It will be central to ensuring the goals and actions of shopping centre marketing are completely aligned with its management strategies and owners' objectives, and best support its retailers, using the latest advances in technology."

Van der Walt adds: "Excellerate Brand Management is a great addition to our quality property solutions, confirming our leading position as a one-stop property services shop. We're excited at the possibility of reinventing this key area of retail property."

Darren Katz, who is MD of Excellerate Brand Management, has exceptional insight into the ever-changing dynamics of the retail sector. He is the former director and founding partner of Primall Media, part of the Primedia Unlimited group of companies, where he spent the past dozen years.

Katz explains: "Understanding our shoppers is more critical than ever for retail success. In our changing world, malls and retailers are quickly realising that being competitive means tailoring their offerings to customers and building greater customer loyalty. Our key focus is getting closer to consumers by understanding them. To do this, we'll be introducing new innovations, technologies and ideas."

## Its focus

Excellerate Brand Management will focus and refine retail experiences by embracing technologies including mobile, social media, branding,

digital, analytics and marketing. Yet it will not offer branding services in the traditional sense.

"The shopping experience is affected by more than just traditional offerings, marketing and branding, so creating effective solutions and appealing experiences requires going beyond the norm," says Katz. "We want to change the perception of retail space for property owners. We aim to create and conceptualise an innovative and all-inclusive brand management platform with our understanding and insight into the needs, attitudes and behaviours of consumers. By their very nature, malls need a unique and specialised approach. Malls are the mother brand in the retail ecosystem, in which all the other brands live."

## Main draw card

With the latest retail innovations and consumer trends, this is becoming increasingly clear. Katz expects that soon we will see the demise of the anchor tenant as the main draw card to shopping centres. "Instead, the mall will evolve into an experience – a single, convenient destination providing more than a location to shop, work, socialise and eat."

Today, consumers share more and more information in their interconnected digital world – how they buy, socialise and transact. Katz believes this opens the door to a whole host of new opportunities that have unlimited potential to enhance the shopping experience for mall customers.

"The most exciting aspect and challenge for Excellerate Brand Management is beginning a different type of relationship with our shoppers through digital collaboration – this in itself is the biggest growth opportunity for us."

One of the major goals Excellerate Brand Management has set itself is driving greater revenue streams for retail property owners, and creating new ones, when it develops new customer experiences.

"Retail is becoming a more targeted and



Marna van der Walt, CEO of Excellerate Property Services.

Darren Katz, MD of Excellerate Brand Management.



personal science. This means there is a need to manage business intelligence effectively using data information and new technologies. As a result Excellerate Brand Management will focus on 'digital' as its true driver of growth. "It creates new channels for interaction and engagement," says Katz, pointing to the emergence of location based advertising as an exciting new opportunity.

"Knowing consumers' whereabouts through mobile devices allows accurate and relevant offers to reach only specific and applicable customers. This in itself will drive a viable revenue stream that will move retail forward," he says.

For Excellerate Brand Management, the starting point is working with the unique qualities of each shopping centre already under Excellerate Property Services umbrella. This is no small task – Excellerate group company JHI Retail manages 340 shopping centres spanning some 2 million square metres of gross lettable retail space.

"From there, we will build a unified brand story across all the innovative technologies and ideas in our growing, and increasingly digital, ecosystem," notes Katz. It will also expand its services beyond the Excellerate Group, to other property owners in South Africa and – leveraging off Excellerate's strong and growing African footprint – across the continent too. ■

Reflecting its powerful regional pull for such a young centre thanks to its excellent location on Jacobs Road right next to the N3 highway, 32% of its customers visit Heidelberg Mall every second week or monthly.

Plus, it is still attracting new visitors, with the remaining shoppers surveyed experiencing the centre's shopping attractions for the first time.

"Heidelberg Mall has settled quickly, but remains in a market growth phase and we believe it will continue to attract new shoppers for some time to come," reports Amorim.

Heidelberg Mall shoppers speak mainly Afrikaans, Zulu and Sotho. Most of its shoppers – in fact 63% – are female. The average visit to the centre sees customers enjoying around 90 minutes of shopping.

The average age of its customers is 39 years, showing a younger profile than many malls with 34% of shoppers in the younger lifestyle stage and 54% in the full-nest lifecycle stage. "So, it's not surprising that most shoppers

at Heidelberg Mall enjoy their trip to the centre with their family, partner or friends, embracing it as an enjoyable social experience too," says Amorim.

Grocery, fashion and shoe shopping is top of Heidelberg Mall customers' lists. Its other categories with the biggest shopper appeal include the mall's most popular health and beauty range and its selection of coffee shops and restaurants.

"We are delighted with the findings of the Urban Studies research, which shows the warm welcome that Heidelberg Mall has received from the local community and our surrounding neighbours," says Amorim.

She adds: "Using this information, Heidelberg Mall can make management decisions that support the best shopping experience, choices and services for our shoppers. We will continue to deliver a top-quality, convenient retail experience, especially tailored to our customers' needs, right on their doorsteps." ■



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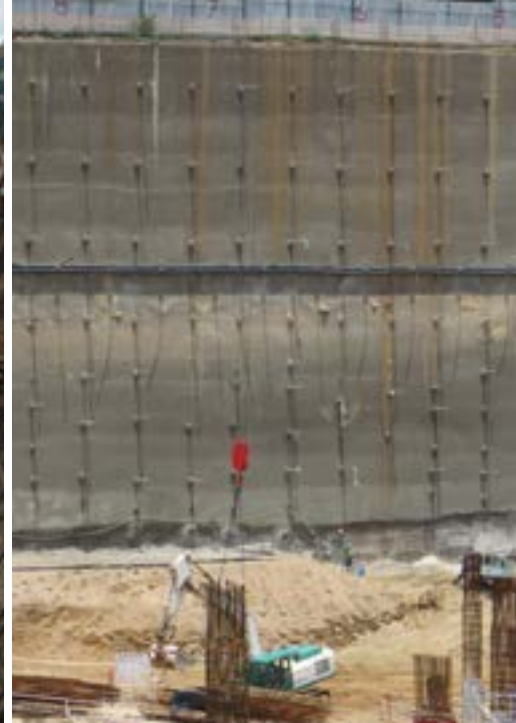
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An overall view of the site as seen from the north western corner.

# FRANKI'S DISCOVERY work shines in Sandton

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Franki Africa has dominated the geotechnical industry in the plethora of major developments that have been taking place in Sandton in the recent past. Two of its most recent contracts include the 170 000 m<sup>3</sup> basement for the new Sandton premises of petrochemical giant, Sasol, and the 60 000 m<sup>3</sup> basement for the new head office of legal firm Webber Wentzel.

**A** third, perhaps the largest basement project undertaken ever in South Africa, the mammoth 550 000 m<sup>3</sup> excavation and 15 300 m<sup>2</sup> of lateral support basement for the new Discovery head office, has been a prime example not only of Franki's ability to work under pressure, but also to find the right solution in the face of challenging geological conditions.

## Discovery basement – a mammoth excavation

"While this is certainly one of the largest ever basements in this country's history, it is definitely the largest ever for Franki," says Franki's Gavin Byrne. "The vast scale of the project is brought into clear perspective on the realisation that this will have required 110 000 X 10 m<sup>3</sup> truck trips (there and back) to dispose of the soil. Given that the site is in one of the busiest traffic areas in all of Africa, it is no wonder that this element of the contract was crucial in its overall 'critical path'.

The development is being undertaken by Growthpoint Properties and Zenprop Property Holdings who awarded the contract to the JV of Diesel Power and Zero Azania, with Franki Africa as a nominated sub-contractor. The western boundary of the site, where the excavation is at its deepest (32 m) is on Rivonia Road, the northern boundary on Katherine Street, the new IBM development is on the southern border while on the eastern side there is a series of office blocks.

Byrne says that the available geotechnical information showed that the site was underlain by a granite bedrock at an average depth of about 15 m below natural ground level, similar to several sites in the immediate vicinity of Discovery. "We decided on a well-established solution for this situation

– soldier piles drilled to bedrock with ground anchors over the upper circa 15 m and rock bolts and shotcrete below the pile-toe level within the granitic bedrock zone of excavation," Byrne says.

The excavation face comprised a flat gunite surface proud of the soldier pile line to allow the gunite to be the final finish of the multi-level basement parking. "A departure from the more traditional soldier pile and gunite arch solution which has been in use for the past 20-30 years, this results in an exceptionally smooth and aesthetically pleasing surface," Byrne says.

The project commenced in February 2014 with the installation of 216 (No.) soldier piles of 600 mm diameter down to bedrock approximately 15 m-18 m deep. The excavation followed in bench heights of about 2 m around the perimeter with the ground anchors and gunite face being installed from the benches.

## Unforeseen challenges and the revealing of diabase dyke

Normal earth-moving equipment was used for the excavation down to bedrock level but the hard granite bedrock had to be removed using controlled blasting techniques.

"The shallowest bedrock was encountered on the the north-western corner of the site and blasting commenced from





North western corner of the site where the excavation depth reached 32 m.



Gunite being applied to the trimmed face along the southern portion of the site.

approximately 6 m below surface level.

He adds that it was also noted at this time that rock levels on the south-eastern portion of the site were much deeper than had been anticipated from the initial geotechnical investigations. "This significantly deeper soil profile was also accompanied by a much higher localised water table condition resulting in substantial movement of the lateral support system," Byrne says.

These complex geological conditions meant additional geotechnical investigation of the site needed to be undertaken. "The geotechnical conditions highlighted by the additional investigative drilling undertaken by Franki revealed a very complex Diabase dyke along most of the Rivonia Road boundary. We also found that there was a deeper weathering of the granite bedrock in the area surrounding the intrusion," Byrne says. This resulted in the provision of additional anchor force than had been initially planned, with the corresponding reduction in the rock excavation and blasting requirements.

The expertise of Peter Day, a well-known and recognised Geotechnical engineer, was utilised by the Discovery team and his review of Franki's assessment and design for the complex conditions encountered was much appreciated by all parties.

## New requirements, new challenges

Byrne says that perhaps the biggest challenges for Franki was the doubling of the anchor forces required to provide satisfactory



Drilling for the installation of the strand anchors. In instances, 25 m long anchors were installed.

stability to the excavation face and limiting the movements of the site surrounding the excavation face. "This process required sophisticated and complex finite-element calculations to model the behaviour of the excavation as construction proceeded," Byrne says.

He adds that the difficult conditions encountered also required extensive and frequent movement monitoring of the excavation and its surrounds. "The complex analysis as well as the detailed monitoring programme enabled the use of an observational and interactive design approach to accommodate the highly variable conditions on the site," Byrne says. The contract commenced in February 2014 and was completed on 17 February 2015.

## Teamwork

Franki's Paulo Alves says that all the recent Sandton basement work could not have been undertaken without exceptional teamwork.

"It has been a privilege working in a team with Zero Azania, Diesel Power and Pro-Frag Blasting on this job. Unless there is harmony and teamwork between all the players on complex geotechnical sites, all the expertise and experience in the world can mean very little.

"The Discovery contract is a prime example of how engineering and related teams can work together to produce world class results," Alves says.

For all these jobs Franki Africa utilised up to seven lateral support teams and three Soilmec SR 30 drill rigs, which proved to be invaluable in the speedy and efficient drilling and installation of the soldier piles. "Balance between quality and time is always the issue in projects with tight timing and these machines as usual proved to be significant in us maintaining this balance," Alves concludes. <

***"A departure from the more traditional soldier pile and gunite arch solution which has been in use for the last 20-30 years, this results in an exceptionally smooth and aesthetically pleasing surface."***

# Interchange's MANY CHALLENGES

The South African National Roads Agency Limited (SANRAL) originally initiated the project to improve the capacity of the Ballito Interchange, which became highly congested at peak times. The initial plan was to add a single loop ramp to accommodate east-to-north turning movement. However, a detailed traffic study carried out by SMEC South Africa indicated that this solution would at best be a stopgap measure. In addition, construction of a new loop ramp would necessitate lengthening the existing bridge, an undertaking that would make it extremely difficult to accommodate existing traffic.

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“Taking future growth into account, we also found that a single loop ramp would not suffice,” comments Dawie Erasmus, functional head: roads and highways at SMEC South Africa. “There were other capacity considerations in keeping the traffic flowing,” he adds.

“That led us to consider the possibility of a new bridge that could accommodate double loop ramps underneath it, as well as the additional lanes on the cross road on top. This could be constructed with the traffic utilising the existing bridge,” points out Erasmus. Certain deficiencies in the existing bridge deck were also identified. These supported the building of a new bridge.

Such detailed analysis of the existing infrastructure, in tandem with the client's specific requirements, resulted in SMEC South Africa coming up with the most practical and cost-effective solution possible.

“We proposed building a partial clover leaf interchange with two loop ramps, but shifted slightly south so that these loops could be fitted in,” highlights Erasmus. This was necessitated by the fact that quite severe land topography constraints and development in the eastern quadrant limited what could be done.

SMEC South Africa then embarked on extensive opinion discussions with the client, with the end result being almost a total redesign and rebuild of the Ballito Interchange.

The construction phase of the project lasted 18 months, with Stefanutti & Stocks Civils KZN appointed as the main contractor.

“We were not only responsible for the design, but also monitored the construction period,” adds Erasmus. SMEC South Africa had a resident engineer and an assistant resident engineer on-site, in addition to a contracts manager overseeing the project.

A pavement specification was used that could accommodate traffic during construction. The asphalt base course was applied in sections depending on traffic accommodation requirements. Therefore the final asphalt wearing course was only applied once the base course was completed on the entire interchange.

“This was done so we could switch traffic during the various construction stages and have temporary line markings on the asphalt base, which would later be overlaid with the final asphalt wearing course,” elaborates Erasmus. There were a number of traffic accommodation phases during the construction period. The old bridge was kept open until nearly the end of the project, when the new structure was ready to take traffic. At this point the old bridge was demolished.

## Challenges

The foundations for the new bridge involved a detailed geotechnical investigation as



the typical Berea sand type formations in the area are not ideal for bridge founding. The harder rock was more than 25 m deep. Spread footings were still opted for, but at a founding level of about 5 m below ground level, with pre-treated foundation platforms to limit the settlement of the bridge piers.

Erasmus points to all these different elements adding to the overall complexity of the project. “In addition to all the components of a typical road project, we also had to contend with quite intricate structures and geotechnical investigations. The road design and asphalt technology we applied was the latest available,” he adds.

Retaining walls were necessary due to the fact that where two road elements were immediately adjacent to each other, they were nevertheless separated by quite a high level difference. This called for retainment between the upper and lower levels using a contiguously piled type retaining wall. Upon completion, these were clad with precast concrete to enhance the aesthetic appearance.

A unique feature of the project was that it had to accommodate pedestrian movement. “That was an important safety consideration during the design phase,” Erasmus comments. Safe pedestrian drop-off zones were provided for on the N2, with pedestrian walkways behind protected barriers where these were adjacent to the roadway itself.

Traffic signals were also provided at the



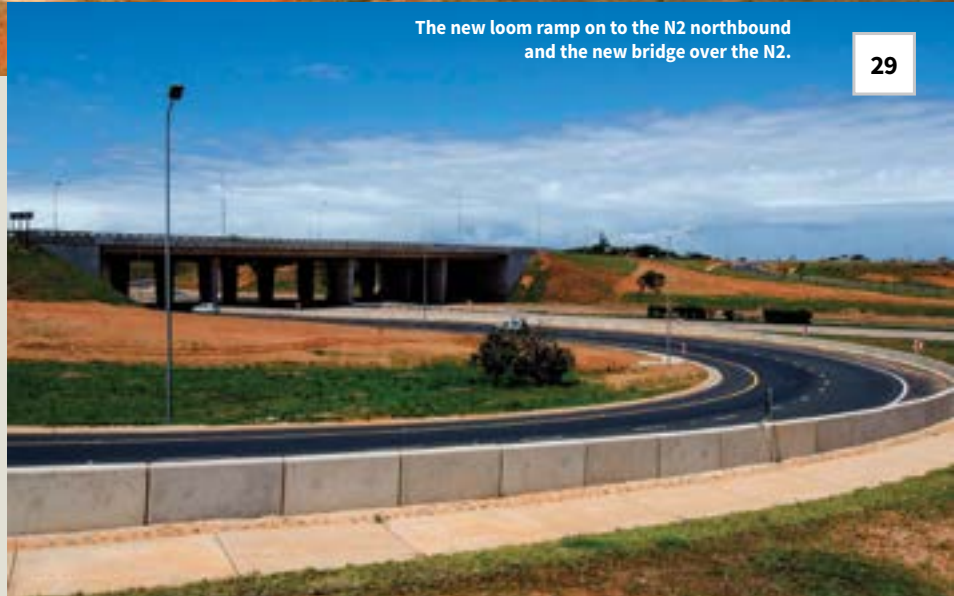


The newly completed improvements to the Ballito Interchange – looking eastwards to Ballito.

two ramp terminals to create safe opportunities for pedestrians to cross over. In order to increase visibility and safety at night, SMEC South Africa was also asked to provide street-lighting for the project.

“We also had to look at some changes to the onramp configuration on the N2, which in this section consisted of a concrete pavement. We had to ensure that the new concrete pavement was an exact match with the existing one,” Erasmus stresses. The project has been completed successfully, with SANRAL reportedly very happy with the end result. “We are certainly pleased with delivering a high-quality project,” he says. <

The new loom ramp on to the N2 northbound and the new bridge over the N2.



The new 7 m high contiguous piled wall adjacent to the new N2 southbound on and off ramps.

Underneath the new bridge crossing the N2.





# BRYANSTON'S commercial developments

Johannesburg's affluent suburb of Bryanston is experiencing an upsurge in the number of businesses moving to the area, resulting in an increase in office developments currently under construction. In recent years there has been a noticeable trend towards an increase in demand from businesses seeking to relocate and these are adding to numerous existing office buildings along Main Road and William Nicol.

This stretch of Bryanston along Main Road is rapidly becoming Africa's own Silicon Valley, due to the many leading technology and communications companies operating in the vicinity.

Microsoft, Dimension Data, Internet Solutions, Software AG, Google SA, amongst others, are all based in the immediate area, while other large corporates include Tiger Brands, Nestlé, GlaxoSmithKline, Ogilvy, Samsung and Synovate.

Since its early beginnings in the 1940s, the northern Johannesburg suburb of Bryanston has been sought after among residential property investors. More than 70 years on and the area has retained its appeal, seen solid increases in its residential property values, and now appeals to both residential and commercial property investors.

With more land available for development, Bryanston currently has over 560 000 m<sup>2</sup> of office space.

Culross on Main office park, developed by Barrow Properties and completed in 2013, brought to the local market 7000 rentable square metres of A-Grade office space. The park is currently fully tenanted and on the back of the positive demand for the office

space, Barrow is expanding Culross on Main to include an additional building of 2400 m<sup>2</sup> scheduled for completion by mid-2016. Barrow Properties was also behind Metmar's new head office, Corner Main, situated opposite the Dimension Data Campus and across the road from Culross on Main.

## The Crossing

Barrow Properties has another exciting development nearing completion. The Crossing, located close to the new Virgin Active gym at 1 Cross Road Bryanston will be ready for occupation on 1 October 2015.

This development is situated in a prime location in Bryanston at the busiest intersection of Main Road and William Nicol. It comprises 4 765 m<sup>2</sup> of rentable office area. It is also topographically the highest point in the general area and enjoys visibility and magnificent views northwards towards the Magaliesberg.

According to M/Architects, the design of the building is modern and bold. Clean planes define the architecture and extensive use is made of flush glazing on the north and south façades. A dramatic entrance canopy announces the approach to the building with

extensive visitor parking outside the entrance. The features of the design are the courtyards at ground level with sliding doors spilling out onto rest areas for office workers amid planters and seating.

Another feature of the design is a large terrace at second floor level which looks out both west and north over Johannesburg as far as the Magaliesberg mountains. The terrace will become an entertainment area for the building and will include a kitchen and bar. Again, extensive use is made of sliding doors permitting access from the offices onto this delightful terrace area.

The building has been designed with energy efficiency in mind and high performance glass is used throughout. The building is also designed for a VRV central airconditioning system which is currently the most energy efficient option available. Intelligent sensors will be used throughout as well as LED lighting.

The west sun is managed by means of solid facades which will insulate the interiors of the offices against overheating. This provides for exceptional signage opportunities facing Main Road.

An extensive landscaping plan has been prepared by DDV Landscape Design Group. This plan uses indigenous vegetation as well as a dramatic water feature at the main entrance.

Comments Barrow Properties' Mark Uhlmann, "The Crossing and Culross on Main offer suitable tenants the advantage of a prominent and convenient location, nearby retail amenities, a backup water supply and full diesel generator standby power at very competitive rentals. Barrow's continued involvement from the construction phase to the hands-on property management function allows us to respond efficiently and effectively to our client's demands." <







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# Generators keep **WONDERPARK OPEN**

Emira Property Fund has announced it is investing R17,6-million for generators to serve retailers at its super-regional Wonderpark Shopping Centre in Pretoria to help counteract the detrimental effects of load shedding on their businesses.



**James Templeton, Emira CEO.**

> James Templeton, CEO of Emira Property Fund comments: “With Eskom not able to guarantee the supply of electricity to business, it has become necessary to investigate other power sources that will be able to keep businesses operating through load shedding. It looks like load shedding is going to be a reality for the next couple of years at least. Unfortunately, it has become the norm.”

For Wonderpark Shopping Centre, daily load shedding is scheduled at its busiest time of day, from 16:00 to 18:30. In addition, for stage three load shedding, the mall is switched off from 8:00 to 10:30.

He adds: “Customers that leave the centre during load shedding tend not to return when the power does eventually come back on.”

It isn't only load shedding that has left the mall powerless, but its knock-on effects too, such as the damage to infrastructure as a result of electricity being switched on and off, as well as security risks.

All this has led to Emira shelling out R17,6-million for generators to be installed at Wonderpark Shopping Centre to ensure it can trade through load shedding periods, as well as any other power outages that may arise.

Five generators will be connected to the mall's substations, providing sufficient power

to run all retailers that do not currently have their own generators. This means stores will be able to trade as usual. The project to install the generators will be complete by mid-August.

“The generators will give Wonderpark Shopping Centre a competitive advantage. Customers can be assured they can complete their shopping, even during load shedding. It also creates a safe and welcoming place where people can come during load shedding to get a warm meal, get their shopping or banking done, see their favourite sports on TV or enjoy a family outing,” says Templeton. “Importantly, this investment supports our tenants' trading.”

Wonderpark Shopping Centre is a key asset for Emira. This landmark shopping centre recently received a R551,3-million major upgrade and extension, expanding it from 63 000 m<sup>2</sup> to 90 000 m<sup>2</sup> to include extensions for existing national tenants and introduce new anchors. The expansion and upgrade was completed in October 2014.

Templeton says: “By investing in generators for Wonderpark Shopping Centre, we are protecting this core asset for Emira and ensuring it remains competitive, dominant and attractive in its market.”

Emira is also actively playing a role in helping to prevent load shedding, by taking strain off South Africa's power grid

with its renewable energy pilot project.

It recently installed a R6-million solar farm on the roof of its Epsom Downs Shopping Centre in Bryanston, Sandton. This pilot project is Emira's first step in adding renewable energy solutions to its quality portfolio of properties across South Africa, and part of its sustainability strategy.

The photovoltaic (PV) solar farm, comprising 1 084 panels, will produce around 271 kWp, or about 30% of the electricity required by the shopping centre – the maximum possible with its roof size.

Emira's state-of-the-art pilot project will save 515 172 kWh of energy. At the same time it will reduce carbon emissions annually by approximately 503 838 kg. You would need to plant 458 new trees to offset these emissions.

Templeton notes: “By taking strain off the power grid, we're doing our bit to prevent load shedding too.”





# Cape Town's **LATEST HOTEL**

The London based architectural firm, Dexter Moren Associates, has been selected to design the new hotel to be built on the site of the demolished Tulip Hotel and Conference Centre in Cape Town's city centre. The new hotel will be a Tsogo Sun Hotel brand.



**Dexter Moren, founding director of Dexter Moren Associates.**



## About Dexter Moren Associates

Dexter Moren Associates is an award-winning architecture and interior design practice of 50 people specialising in hospitality and hotels. With a design-led ethos of 'creating places people want to stay' the practice has, over the last 23 years, established a reputation as one of London's leading hotel and leisure architects.

> Born in Johannesburg and now based in London, Dexter Moren, founding director of Dexter Moren Associates (DMA) says: "The Tsogo Sun Hotel Complex in Cape Town is a return to my country of birth and the design reflects a merge of the best in global architectural trends with a quintessential African feel."

Moren adds: "The site is a prime location in the city bowl with interesting heritage challenges. Our design, which has been approved by the city, specifically responds to the streetscape of the heritage-rich location."

The hotel will have 500-rooms, 300 of which will be 3-star and 200 of which will be 4-star. The top of the hotel will have a distinctive profile that

works with the taller scale of buildings fronting Strand Street. The middle will reflect the rhythm and proportions of the typical Bree and Buitengracht Street buildings. While the base has been designed for the pedestrian, with canopies, active frontages and typical street block diversity. The new design is sensitive to the Tothill building and the neighbouring Lutheran Church complex.

Dexter Moren Associates were selected by Green Willow Properties (who own the site that the hotel will be built on) after participating in a design competition. With over 30 years' experience Moren has worked with the majority of leading brands in the UK, Europe, Africa, Middle East and Asia. Current projects include Gansevoort Shoreditch, Hilton London Bankside, The Westin City of London and the InterContinental Lisbon.

Hotel projects in Africa by Dexter Moren Associates include: Sunrise Hills Luxury Hotel, Abuja, Nigeria; Golf Park Hotel, Dar es Salaam, Tanzania; Mpaka Road, Nairobi, Kenya; InterContinental Resort, Pongwe, Zanzibar; Alswani Resort Hotel & Villas, Libya; Dunas Resort, Cape Verde.

Moren concludes: "Since demolition, the site has been cleared and the basement levels are currently being dug out. Completion is planned for the September 2017". <





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# Kilimanjaro AIRPORT UPGRADE

Construction supervision of the €37-million (R450-million) upgrade to Tanzania's Kilimanjaro International Airport is to be undertaken by local consultants Royal HaskoningDHV and Tanzanian subconsultant, Howard Humphreys. Work is due to start in July this year and be completed by early 2017. The project is funded in part by the Dutch Grant Facility for Infrastructure Development (ORIO) and partly by a commercial loan to the Tanzania Ministry of Finance.

The Terminal building will be reconfigured and rehabilitated, including:

- The creation of a central commercial lounge and separate waiting areas for domestic and international passengers
- Improved security and passport control processes to modern international standards
- Construction of a new roof terrace to increase the capacity of the lounge area.

"The existing terminal building was built in 1971 and is generally in very good condition. By rehabilitating the building, rearranging the spaces and creating a new covered roof terrace we are able to extend the lifespan of the building and revitalise it. This will minimise the need for new resources and materials in construction. The end result will relieve congestion, provide space for future growth, create new opportunities for commercial activities and greatly enhance the passenger experience at the airport," expounded Langeslag.

"A challenge to the professional team is that the airport has to remain operational throughout the entire duration of the works. This impacts the scheduling of the works, and requires temporary provisions and pro-active management of stakeholder expectations. The goals are to maintain safe airport operations at all time, and to minimise the adverse impact on passengers, airlines and other stakeholders at the airport," he said.

## Gateway to Africa's wildlife heritage

Kilimanjaro is one of East Africa's most popular tourist destinations, with nearby attractions such as the Serengeti National Park, Ngorongoro Crater, Lake Manyara and of course Mount Kilimanjaro. Kilimanjaro International Airport (KIA) brands itself as the Gateway to Africa's Wildlife Heritage and provides a key entry point to the region known as the Northern Tourism Circuit in Tanzania. <

> Company spokesperson and project manager Marcel Langeslag explained that the construction contract was the culmination of several years of preparatory work by three Royal HaskoningDHV Group companies – its South African operation, NACO – Netherlands Airport Consultants and InterVISTAS.

"Strong traffic growth and the mix of domestic and international flights at the airport have resulted in capacity constraints and this rehabilitation and expansion project will relieve congestion and provide capacity for future growth. It will also ensure the airport is given a make-over that will enhance the passenger experience," he said.

"In 2012 we were appointed for the update of the master plan, which was completed in early 2013. Subsequently, we were appointed for the concept and preliminary design of the rehabilitation works and the preparation of Design & Build tender documents. For the past three years colleagues from our sister company InterVISTAS have supported Kilimanjaro Airports Development Company (KADCO) in Air Services Development, increasing air traffic at the airport, and winning three Routes Africa Awards in the process (2013, 2014 and 2015).

"Royal HaskoningDHV and NACO have been involved with this project from its inception, working closely with the client and

the donor organisations to get the project off the ground. We have been able to assist the airport with a wide range of services, including master planning, civil engineering and terminal building architecture," explained Langeslag.

The scope of Royal HaskoningDHV's involvement includes the design review of the detailed designs that will be prepared by the Design & Build contractor, contract administration of the Design & Build contract as the Employer's Representative (the engineer) and supervision of all construction works on site.

## Scope of work

Kilimanjaro International Airport saw more than 800 000 passengers and more than 20 000 air traffic movements in 2013. Overlapping peak hours for domestic and international flights caused congestion in the Terminal Building and further traffic growth will put pressure on the 3 600 m long runway. Upgrades and expansions are required to accommodate the expected future growth of air traffic at the popular tourist destination.

On the airside this project includes:

- Extension of parallel taxiway to enhance runway capacity
- Expansion of apron to create more aircraft parking stands
- Rehabilitation of all airside pavements





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# KPONE IPP PROGRESS



WorleyParsons is making progress on a design engineering contract to provide concept design, detail design, procurement support, construction and commissioning support to Group Five Power International, the Engineer Procurement & Construction (EPC) contractor on the Kpone Independent Power Plant (KIPP) project in Ghana.

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> The USD410-million power plant will provide urgently needed low cost, reliable and efficient thermal power to the deregulated Ghanaian power market. Kobus van der Merwe, project manager, WorleyParsons RSA, says WorleyParsons has been supporting Group Five from June 2014 on procurement of the major equipment, including the gas turbine, steam turbine and heat recovery steam generator.

“WorleyParsons’ design effort will be undertaken through two main offices – our Johannesburg office and our office in Reading, USA, which is our Group’s global centre of excellence for gas turbine power

plants, specialising in combined cycle power plants. The Reading team brings to the table a depth of experience in the global gas turbine-based power generation arena, while our Johannesburg team has the advantage of relationships with local suppliers and manufacturers and project execution in Africa. We’re delighted to be working on a project of this calibre, because we regard it as a gateway to the entire region, where there is a significant need for electricity.”

Van der Merwe adds that one of the key challenges with the KIPP project is the use of seawater to cool the steam condenser. The seawater extraction point is 1 200 m offshore

and the discharge point 375 m offshore. The seawater cooling system is designed to use free flow or gravity flow to get the seawater in site and then back to sea. The construction of these seawater pipes will be by micro tunneling and is on the critical path of construction due to the anticipated construction period of about 20 months.

He continues “The plant will be of a modern, efficient and flexible design and will meet all relevant safety and environmental standards. It will be capable of operating on three different types of fuel: natural gas, distillate fuel and light crude oil (LCO). Fuel gas will be supplied through a connection to the nearby West African Gas Pipeline, while distillate fuel and LCO will be supplied from a fuel oil tank farm located next to the site. Prior to the arrival of a permanent gas supply on site, it is expected that the power station will operate predominantly on LCO with a distillate fuel back-up.”

Power generated by the plant will be supplied directly to the Electricity Company of Ghana (ECG), the main distribution utility through the Ghanaian grid.

Genpower Generation Ltd, a Ghanaian company specifically set up for this greenfield project, awarded Group Five the 33-month contract in August 2014 to design, build and commission the power plant in the municipality of Kpone in the Tema industrial zone. This will be the single biggest IPP in Africa and has been hailed as an iconic project.

It is the first IPP to receive the majority of its debt finance from African banks and African financial institutions. It is also Ghana’s first licensed thermal power plant and the first project-financed greenfield thermal plant. The financial transactions for this project were internationally recognised by the London based PFI Awards as Africa’s most outstanding power deal of 2014. The PFI Awards are part of the Thomson Reuters Awards for Excellence, recognising corporate and individual success in the global financial industry. <





# OVERBERG RE-GRAVELLING PROJECT

**Mott MacDonald is assisting the Western Cape Government with planning, design and control aspects of the maintenance of gravel roads within the Overberg region – one of four regions in the province.**

➤ The consultancy is also working with local provincial maintenance teams and supporting the development, improvement and management of materials supply.

There are approximately 10 000 km of gravel roads within the Western Cape (excluding minor roads), of which approximately 1 300 km are located within the Overberg region. These rural roads are susceptible to changes in traffic volumes, material properties, precipitation, temperature and even flooding which can lead to increased deterioration.

Regular maintenance activities include regravelling or spot re-gravelling, reworking, hard or regular blading, patching, and pothole and shoulder

repairs. Suitable material sources available such as shale, mudstone, sandstone, limestone, granite or ferricrete need to be sourced sustainably and where possible aggregate will be obtained locally through borrow pits.

Mott MacDonald has previously supported re-gravelling and maintenance strategies in the Western Cape Province. The consultancy is using this experience to develop strategic planning and optimisation models for the sourcing and use of suitable materials from borrow pits. The condition of gravel roads will undergo detailed visual assessments and combined with annual panel inspections will contribute to an overall view of the management of the road network.

Robbie Uys, Mott MacDonald's project director, said: "Road maintenance in this province is quite challenging due to the limited local resources and material sources available. This is mountainous topography, which includes expensive agricultural or even heritage sites, with a highly sensitive and endangered natural vegetation or fauna. In all cases, borrow pits will be developed in agreement with landowners and in accordance with national mining and environmental regulations. This will enable the most sustainable efficient solution is found." ❏



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## FIVE-FOLD IN FIVE YEARS

**Big Ben Construction, the construction arm of Rabie Property Group, has lifted turnover five-fold in the past four years with further strong growth forecast.**

Since 2012 when the turnover of the company was under R50-million, Big Ben has grown from a small, niche residential contractor specialising in low-rise construction to a medium size contractor with a diversified work portfolio across commercial, residential and even specialist projects and a growing track record of high rise construction.

MD Colin Ridley says they expect this upward trend to continue for the foreseeable future at least as they already had an order book of more than R250-million for the 2016/2017 financial year.

He said while the bulk of their work load was for Rabie's account at Century City, they were also undertaking projects for Rabie outside of Century City and for third parties both inside and outside of Century City. Recent specialist projects undertaken include a day hospital at Century City where the company was able to meet the exacting technical specifications.

Ridley says the company's staff complement has grown in line with its turnover. Four years ago it employed nine managerial staff and a workforce of 20 and this now stands at over 20 managers and a work force of 80.

Work recently completed includes the second phase of the Greenford office project in Kenilworth comprising a total of 5 600 m<sup>2</sup> in seven stand alone office blocks. At Century City it has undertaken an office block in The Estuaries for Horizon Capital, the Quays mixed use development comprising 92 apartments in two blocks and a 4 000 m<sup>2</sup> commercial component consisting of 36 sectional title office suites and a restaurant as well as 140 residential apartments and seven villas in Ashton Park.

"We are currently busy with Mayfair – also a mixed use development



**Petri Wessels, Colin Ridley and Eddie Cupido on the construction site of Mayfair mixed use development at Century City.**

comprising 136 apartments in two blocks and 3 000 m<sup>3</sup> of sectional title offices at Century City due for completion in Easter next year – and we are now coming out of the ground with Manhattan Quarter, another residential development of 63 apartments on basement parking.

"In addition we are shortly to start work on a 190 unit residential development outside the confines of Century City."

Ridley says their order book for the next financial year includes a nine-storey residential apartment block in Century City.

"We have done a number of high rise buildings of late but this will be the first time we will have exceeded five levels and we are looking forward to the challenge."

The key to Big Ben's success, he says, is their hands-on, passionate approach to construction and their striving for continuous improvement in both systems and quality.

"This is not a nine to five industry. It is literally 24/7. One is continually on call and the attention to maintenance is as important as the construction in terms of delivering both the ultimate client experience and building a track record of excellence." ❏

## BALLITO'S NEW ENTRANCE

**Entering the bustling coastal town of Ballito on the KwaZulu-Natal North Coast, pedestrians are welcomed by the recently completed walkways made up of Corobrik's range of clay pavers.**

A total of 3 600 m<sup>2</sup> Burgundy pavers have been used to construct the sidewalks and islands along both sides of Ballito Drive, extending from Greenfields Road near the new N2 interchange, all the way to the M4 intersection.

Dave Duke, general manager of Urban and Social Development Africa Division for SMEC South Africa, said the project, which started in August 2014 and completed on 18 June this year, was essential for the area.

"Ballito has experienced phenomenal growth in recent years and required a major road and sidewalks upgrade to provide for increased traffic and ensure pedestrian safety," explained Duke.

"The transformation of the old low-volume, rural-type access road into a new, urban environment required improved aesthetics." He said that, it was for this reason, that Corobrik's Burgundy pavers were selected. "They add rich colour and contrast to create a quality urban environment."

Duke said that a herringbone pattern was selected because of its increased interlocking strength. "This ensures the movement of the pavers is limited and the risk of pavers shifting or lifting is reduced," he said.

Depending on future urban design, upgrades and budget availability, Duke said the paving could be extended into Ballito.

Corobrik's director of sales Allin Dangers, said

the clay pavers were the perfect choice for an outside area that will have to endure high levels of foot traffic.

"The pavers, which undergo an intense firing process, offer outstanding durability while retaining colour over time," said Dangers. "As shown in the many inner city and urban landscape upgrades across South Africa, the colourfast hues of fired clay provide the propensity to uplift urban environments in a stylish yet unobtrusive manner."

He said clay pavers are also a safe choice as they are smooth so easy to walk on and skid resistant in wet weather.

Zayne Sayed, contracts manager for African appointed Advanced Retaining & Paving Systems to install the pavers. Sayed said that the main challenge was to ensure the safety of the pedestrians while working. The construction team needed to remain focused on the work during the period of high traffic volumes in Ballito. ❏



**Corobrik's Burgundy pavers have been used to construct the sidewalks and islands along both sides of Ballito Drive, extending from Greenfields Road near the new N2 interchange, all the way to the M4 intersection.**





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# POWERING infrastructure DEVELOPMENT in Africa



Andre van der Walt – functional head: power and energy at SMEC South Africa.

The bulk of infrastructure development funding in Africa is allocated to power and energy. In addition, the South African government's highly successful Renewable Energy Independent Power Producer Procurement (REIPPP) programme is perceived globally as a model for private-sector investment in public infrastructure.



This has paved the way for companies such as SMEC play an increasingly vital role in these sectors. The REIPPP programme has provided an important springboard for opportunities in base load, cogeneration and gas-to-energy power, Andre van der Walt, functional head, power and energy at SMEC South Africa comments. "It is also an indication of the market appetite for such projects, and has opened a gateway into Africa for us."

SMEC power and energy capabilities encompass all stages of project completion, from project inception through to delivery, including feasibility studies, front-end engineering, modelling and analysis, engineering design, procurement, contract management, construction supervision, quality assurance and operation and maintenance.

SMEC has a capability in high, medium and low-voltage transmission and distribution systems, including secondary systems, telecoms, SCADA as well as civil and structural work. "We have a team of professional engineers and registered project managers that work closely with our clients to drive technical excellence and project success," Van der Walt notes.

In the planning and development of power systems, SMEC identifies, evaluates and recommends the most appropriate and holistic option for specific customer requirements. This includes looking at system optimisation options, protection studies and stability analyses, the design of generator grid connections and even power security studies.

In terms of project execution, SMEC South Africa can undertake both preliminary and detailed designs, tailoring project solutions to local needs by leveraging off its global expertise and experience. "We integrate innovative global best practice into local customer-focused solutions," Van der Walt notes. "SMEC South Africa understands local

tendering and procurement practices, enabling efficient technical and commercial evaluation of contractor bids."

Van der Walt points out that SMEC South Africa adheres to PMBOK (Project Management Body of Knowledge) guidelines to drive its projects from planning to successful completion. "We are experienced in all facets of power engineering management, from construction supervision through to network management and institutional capacity building, thereby ensuring effective implementation and continued operational excellence."

SMEC's hydropower expertise ranges from the successful delivery of 5 kW micro projects to 8 000 MW high-capital multi-disciplinary mega projects. Van der Walt points out that SMEC was one of the original players in the renewable-energy sector, with the Snowy Mountains Hydro-Electric Scheme in Australia. This expertise has culminated in SMEC South Africa contributing front-end engineering services to a number of developers and contractors involved with the REIPPP programme.

"Not only have we strategically positioned ourselves in this field, but the power and energy division is doing very well in Africa at the moment," van der Walt highlights. "There is a plethora of projects, of which some are being supported from South Africa." These include a 132 kV network feasibility study underway in Uganda and a 220 kV mining substation extension in Botswana.

Key renewable energy projects currently undertaken by SMEC South Africa include implementing an energy-efficiency retrofit programme and photovoltaic system installation at four Trans Africa Concessions (TRAC) toll plazas, each with a capacity of between 30 kVA and 45 kVA. "We have been commissioned to provide a further two such systems," van der Walt reveals. ◀

**LEFT: SMEC power and energy capability encompasses all stages of project completion.**

**BELOW: A typical substation: SMEC is extending a 22 kV substation in Botswana for a mining project.**





## A MEGA CITY IN THE MAKING

A previously empty piece of land, 20 kilometres south of Johannesburg, is being turned into a mega city, named Savanna City. This 1 462 hectare property will contain over 18 000 housing units, retail outlets, schools, clinics, crèches, churches and other community provisions. It will all be linked by some 127 kilometres of roads. Parks, sports fields, gardens and over 30 000 trees will make it a pleasant place in which to live.

Savanna City is a development of Basil Read, which manages a 50% interest, and the Housing Impact Fund of South Africa (HIFSA), a R9-billion fund formed by Old Mutual, with support from the DBSA, the Government Employees Pension Fund and the Eskom Pension and Provident Fund.

Savanna City employs numerous contractors, which in turn employ subcontractors. To support the growth of these small businesses, Savanna City Developments created a budget for skills development, outside Basil Read's budget possibilities for the same purpose, co-operating with CETA (Construction Education and Training Authority). Savanna City aims to equip these small businesses with effective management principles, enabling them to manage and run a business. To date 15 small and medium enterprises have benefitted from this programme, which greatly increased their ability to compete in the market.

In the development of the Savanna City

concept, most government departments have a part to play. Davina Piek, development director of Basil, explains: "Not all are funding partners, but most are. In the nature of things, it took a long time to resolve the issues around payment for bulk services before we broke ground. The Department of Human Settlements, National Treasury and Gauteng Province all helped to get us to the point of breaking ground. Government financed the Fully Subsidised Housing and assisted with bulk and link funding."

Savanna City will play another important role in the growth of the Gauteng economy. Once completed, it will provide a stable labour pool for Midvaal, Johannesburg and surrounding areas. The project has pushed boundaries in many areas. For the first couple of years this unique development will contribute to Midvaal municipality by means of an urban management grant of up to R35-million. "I have never seen anything like it in any project anywhere," says



Piek. "We budget for it annually. Midvaal is not a big municipality and the money is used to beef up staff and equipment".

By the time Savanna City is completed it will have doubled the size of Midvaal. Midvaal have responded by employing a full-time project manager, something that has proven very useful. "The urban management plan shows the roll-out of houses, the potential income from rates, taxes and municipal services, as well as the potential cost related to additional staff, equipment, vehicles and operational costs. "It is complicated," says Piek, "but the co-operation between the people on all these bodies is really excellent. The way we are working together has made it possible to move the project forward strongly."

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A bird's eye view of the B&E International crushing site at Kusile.

# AGGREGATES FOR POWER

## station projects

The ability to understand customer requirements in challenging conditions, coupled with years of experience in a variety of crushing and screening applications, set B&E International in good stead for supplying aggregates to major power station projects in South Africa, Dewald Janse van Rensburg, managing director, says.

Added to the power supply issues at Kusile power station is the fact that the crushing and screening operation is located in an environmentally sensitive area. Janse van Rensburg says that B&E International has put stringent measures in place to ensure that all work carried out is in line with all the environmental requirements of the project, such as reducing dust and noise emissions and minimising water use so as to conserve scarce natural resources.

While Eskom is B&E International's major customer it is supplying from the crushing and screening operation at Kusile, it is also providing aggregate for associated infrastructure development in the area, such as roadworks. "We anticipate a fair quantity of construction spin-off, with the power station as the hub of the development," Janse van Rensburg says.

B&E International established its credentials in the power generation sector by crushing 3,5 million tons of aggregates at the Medupi power station in Limpopo. "That was a significant operation, and stands us in good stead for securing work in future when additional power stations are built," Janse van Rensburg says.

Commenting on B&E International's success at Medupi power station, Janse van Rensburg says the large equipment fleet at its disposal was a critical factor. "Our major advantage at Medupi, which gave us the competitive edge in the market, was that we had three complete crusher fleets at our disposal. This meant we were able to

produce the volumes required and meet all the production targets."

### History

B&E International was established in 1972 in the Eastern Cape. It soon established its own mobile and static crushing division, followed by further diversification into mining services and bulk mining and minerals processing and beneficiation. B&E International was acquired by the Raubex Group in 2009, completing its transformation as a total solutions provider in the mining and construction industries.

"There was a time in the infrastructure sector when a lot of contractors opted for in-house crushing, but this has changed significantly over the years. There are very few contractors that choose this option, as it is now correctly perceived as a specialist skill set. With this follows the recognition that it requires the knowledge and applications experience of a seasoned operator," Janse van Rensburg says. "B&E International is that operator."

B&E International's largest crushing contract to date was at Eskom's Ingula pumped storage scheme near Ladysmith in the Free State. Janse van Rensburg confirms that the power generation sector offers major opportunities in Africa, with major hydro-electric projects being mooted in the Democratic Republic of the Congo, for example. <

> B&E International has been supplying aggregates to Eskom's Kusile power station in Mpumalanga since 2011, with about 1,7 million tons crushed to date. "Our current quarry at Kusile will be operational until early 2016, whereafter we will commence with a new quarry closer to the planned New Largo coal mine," Janse van Rensburg says.

He points out that B&E International's involvement in such power station projects is not as simple as transporting equipment to site and then just commencing with crushing and screening operations. "It is much more about understanding the specific requirements of the customer, as well as the particular conditions on the project, and then determining the appropriate solution that will produce the required tonnages and quality required. This means that the equipment selection is critical, combined with the in-house expertise and experience of B&E International."

In the case of Kusile, B&E International established a crushing and screening operation on site in 2011. What was particularly challenging in terms of this contract was the fact that the entire operation is driven by standby power. This means that a tight control needs to be kept on operational costs, while at the same time ensuring that the aggregate specification and quantities are met.

A view of the secondary crushing plant at the B&E International operation at Kusile.





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# Towards **SERVICE** excellence

Service delivery and overall customer satisfaction across the Cummins supply chain in Southern Africa is set to dramatically improve, following the recent official opening of the 20 000 m<sup>2</sup> state-of-the-art Cummins Regional Distribution Centre (RDC), Filtration and Coolant manufacturing plant in Johannesburg.

the environmentally-friendly Fleetguard ES Compleat™ organic acid technology (OAT) coolant formulation,” says Feroze Chowdry, director of Africa Components.

Mackell states that the need for the RDC, located in Waterfall Commercial Park, was realised as a result of a strategy network study conducted by Cummins Africa.

“The study revealed that, in order to support our forecasted growth on the African continent, Cummins would have to invest in supply chain capacity and capability that will be resilient, competitive and creates a preference for Cummins by our current and future customers.”

Construction of the RDC took one year, and Mackell is confident that it will enhance the company’s capabilities in Africa, allowing it to optimise customer service, inventory and logistics costs. “The Southern Africa RDC will vastly improve service offerings across the region through enhanced stock availability, shorter lead times, lower end-to-end logistics costs, and value-added logistics solutions. The RDC has also facilitated the consolidation of various distribution points under a single roof.”

Another important aspect of the establishment of the RDC is that we have executed a successful relocation program. “Twenty three employees from our Kelvinview and Pietermaritzburg warehouse facilities as well as 24 employees from our Pietermaritzburg filtration plant have been relocated to continue their work at the new RDC location. There are currently 72 employees located onsite, and

there may be a need to hire additional staff in the near future,” adds Mackell.

RDC staff members have also been upskilled by undergoing comprehensive training on best-of-breed warehouse management, materials planning and order management applications. Due to the fact that new state-of-the-art material handling equipment was introduced to the RDC, all staff underwent certified training on the new reach trucks, order pickers and forklifts. The RDC is run by Cummins Global Logistics who perform supply chain operations on behalf of the other Cummins business units.

He adds that inventory relocation was another challenge. “A considerable amount of inventory was moved from original sites to the RDC during April 2015 in preparation for the go-live in May 2015. Although this was an undertaking that required considerable manpower, customer service was not compromised, as employees remained committed to their task at hand throughout the duration of the move.”

Mackell is optimistic of the future outlook for the RDC. “In the past, our distributors ordered directly from the parent distribution centres located in Belgium, Singapore and the USA with long lead times and often paying premium freight. The establishment of the new RDC will result in increased overall parts and filtration availability with greater depth and breadth of product stocking. This RDC will service 12 Southern Africa countries and enhance our brand promise of “We are Cummins you can depend on us.”



Cummins supply chain director for Africa, Ged Mackell states this new purpose-built facility is part of our global strategy to move our resources closer to our customers. This Southern Africa Regional Distribution Centre for parts and filters covers 10 000 m<sup>2</sup>, while the engine and generator storage warehouse covers a further 6 000 m<sup>2</sup> area.

“In addition, we are introducing a best-in-class, coolant blending plant and air filter manufacturing plant that comprises 4 000 m<sup>2</sup> of the facility. The plant will also be home to





# ABUJA'S JABI LAKE MALL

Jabi Lake Mall is a two-level shopping centre in Abuja, Nigeria on a spectacular site at the edge of a lake. The main entrance features a striking triple volume metaphor for a tree as a focal point and traditional gathering point.

Jabi Lake Mall will offer 27 000 m<sup>2</sup> GLA on completion. Designed by South African architectural practice MDS Architecture for London-based developer Actis, the design is a contemporary take on the concept of a gathering place.

Donald McGillivray, the partner heading up the project, says that the shopping centre is one component of an overall master development for the lake which includes a hotel, office buildings and residential apartments.

"The shopping centre is the catalyst for the initiation of the rest of the development. For this reason, a lakeside boardwalk has been incorporated in the shopping centre design. All the restaurants, cafés and children's play area face the public boardwalk," he says.

Construction started in January 2014 and the shopping centre is due to be opened to the public in October 2016.

The entrance into Jabi Lake Mall is a double volume space, with the tree extending through both levels. A leaf floor patterns has been incorporated into the floor at the ground floor entrance, as if the tree has shed its leaves.

The building is two-fronted onto the main

road as well as onto the lake. The interior features floor patterns which evoke typical West African patterns. The muted colour palette has been achieved with water tones and natural materials for serenity.

The entrance court is also the main promotional court. It echoes the lake through a chandelier which features bubble-like spheres. Yet, the entrance court offers quite a departure through vibrant colours, in contrast with the muted colour palette elsewhere in the shopping centre.

Leaf patterned lighting has been used, as well as bulkhead lighting, recessed lighting and natural light through clerestory windows.

Jabi Lake Mall will feature water harvesting facilities and insulated walls and roofs. Glazing is properly shaded for greater energy efficiency. Water and sewer treatment plants are part of the design. In addition, recycled, sustainable and locally available materials are being used on the building. ■



## Professional team

- Client: Actis (London)
- Development manager: Laurus Development Partners (Nigeria)
- Architect: MDS Architecture (SA)
- Structural engineer: L&S Consulting (SA)
- Mechanical engineer, electrical engineer, plumbing & lighting consultant: Chapman BDSP (London)
- Main contractor: Bouygues Construction (Nigeria)

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# Incorporating **PILLARS** of **SUSTAINABILITY**

The new sustainable I-CAT campus being developed at the N4 Gateway Park in Pretoria will feature a 914 m<sup>2</sup> office building, and a 1 035 m<sup>2</sup> warehouse. Earthworld Architects designed the building by incorporating the three pillars of sustainability: Environmental resilience, economic demands, and social sustainability were key focuses of the building's design.

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**T**he result is a corporate office and warehouse that has a minimal impact on the receiving environment. The building harnesses natural solar energy in an environmental efficient manner to create a comfortable working environment, thus increasing the reuse of natural resources. The building design will also improve positive visual and noise impacts on the receiving environment and building occupants.

Architect Rudie Botha notes that it was important to understand the local climate, and the type of structure, as well as its occupants when designing the building. "The design of the building in relation to the local climate and environment can have a significant impact on the energy consumption of the building," he explains.

All materials that are being used in the construction of the building have been locally sourced, thereby reducing the energy needed to get them to site. Furthermore, the building has been designed to use as little energy as possible.

"The orientation of the building places the offices closer to the northern side of the building. This ensures greater solar access during winter, while the specially designed roof and overhang reduces solar gain during the summer months," adds Botha.

Shading devices will be utilised on the northern, eastern and western sides of the building, to limit direct sunlight. However, natural light will still be used during the day, in addition to solar power. Botha adds: "The optimum running stage of the building has been established. If the natural light during the day is not sufficient in terms of light levels, the artificial lighting will automatically be switched on."

In addition to solar electricity, water in the offices and the showers in the warehouse will be solar heated to reduce energy consumption. To reduce water consumption, rain water will be harvested from the roof and stored in a tank, which will be used in the landscaping around the building. The harvested rain water will further be filtered and purified allowing it to be used in the water cisterns.

When designing the building, the overall level of comfort was considered. Botha reveals that this relates to thermal comfort, visual comfort, acoustical comfort and comfort of air quality. "Several systems were designed to ensure optimum occupant comfort at all times."

In summer months the building would be nocturnally ventilated. This will happen in the early hours of the morning, allowing the internal temperature to drop. The fresh air will then be contained for as long as possible. Once the temperature inside the building gets to high the windows at the top of the building will automatically open, allowing the hot built up air to escape.

To maintain the thermal comfort of the occupants, the building will make use of a small inverter air conditioning system which will run from the solar power. When the temperature in the office drops below or above the comfort level, the air conditioning system will automatically activate to get the temperature back to the optimum thermal comfort.

The building also features a courtyard at its southern end. Botha points out that this creates a light environment which will draw cool air into the building. This also creates an environment where people can go and enjoy some time outside. "This courtyard adds to the social sustainability of the building,

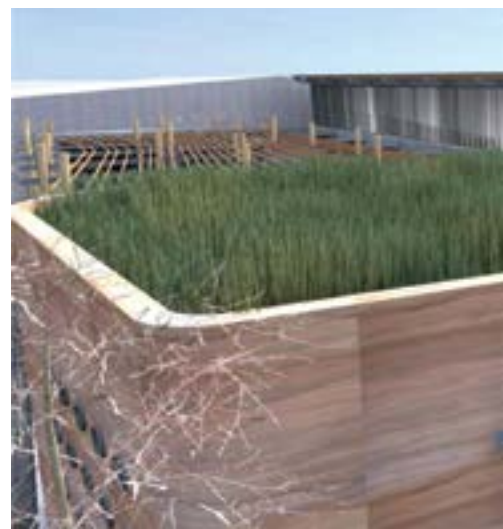
as you want happy workers, because this improves efficiency from an economic sustainability point of view."

Botha highlights that the office building and warehouse were also designed to allow I-CAT flexibility in the way in which the buildings can be utilised. Both buildings have been designed with an open plan layout that can be divided into smaller sections if needed.

"The interior of the office building is designed in such a way to allow it to be used as a large open plan office, or to divide it into smaller offices in the future. The warehouse features a column free design, with supporting columns only along the perimeter of the warehouse. This leaves the interior of the warehouse free to be adjusted and changed to suit future needs," Botha concludes.

## Shading

The heating effect by solar radiation in the summer months will be controlled by







Rudie Botha, the architect (from Earthworld Architects).

external shading, north facing windows will be shaded by a roof overhang that will shade the building completely during the summer months and partially during the winter months to ensure the comfort of building occupants are optimised. East facing windows will be shaded by vertical fins that deflect early morning radiation during the summer months and afternoon sun on the south facing windows.

### Thermal conduction resistivity

#### Roof

100 mm Rigid Expanded Polystyrene EPS suggested by SANS 204 will be used as roof insulation to restrict the thermal conduction through the roof structure.

#### Walls

High thermal material will be used to construct the office building walls to ensure there is a sufficient time lag so thermal heat does not reach the interior of the building in the peak working hours and natural ventila-





tion will cool down the building in off peak periods.

**Windows**

East and west facing glass windows were restricted and all glass windows were designed incorporating shading devices to limit exposure to solar radiation.

**Colour of building envelope**

Light coloured building materials were selected to reduce the absorbance of solar radiation by the building envelope.

**Landscaping, trees, ground covers**

According to Earthworld Architects the following considerations in terms of the thermal design was taken into account:

- Plants are provided to shade windows and walls, thus reducing the solar gain.
- Ground covers, trees and shrubs are provided to reduce the reflectivity of surfaces, thus minimizing both the solar reflectance and long-wave reflectance into windows.
- Un-shaded hard surfaces are kept to a minimum. Hard surfaces (paving, concrete, and asphalt) are alternated with plants and ground covers. Patios with hard surfaces are shaded during the summer time.
- The planting of vegetation would be seasonally beneficial to the building. In front of the equatorial facing windows only a few tall deciduous trees are planned.

**Environmental efficient considerations**

**Energy consumption**

I-CAT Environmental Solutions will incorpo-

rate a solar photovoltaic system on the roof of the new building to generate electricity. The system will not be connected to the national electricity grid so all electricity generated will be used to supply power to the building itself.

A typical solar system of this nature will supply enough power for peak working hours without feeding excess power back into the grid. Should the building require extra power at any given time, power from the national grid is available. The implementation of the system will allow I-CAT Environmental Solutions to generate 69 920 kWh per annum from solar energy which is a renewable resource. As a result of this project I-CAT will only need to import an expected 1 049 kWh per annum from the national electricity grid. The implantation of the system will result in the reduction of greenhouse gas emissions. The electricity from the national grid has an emission factor of close to 1 kg of CO<sub>2</sub> per kWh of electricity. Hence, the implementation of the system will result in a reduction of almost 70 tonnes of CO<sub>2</sub> emissions per annum.

**Rainwater Harvesting System**

I-CAT Environmental Solutions will be implementing a rain water harvesting system at the new building. A 50 000 litre underground water storage reservoir will be installed. The intention is to collect all the rainwater from the combined roof area which is 1 495 m<sup>2</sup>. This water will be filtered and re-used to flush toilets and landscaping purposes, also, I-CAT has focused on water efficiency through the use of waterless urinals, low water usage toilets and low water usage taps to conserve water.

**Solar water heating and solar powered heat pumps**

The new building will incorporate the

installation of solar water heaters and solar powered heat pumps. Solar water heaters convert solar radiation into thermal energy for heating water. Solar water heating systems consist of a solar collector and a storage tank. In the solar collector, the sun's thermal energy is used to heat a liquid. This liquid transports the heat through pipes to the storage tank. Heat pumps use electricity more efficiently and hence also reduce the electricity demand of the building.

**Wash bay filtration system**

I-CAT Environmental Solutions will install a filtration system at the property's wash bay, which will use disc filtration technology to remove any suspended solids. The filtration system will also make use of activated carbon filters to remove hydrocarbons and dissolved impurities. UF membrane filters will be used to remove all particles up to 0,01 microns including bacteria and viruses.

Water will then be re-used in the wash bay and for irrigation purposes. With clean water becoming more scarce, I-CAT intends to re-use all of the water used for cleaning the vehicles at the wash bay. It is estimated that there will be a 93% recovery rate of the water used after filtration, which means there would only be a 7% loss. This will reduce pressure on the municipal water treat

An increase in environmental consciousness in the design, construction and operation of corporate and industrial buildings leads to a decrease in negative environmental impacts.

I-CAT Environmental Solutions has taken every aspect of the environment into consideration to optimise spatial use and minimise the impacts on the receiving environment as far as possible, while increasing the visual impact of the new I-CAT Environmental Solutions building. ◀



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# ISO CERTIFICATION

Lafarge South Africa's Readymix business line has been awarded ISO 9001:2008 certification after a two year rigorous auditing procedure.

This internationally highly-respected Quality Management System (QMS) gives customers peace of mind by verifying that the procedures and people in the organisation are focused on continually meeting or exceeding customers' expectations.

The core principle of the ISO 9001:2008 Quality Management System is accepting that the success of an organisation depends on its customers and it should focus on working closely with them to understand current needs, as well as anticipate how to add value to their businesses in the future. While traditionally being thought of as the sales team's job, this principle has to be entrenched in the minds of staff at all levels of the company and their active contribution motivated at all times.

QMS certification is by no means a once off exercise and requires continual vigilance, reinforcement and innovation to establish new and better ways of giving customer service. To ensure the standards are maintained at all levels of the organisation, Lafarge Readymix has established an internal team of auditors trained in the ISO processes and procedures. The ongoing validity of the ISO 9001:2008 certification is contingent upon their diligence and effectiveness being confirmed in spot surveillance audits by the SABS.

"This has been a Lafarge Readymix team effort to enhance our standing in the marketplace and ensure continued growth our business," says Lafarge South Africa's Hennis van Zyl, area manager for concrete (Cape Town).

"Everyone deserves congratulations for this successful outcome from their hard work and commitment: from the strong belief and leadership of our management to every member of our operating teams in ready-mix concrete plants throughout the country. Our appreciation also goes to our internal audit teams as well as the SABS." ◀

➤ Handing over the ISO 9001:2008 certificate on 13 May 2015 at a ceremony held in Lafarge South Africa's Johannesburg head office, the Business Development Manager for the South African Bureau of Standards (SABS), Tony Fillmore said: "This certification is the foundation phase of entrenching quality management practices throughout your organisation. Now that it is in place you can build on it. Lafarge Readymix should now aim for the Environmental Management System ISO 14001 as the next step in the QMS certification process.

"While one of the outcomes of the successful QMS certification process is reliable product quality, it actually embraces everything that we do to provide quality service to our customers, from raw material

control to delivery and invoicing," comments Anton Combrink, general manager of Lafarge South Africa's Readymix business line.

"It acknowledges that our company structure and the hard work we put into ensuring the effective control of all activities which are related, either directly or indirectly, to satisfying our customers are of a high international standard."

Lafarge South Africa is the local presence of the international Lafarge Group, a world leader in building materials. Lafarge's commitment to use its unparalleled technical strength to contribute products and solutions for *Building better cities*: cities that are more compact, have more housing, are more durable and better connected, while being more beautiful and desirable places for everyone to live in.

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**From left: Anton Combrink (GM of the Lafarge Readymix business line); Hennis van Zyl (Lafarge Readymix – Concrete (Cape Town)); Tony Fillmore (business development manager, SABS); and Colin Sutcliffe (executive risk management solutions).**







Concrete masonry housing offers a wide variety of benefits including job creation for block layers, says The Concrete Institute.

# The **SUSTAINABLE** choice

Concrete masonry housing offers substantial environmental benefits, says Bryan Perrie, managing director of The Concrete Institute.

– all of which contribute immensely towards social and economic sustainability.

“Furthermore, the thermal mass quality of concrete provides it with the ability to improve environmental sustainability by aiding passive climate control design. From this perspective, it is clear that concrete masonry is an inherently ‘green’ material ideally suited to improve sustainability in South Africa,” Perrie adds. ◀

➤ “The increasing focus on environmentally-friendly practices and energy-efficiency has resulted in the emergence of global ‘green washing’ with its inherent unsubstantiated, or misleading, claims about the environmental benefits of products or materials. As a result, it has become necessary to delve deeper into the manufacturing processes of materials to distinguish the truth from fiction in this regard,” Perrie asserts.

“The ability to incorporate recycled and industrial by-products into the concrete masonry manufacturing process not only reduces the embodied energy of the units significantly, but also has immense environmental benefits. It decreases the demand for non-renewable resources by reducing the amount of virgin aggregates to be sourced.

“Secondary energy consumption generated by long-distance transport of aggregates from quarries to manufacturing plants can be reduced by using locally available building

rubble. At the same time, it eases the pressure on landfill sites by decreasing the amount of rubble and waste material to be transported to, and dumped at, landfill sites. Concrete masonry manufacturing plants also have the unique ability to become zero-waste manufacturing sites by recycling their own manufacturing waste back into the process.

“Further to that, any so-called ‘green’ material should be evaluated against its ability to contribute towards the overall sustainable future of South Africa. In order to do that, one needs to consider that true sustainability is the result of a balance between environmental, economic and social factors.

“The inherent cost-effective, durable and low-maintenance qualities of concrete masonry have for long made it the material of choice for the South African context. The labour-intensive nature of concrete block-laying provides the opportunity to create numerous jobs in the unskilled labour market



**Bryan Perrie, managing director of The Concrete Institute.**

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Aspsa chairman, Gert Coffee.

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## Quarrying industry to **PUSH FOR AUTONOMY**

Small quarrying operations throughout the country are carrying the back-breaking burden of supplying the country's entire building and construction industry with up to 70% of building materials used to construct infrastructure and housing.

➤ Yet, individual quarrying operators in this key sector are not being nurtured by Government, rather they are being over-regulated and are pushed to the point where smaller operations are becoming unviable and left with no choice but to close their gates. This often allow for illegal mining to escalate and not be controlled. The problem says Aggregate and Sand Producers Association of Southern Africa (Aspsa) chairman, Gert Coffee, is that regulation of quarries is lumped into the same legislative framework as mining and therefore the same rules apply for small quarries as they do for large gold or platinum mines.

The burden on financial resources of small quarrying operations is enormous and can easily drive input costs beyond the price that is attainable for sand and stone.

### Localised operation

"For this reason we want to be recognised as different from the mainstream mining industry and want to draw attention to the fact that the majority of members are smaller operations outside of towns that do not have the same resources that mainstream mines have. Without these small quarries however, the construction industry in the area that it serves will be severely impacted as materials will need to be shipped in, although road transport of aggregates beyond a 100 km radius is uneconomical and exceeds the market price attainable.

"Another problem is that input costs are pushing the price of sand and stone upwards and as a result building costs are rising to the point where illegal quarries and borrow pits are starting to thrive. With no regard for legislation nor tax, royalties or even the wellbeing of their workers, these unscrupulous operators can undercut legal ones and drive them to closure," says Coffee.

He explains that in order to bring relief, Aspsa wants to work with authorities to explore a separate sectoral classification which can be tailored to the industry and govern it according to its own requirements. "It is not that we do not want to be regulated, rather we want regulations to be useful rather than counter productive."

### Construction materials

"In a number of other countries the industry is regarded as separate from mainstream mining and is defined rather as Construction Materials Quarrying. It therefore takes into consideration the industry's role as a key material supplier for the construction industry and acknowledges the materials importance in the building of roads, railways, infrastructure and housing.





# REFLECTING ON ONE YEAR OF INDUSTRY INNOVATION

A year since its launch in 2014, PPC's Cement and Concrete Cube (C3) remains a true triumph for the industry. Designed to facilitate greater collaboration and information-sharing, the Cube's interactive interface speaks to user trends and needs.

> First launched to the industry in July 2014, PPC's Cement and Concrete Cube continues to offer users a subject-specific, neutral platform where they're able to source and share information, and interact with like-minded people. "C3 was conceptualised to close some of the collaboration and communication gaps we had noted in the industry," explains Hanlie Turner, PPC's technical information services' specialist. "Its interactive interface speaks directly to the need for electronic information sharing and networking, driving practical conversations where groups can leverage collective experience and knowledge." Industry uptake supports this assertion – with over 1 200 registered users on the platform.

C3 has driven a number of key conversations over the past year, with posts around innovation and creativity generating the most engagement. "The trend is towards shorter, catchier content for day-to-day interaction, while more technical content is accessed when a specific need for in-depth information is identified," notes Turner.

The Cube has attracted members from across the sector, including the likes of John Sheath, CEO and Director of the Concrete Society of Southern Africa, and Johan van Wyk, general manager of the Southern Africa Readymix Association. Both note C3's ease-of-use as one of its key features.

Users are able to join multiple interest groups. This has seen the growth of groups around subject matter including innovation, architectural concrete, C3 A – Z and energy. The ease of searching for content across the Groups remains one of the strengths of C3.

Current – and future – users can look forward to the continued evolution of the Cube. "We've already received requests for an App that will facilitate greater interactivity, much like Twitter and Instagram," says Turner. "We're committed to updating and refining C3 to respond to this type of request, as well as to keep abreast of leading social and electronic media trends." ☑

"It also tackles legislation that is specific to the types of equipment found on these sites, covers relevant health, safety and environmental issues, as well as defining taxation, royalties etc in a different light compared with mainstream mining. With our own set of rules and regulations we can also begin addressing issues that affect our industry head-on rather than adapting our response to an industry that is similar, but not the same.

"For example, we can formulate sector specific skills development plans and work with government departments at all levels to eradicate illegal mining. More importantly we can work in parallel with Government and the construction industry to ensure the success of future construction and infrastructure projects on a national and local scale," he says.

## Towing the line

Coffee concludes that in the past two decades since the formation of Aspasa, the association has actively worked with all role-players to establish acceptable working codes and best practices. It has also taken safety, health and environmental ethics on its quarries to world-class standards and has implemented annual audits to ensure members comply with its own strict guidelines as well as complying with all legal and statutory requirements.

"As a key role-player in the mining industry, a member of the Chamber of Mines executive committee and active role-player on various Government and industry panels, we believe that the time has come for us to define our own sector with our own rules designed to protect and promote companies and individuals within the quarrying industry." ☑

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## QUALITY MEETS AFFORDABILITY

Performance, efficiency, reliability, and affordability differentiate the quality range of compact concrete mixers, concrete cutters and light towers, from Goscor Power Products.

➤ Goscor Power Products is the exclusive southern African distributor of the H-Power range of light construction equipment. With ISO 9001:2008, CE, EPA and CSA accreditation, this product range reflects world-class quality and the H-Power concrete mixer is no exception.

This versatile, compact, high efficiency mixer boasts a 350 l drum capacity and rated production capacity of 240 l per load. Fitted with four wheels and a draw bar, the operator friendly unit can be moved with ease on site to keep productivity levels up. Mark Bester, managing director of Goscor Power Products explains that the H-Power units are available with different engine options including Robin Subaru and H-Power 10 hp diesel engines "in order to meet the extremely diverse applications of concrete mixers."

"The Goscor Q450 concrete cutter is extremely affordable without compromising on quality. It is unique in the sense that it is one of the more powerful and efficient cutters available on the market," affirms Bester.

The strong 14 hp Robin Subaru Engine with a high mount air cleaner, is capable of powering a full 450 mm blade compared to other 350 mm units on the market with 11 hp engines. A larger cut ensures shortened work time on site while the water system which provides optimum flow to the blade to ensure the blade stays cool during cutting, extends equipment

life. The plastic water supply tank makes this unit virtually corrosion free and is thus ideally suited for coastal sites.

Goscor Power Products recently augmented its wide range of construction equipment with the addition of a diesel-powered light tower.

"The main objective of developing this light tower was to create a unique, completely mobile unit that can be easily transported on the back of a bakkie rather than being towed. This broadens the unit's accessibility to working areas and is ideal for roadside stop-go, construction and mining sites," explains Bester.

This unique compact light tower combines lighting power and auxiliary power in one unit, offering 220 000 luminous flux from two LED lights which can be easily lifted to 4,2 m. Fitted with a 5 kVa diesel generator, the light tower provides an impressive 7,5 hours of continuous running time with a total inclination of 10 degrees with side-mounted support struts ensuring unit stability.

"This high quality, affordable compact product range, parts and spares are readily available from our dealer support network across South and southern Africa including Botswana, Mozambique, Namibia and Zambia," states Bester.

All Goscor Power Products equipment is tested specifically for the harsh dry and dusty southern African conditions to ensure optimum reliability, maximised uptime and low total cost



of ownership for customers and end users. Goscor Power Products, part of the Goscor Group of companies and Imperial, has enjoyed significant growth over the last few months and the resultant increase in market share required the company to move to larger premises at the end of 2014.

"Our new facilities have assisted us in further improving our service to our valued customers by enabling us to enhance stock capabilities, accommodate larger stock volumes and improve lead times," concludes Bester. ■

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## BETTING BIG ON ZIMBABWE'S GROWTH

After a challenging economic phase, the Zimbabwean economy is showing strong signs of recovery. The 2014 tobacco crop achieved new record levels, and demand for the product continues to be strong, particularly in China. Cotton, too, is booming while the mining sector is starting to revive.

➤ Along with this economic revival, the Zimbabwean government is beginning to invest in renewing existing infrastructure, like roads and dams, and to invest in new projects, such as energy generation.

"As Zimbabwe's largest producer of Ordinary Portland Cement – the highest grade – PPC Zimbabwe is a key player in all the big projects under way, and we are working hard to be involved in those still at the planning stage," says Njombo Lekula, managing director of PPC Zimbabwe.

"We are also well positioned to play a leading role in the building up of Zimbabwe's infrastructure because we already have the equipment, processes and tanker fleet to handle bulk deliveries, something that's vital for these big projects. We see ourselves as selling not just cement but a total solution to our customers."

Lekula goes on to point out that PPC Zimbabwe is looking to the future, with substantial new investments in capacity underway or planned. He explains that while PPC's existing factory in Bulawayo positions it particularly well in the Matabeleland region, it's clear that much of the country's future growth will be centered on Harare and Northern Zimbabwe.

Much of the infrastructure needed in this region will be housing, in line with the trend towards rapid urbanization in Zimbabwe (and the rest of Africa, for that matter).

To ensure that PPC Zimbabwe is able to participate in the development of this region, it has embarked on the creation of a second manufacturing facility at Msasa, just outside Harare. PPC's Msasa plant is expected to be commissioned in the second half of 2016 and, Lekula says, should have a capacity of 780 000

tons. It will increase the country's total capacity to 2 million tons, an increase of some 48 percent.

### Building for the future

The Msasa plant is being built to the most modern standards, including bulk-handling and palletising capabilities such as were recently introduced at the Bulawayo factory. Thereafter, a clinker plant will also be constructed in the country, properly positioned to feed Msasa. This will supplement PPC's existing clinker plant at Colleen Bawn.

"The key point to make is that Zimbabwe's cement industry can already meet existing demand, so the investment in Msasa of around USD86-million is very much a vote of confidence in the country's future as we see it," Lekula says. "It's an expression of our confidence that the economy is on the up, and also in the growing amount of intra-regional trade with South Africa, Mozambique, Malawi and Zambia particularly. Our total investment is USD200-million in the country over the coming years."

PPC Zimbabwe is also involved in infrastructure projects in Malawi, Mozambique and Zambia. He adds that a big contributing factor to PPC's investment is the support the company receives from the state – in particular





Goscor Q450 concrete cutter with 14 hp Robin Subara power unit is affordable quality.

Versatile, compact H-Power concrete mixer with 350 l drum capacity and rated production capacity of 240 l per load.



the three key ministries of the Environment, Finance, and Industry and Commerce.

"We adhere to the same strict environmental standards of the PPC Group as a whole, so that has helped us build a cordial relationship with the Environment ministry," Lekula explains. "Finance has given us invaluable support as regards the investment itself, and of course we are reliant on the backing of Industry and Commerce in a myriad ways. This kind of positive interaction with government is highly conducive to building business confidence, I believe." ❏

### About PPC Ltd

As the leading supplier of cement and related products in Southern Africa, PPC Ltd has nine manufacturing facilities and three milling depots in South Africa, Botswana and Zimbabwe. Related products include aggregates from quarries in Gauteng and Botswana. PPC Lime supplies metallurgical grade lime, burnt dolomite. PPC Zimbabwe is a subsidiary of PPC Ltd.



Njombo Lekula, managing director of PPC Zimbabwe.

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# SPECIALISED EQUIPMENT

Concrete surface preparation is a specialised activity and demands the use of specialised equipment. However, since it is not always practical for a contractor to purchase this equipment being able to hire it from a reputable company like Lambson's Hire provides a significant cost advantage.

Concrete surface preparation is applied to any new or existing concrete surfaces or structures and Lambson's Hire recently expanded its offering with a range of fit-for-purpose equipment. The selection or use of inappropriate equipment can have a significant impact on the contractor's bottom line. If the required quality finishes are not being achieved and work has to be redone as a result, this will incur additional labour, hire and consumable costs.

"It is essential that contractors have access to best practice solutions for specialised tasks such as concrete surface preparation and this is where we play a vital role in industry. Each of the products in the Lambson's Hire range has a specific purpose in surface preparation, depending on the degree of roughness required and with some overlap of functionality apparent," Devin van Zyl, CEO of Lambson's Hire, says.

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## Equipment range

The equipment range available from Lambson's Hire's Concrete Surface Preparation Division is aimed at improving the productivity and cost effectiveness of the company's customers. It consists of quality equipment, suited to the harsh working conditions found in Africa and with a strong international reference base.

Tough floor surfaces are tackled with ease, using the Beaver 250

**The 20 hp self-propelled cutting saw features a reinforced steel box frame design that helps reduce vibration during operation.**



floor scraping/stripping machine. "This scraper readily removes glued down floors, commercial carpets, gummy adhesives, vinyl tiles, solid vinyl, radial rubber tiles, sheet rubber, ceramic tiles, indoor and outdoor sport surfaces, as well as roofing material," says Van Zyl.

For grinding and polishing tasks Lambson's is able to offer a number of tools that include the versatile 65 kg Meteor 250 and 160 kg Satellite 480 machines. These easy to use and highly manoeuvrable machines are available with a variety of discs for various tasks. The Meteor 250 is a single disc electric floor grinding machine, and the Satellite 480 is a triple disc planetary machine which is available in both electric and petrol options.

On the other end of the scale, 125 mm handheld diamond grinder is perfect for use in confined areas due to its compact size and mass of only 2,6 kg. This grinder is typically used for the grinding and polishing of concrete on beams, columns and stairways. The grinders are complemented by the Edco walk behind floor scarifier. This machine has a working width of 250 mm and is used for surface marking removal, levelling, texturing and grooving.

Using compressed air to hammer piston-mounted bits into the concrete surface, scabblers typically roughen the concrete surface more than grinding or scarifying. Lambson's Hire stocks a three headed hand-held scabbler that weighs 4,7 kg, with a blow per minute rate of 2 800 x 3 and an 11 headed walk-behind scabbler, weighing 72 kg capable of covering 30 m<sup>2</sup>/h at a depth of 6 mm, with a rate of 2 200 x 11 blows per minute.

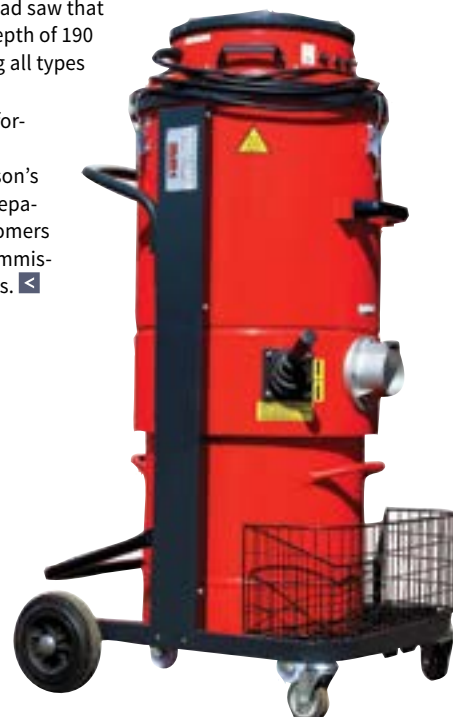
The smaller scabbler is ideal for the removal of plaster or the creation of a rough profile on walls or columns while the larger machine is used for preparing concrete surfaces for new concrete/grout/mortar/thick cementitious layers; for reducing concrete levels and for rectifying over poured concrete slabs.

During the preparation and cleaning of floor surfaces, the presence of dust can be an environmental and health hazard. Lambson's tackles this with two purpose-built dust collectors, capable of catching and collecting even the finest of concrete dust. "These machines feature a special filter shaker which allows all dust to be removed from the filter after operation. For varying needs, we have a smaller 25 litre unit weighing 31 kg and a larger 100 litre, 65 kg dust collector. Both are supplied with anti-static hosing for shock prevention.

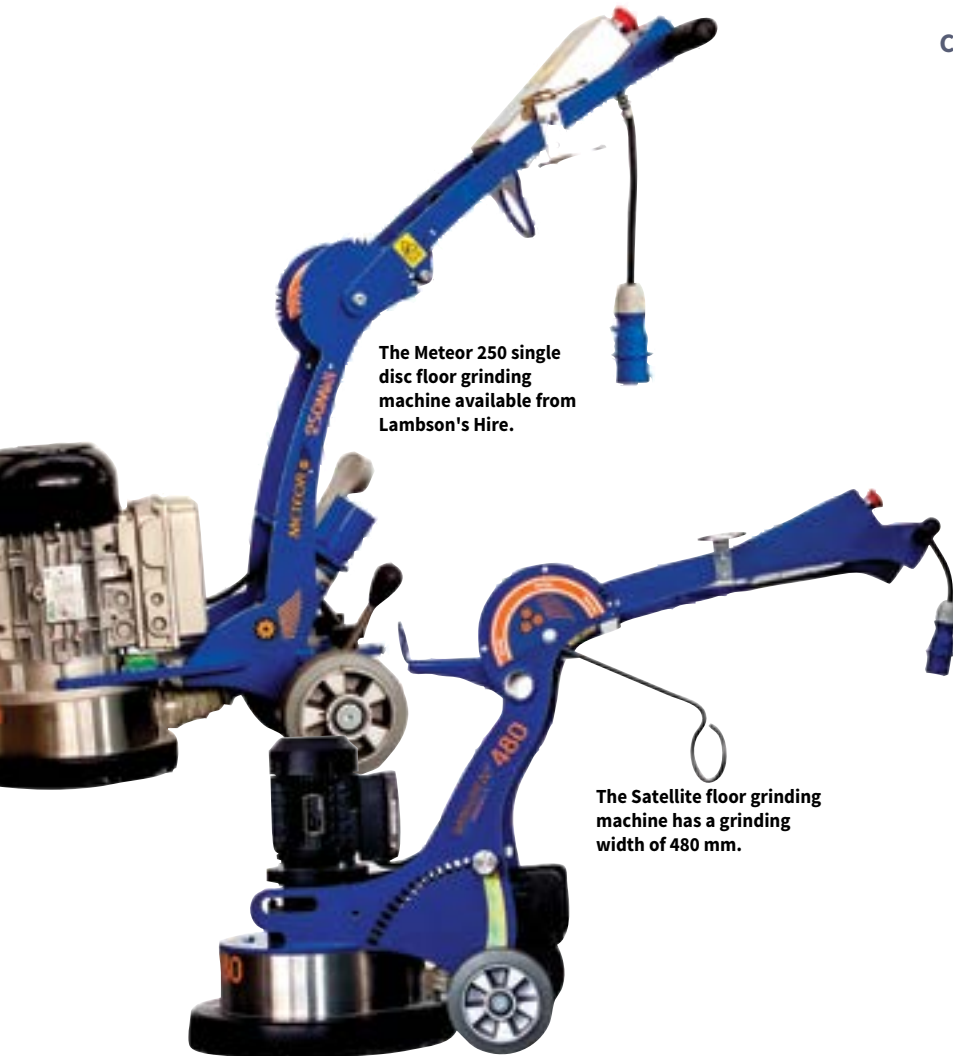
In addition to its range of concrete preparation products, Lambson's Hire also provides a 20HP self-propelled concrete/road saw that has a maximum cutting depth of 190 mm and is used for cutting all types of concrete and bitumen.

"To maximise the performance of this specialised equipment on hire, Lambson's Hire's Concrete Surface Preparation Division offers customers assistance with on-site commissioning," Van Zyl concludes. ◀

**A specialised 60 litre dust collector, available from Lambson's Hire, will ensure that companies comply with all environmental regulations.**

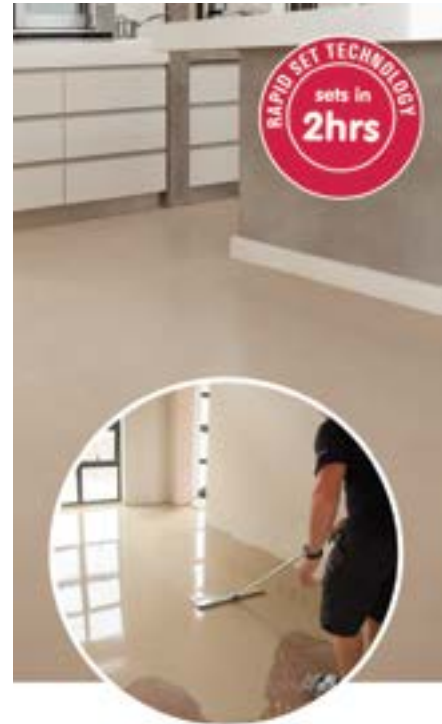






The Meteor 250 single disc floor grinding machine available from Lambson's Hire.

The Satellite floor grinding machine has a grinding width of 480 mm.



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## NEW GM SUPPLY MANAGEMENT

Lafarge South Africa is pleased to announce the appointment of Vishal Devan as the new general manager: supply chain for Lafarge South Africa. The position is a newly created role for Lafarge South Africa following the company's decision to adopt a more integrated Procurement model.

Devan has more than 10 years' experience in supply chain management and has worked for various multi-national companies including Nampak, SABMiller, Sasol and Toyota South Africa.

Devan holds a BSc Engineering Degree from the University of Natal and a BCom Financial Management Degree from UNISA. He has received Dean's Commendations for numerous distinctions for his MBA which he is completing at Wits Business School (University of Witwatersrand).

Devan's strengths lie in strategic supply chain initiatives and in implementing strategies for short and long term sustainability and efficiency. He has an impressive track record as a strategic thinker and a team leader. Some of his successes include leading a local and international team to develop state-of-the-art optimisation software recently featured at the European

Supply Chain summit. He was also responsible for the strategic restructure of the logistics and energy portfolios at SABMiller.

Devan is part of Lafarge South Africa's executive committee and reports directly to the country CEO, Ken MacLean. Commenting on his appointment, MacLean says: "Vishal has an impeccable track record and we are confident that he will add value and be an asset to our business. I believe I have joined at a very interesting time for the company and I look forward to the challenge ahead," Devan adds. ☒

**Vishal Devan, Lafarge South Africa new general manager – supply chain.**



# UNLOCKING concrete possibilities

Leading concrete materials company, AfriSam, has responded to demands for increased convenience by introducing its premium quality Dry Mortar product to the market. With a track record of producing high quality readymix concrete, cement and aggregates for more than 80 years, AfriSam has extended its range by producing its Dry Mortar product.



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> Amit Dawneerangen, sales manager for AfriSam's Gauteng region, says that immediate access to an already blended dry mortar solution is very attractive to South Africa's time-pressed and cost conscious contractors.

This product adds to AfriSam's extensive range of concrete solutions and ensures that contractors have a one-stop solution for all their wet trades, ranging from readymix concrete of varying strengths and specifications to cement, aggregates and Dry Mortar. Through its affiliation with Concrete Laser Flooring, AfriSam also offers contractors peace of mind flooring solutions.

"The AfriSam Dry Mortar mix offers contractors a number of benefits in addition to time and cost savings. Using a pre-blended mortar mix will enable optimum product integrity and subsequently quality construction on a project," he says.

"Manual blending of mortar or plaster requires careful attention to ensure that the correct ratios of sand and cement are used and incorrect blending or mixing will affect the quality of the final product and may result in cracking of plaster. Our Dry Mortar solution alleviates human error and goes a long way to ensuring quality workmanship," Dawneerangen says.

## Ideal for both mortar and plaster applications

This Class II mortar has been specially engineered as a dual purpose mix that can be used for both mortar and plaster. It will meet the minimum strength requirement of 5 MPa at 28 days with ease, whilst its well graded smooth texture requires minimal water addi-

tion and it facilitates an extremely smooth and crack free surface.

## Value-adding benefits

The product is supplied in 10 or 20 ton silos. This is a space saving advantage on a construction or building site as it effectively eliminates the need to accommodate large stockpiles of sand and frees up the area normally used to store bagged cement.

Supplying the product in either 10 ton or 20 ton silos offers optimum flexibility for all customers who can then decide on the size required based on individual project requirements.

The 10 ton silo is delivered fully loaded from the AfriSam facility, while the 20 ton silo is delivered to site empty and filled via bulk tanker. Discharge into the silo is conducted using a closed conveyance system which ensures product integrity and the elimination of dust during the process.

Not only does this guarantee optimum quality of the product, but the process also complies with all the requisite environmental regulations, a factor that underlines AfriSam's long term commitment to environmental stewardship.

To add to this, stockpiled building materials are often pilfered on site and by using the AfriSam Dry Mortar silos, theft is virtually eradicated and there is a similar significant reduction in wastage.

There are also other environmental and convenience benefits such as fewer vehicles on the road delivering raw materials to site. Instead of having separate deliveries for sand and cement, these now arrive in one vehicle. Procurement is simplified with the number

of suppliers reduced, as is the amount of raw materials on site.

## Discharge mechanism

On smaller contracts that do not make use of automated systems, the dry mortar can be discharged from the silo directly into wheelbarrows or other mixing vessels. Other options include attaching a mixer and a water connection to the silo so that when dry mortar is discharged, it comes into contact with the water and delivers a product that is ready to use.

This wet product is then discharged into a utility unit such as a dumper or concrete hopper. Where high rise construction is taking place and there is a need to convey the mixed mortar upwards, a mortar pumping system may be connected to the silo to facilitate the easy transfer of the product.

## Production process

Dawneerangen says that the most critical aspect of a ready to use dry mortar product is that the sand must be completely dry prior to the blending process to prevent any possibility of the cement reacting to any moisture. Special care is taken to ensure that the sand is completely dry and free of excessive clay and other deleterious material ensuring that a product of only the highest quality is produced.

The sand is then blended with AfriSam's All Purpose Cement in a controlled environment at a bespoke plant to produce a mix that is underpinned by high levels of quality. AfriSam's All Purpose Cement is an advanced composite cement containing milled clinker as well as advanced mineral components and





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1. AfriSam has responded to demands for increased convenience by introducing its premium quality Dry Mortar product to the market.
2. As a Class II mortar, AfriSam's Dry Mortar product has been specially engineered as a dual purpose mix that can be used for both mortar and plaster applications.
3. By attaching a mixer and water connection to the silo, a ready-to-use product is discharged when the dry mortar comes into contact with the water.
4. Where high rise construction is taking place, a mortar pumping system can be connected to the silo to facilitate the easy transport of the product.

additives. "These improve the product's workability and durability and it has the lowest carbon footprint in the 42.5N strength class. This ensures that the AfriSam Dry Mortar is a more environmentally responsible choice for contractors," he says

The fully automated plant has a 400 ton per day capacity, with plans in place to expand the capacity in response to market demand. The plant also offers the opportunity to produce coloured mortars and plasters, which AfriSam is currently in the process of developing. This will eliminate the need for paint and other expensive decorative coatings.

### Quality assurance

Batch printouts are produced to verify consistency and ensure optimum quality. In addition, samples of the dry mortar product are taken at regular intervals and tested at AfriSam's Centre of Product Excellence to ensure compliance with the required specifications. In addition, the Centre of Product Excellence will assist customers with queries and will provide product technical support to assist contractors in achieving a quality build.

### Product availability

AfriSam Dry Mortar has already been introduced to customers in Gauteng with much success and will be rolled out to the other provinces shortly.

"We are excited about the addition of Dry Mortar to our existing product range. We believe it demonstrates our commitment to delivering superior concrete solutions to our customers through continuous product innovation", concludes Dawneerangen. <



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# Forging links within DRC'S CEMENT SECTOR

By: Darryll Kilian, partner and principal environmental scientist at SRK Consulting (SA) and Natasha Anamuthoo, senior environmental scientist at SRK Consulting (SA).

The Democratic Republic of Congo (DRC) recorded growth of 9,5% in 2014, above the African average of 6%. In March 2015 Congolese Prime Minister Augustine Matata Ponyo adopted a bullish tone when he predicted 'double digit' growth for 2015.

Against this backdrop, the DRC is seeing an increased demand for cement, as infrastructure projects and construction are amplified in the wake of improved confidence and trust in the country and its economy. However, according to South African cement manufacturer PPC: "At present, the DRC has 16 kg per capita annual cement consumption, the lowest in Africa, compared with the South African average of 240 kg and the global average of 400 kg."

## PPC and Nyumba Ya Akiba

This statistic highlights the drive behind current investments being made in the sector by the likes of PPC and local company group Nyumba Ya Akiba.

PPC, in partnership with local company Baret and using the engineering skills of Sinoma International Engineering Company of China, is establishing a USD280-million plant in the Lower Bas Congo in the Bas Congo Province. Construction began in December 2013 and the plant is expected to come online at the end of 2016. Nyumba, working in partnership with Pakistani engineering firm, Lucky Cement and Groupe Rawji of the DRC, is also expecting to become operational in late-2016 with its USD255-million

project, also in the Bas Congo Province.

SRK Consulting was afforded the opportunity to participate in environmental feasibility studies for both of these greenfield projects. Our on-the-ground presence in the country, extensive experience in conducting international standard environmental and social impact assessments (ESIA), coupled with our ability to interpret client needs, provided SRK with an advantage in conducting the ESIA processes.

A critical consideration impacting both projects was the fact that international funding of projects requires compliance with local DRC regulations as well as international standards and guidelines. SRK, which is currently also working with the International Finance Corporation (IFC) on a broader Cumulative Impact Assessment review of the industry in the DRC, was able to interpret and align both requirements, thus ensuring that the ESIA reports met host country and Equator Principles Financial Institutions conditions.

Central to SRK's work was, and continues to be, the establishment of meaningful stakeholder relationships within the sector; building trust being regarded as a vital component to long-term success and sustainability of both businesses. Testament to this

is the fact that, although the two projects are situated just 15 km apart from one another, PPC and Nyumba agreed to co-operate and share information on issues such as air quality, employment, water quality and quantity, and community involvement. Their combined involvement will provide the DRC government and the IFC with invaluable information about the Cumulative Impact Assessment and Management guidelines and allow the IFC to gauge whether or not they are user-friendly.

## Multi-dimensional nature

Such collaboration and co-operation is indicative of the multi-dimensional nature of the DRC industry, and is a facet that attracted SRK to the broader opportunity to engage at a deeper level with the cement industry in the country. Significantly, with data being shared across two projects, it was also a way of gaining greater insights into the sector. In a region where there is limited data available, we believe that the DRC government can now draw on vital knowledge about air quality, water issues, bio-physical issues and social issues from these two projects.

This information will allow the government to make decisions based on solid data and strategically build and develop a long-term, sustainable cement industry; thereby supporting the country's future infrastructure development plans.

SRK's support to the projects varied according to the two companies' needs and capabilities. This necessitated the ESIA team drawing on the local expertise and knowledge in SRK DRC office to conduct context specific social assessments and facilitate stakeholder engagement, as well as apply in-depth knowledge of international funding requirements and processes.

This advantage reinforced the value of SRK's DRC-based team. Led by country manager, Susa Maleba, with Phillippe Katuta responsible for the stakeholder engagement and social field work, the in-country office has proved vital in our interactions within the DRC over the past five years. Not only do our local SRK experts speak the language and understand the culture, their networks reach into government and business, helping to open doors and ensure our clients can gain access to the right people, at the right level, at the right time.

Certainly, supported by this in-country backup, we've seen SRK's DRC project team grow in confidence, a factor which marks a very real differentiator for us in Africa and highlights the value to clients and impact of having an on-the-ground consultancy by providing a strong basis for continued

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## NEW ACQUISITION

Technicrete ISG, part of the Infrastructure Specialist Group (ISG), has acquired Cast Industries' business operations, a manufacturer of concrete and precast products, effective 1 July 2015.

The acquisition of Cast Industries will enhance Technicrete's position as one of the leading suppliers of paving and kerbing products within Gauteng with Cast Industries being completely incorporated into Technicrete ISG.

Guinevere Thomas, group marketing and communications manager for ISG said "This acquisition will increase Technicrete's market share within the paving market, increase our customer base and augment our production

capabilities. With the increase in production capacity we will be able to satisfy market demands, and service existing and future customer needs.

The acquisition includes the operations, staff and assets currently associated with Cast Industries whose trading name will cease to exist after 1 July 2015.

Technicrete ISG is a subsidiary of the Infrastructure Specialist Group, which also includes Ocon Brick and Rocla. ☐





**ABOVE: Natasha Anamuthoo, senior environmental scientist at SRK Consulting, and Darryll Kilian, partner and principal environmental scientist at SRK Consulting.**

**TOP LEFT: Surrounding landscape in the PPC concession area, Bas Congo Province, DRC.**

**LEFT: Locals from the Mawete village which falls within the Nyumba Ya Akiba project concession area.**



growth, relationship building and the establishment of trust.

As Nyumba CEO Patrick Vandewalle recently noted: “The strong support, knowledge and expertise of the team at SRK – both in South Africa and in the DRC – has guided us through the process of prioritising community engagement from the outset. We believe that stands us in good stead for future growth and the sustainability of the project, for all our stakeholders.”

The cement sector in the DRC will continue to expand and, as a result, other funders of cement projects will enter the market. The PPC and Nyumba projects therefore provide a benchmark linked to the Equator Principles against which others will be measured in the future. These two pivotal projects have, therefore, set a standard for best practice and forging solid ties which will surely stand the industry in good stead for future growth and expansion. ◀

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# STABILISING TECHNOLOGY

## introduced into South Africa

SMEC South Africa was closely involved with the detailed design and project supervision of an innovative Mechanically Stabilised Earth (MSE) wall system on the Ballito Drive road upgrade project in Durban, KwaZulu-Natal. This was one of the first and largest applications of this technology in South Africa to date

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The design of the MSE walls involved close collaboration between SMEC South Africa, Kaytech Engineered Fabrics and

Tensar. Developed as an alternative to traditional retaining wall options, the Tensar TW1 system has been introduced to the local market by Kaytech. The system has been used extensively in Europe and elsewhere to date.

SMEC South Africa undertook the final design checks to ensure the overall stability of the system and its compliance with project specifications and local codes. "These included integration of the system with the new roadway and New Jersey barriers along the top of the wall. We also had to take cognisance of the overall geotechnical condi-

tions," explains Fernando Pequenino, section manager: geotechnics, SMEC South Africa.

### Geotechnical investigation

The geotechnical investigation revealed that the site was underlain by thick coastal dune Berea deposits at the precise location of the MSE walls, with bedrock at depths exceeding 30 m. The design of the MSE walls was based on SANS207: 2006: 'The design and construction of reinforced soils and fills', which provides applicable guidance for the design of reinforced walls.

"A reinforced soil structure must be checked for external and internal stability," notes Pequenino. External stability takes into account sliding, bearing/tilt and overturning of the MSE block. Internal stability involves essential checks for failure against pull-out of the geogrid, as well as failure against rupture. Ancillary checks include compressive block failure, block rotation and bulging and connection failures.

"The type of geosynthetic reinforcement selected must also take into account the soil properties of the reinforced, retained and foundation materials," adds Pequenino. These soil properties contribute to determining the tensile strength, stiffness requirements and spacing of the geogrid.

### Key consideration

A key consideration of the design was to optimise the use of lower-quality fill material, while simultaneously reducing the quantity of lateral support required in cutting back and benching into the existing roadway (that is, the back excavation slope).

However, the use of such lower-quality fill material meant that the strip lengths had to be increased, which implied either an increased cut or the use of a near vertical back excavation slope requiring the use of shotcrete and ground anchors or nails.

"After a number of design iterations, the final design of the 11 m-high wall comprised the use of 7 m-long strips, a granular (COLTO G6) backfill for most of the height and a 1m-thick granular soil-raft foundation," elaborates Frans van der Merwe, engineer: geotechnics, SMEC South Africa. Berea sand was used throughout for the upper 3 m of the 11 m wall and the 5 m-high wall.

Ballito Drive is located about 40 km north-east of Durban. The scope of work on this project entailed widening the two-lane single carriageway to a three-lane dual carriageway. The undulating topography of the site meant that earth-retaining structures had to be built to bring the extra lanes to level.

The lane widening had to be carried out within the road reserve to eliminate encroachment into existing developments. "In order to achieve this goal, two near-vertical MSE walls of 11 m and 5 m, covering a total length of over 400 m and 2 000 m<sup>2</sup>, were proposed," adds Van der Merwe.

MSE walls comprise fill material with horizontal layers of reinforcing elements. This may take the form of sheets, grids, strips or meshes. These metallic or polymeric reinforcing elements are capable of sustaining tensile loads and the effects of deformation or soil strains developed in the fill, part of which is transferred to the clad face through some form of positive connection.

Main contractor, Afriscan Construction opted for the Tensar TW1 proprietary MSE system, introduced into the South African market by Kaytech. The system provides a number of benefits over other block and mechanically stabilised earth systems.

These include the effective connection between block and geogrid, a near-vertical face inclination, locally manufactured blocks, aesthetic appeal and labour-intensive construction, which eliminates the use of heavy lifting equipment. ◀

Installation of a crash barrier on the 11 m high Tensar TW1 wall at Ballito Drive.



The Tensar polyethylene RE560 uniaxial geogrid.





### 1 - Rockfall barriers

Our flexible rockfall barriers are designed for impact energies ranging from 100 to 8'000 kJ. They are successfully tested in a 1:1 field test and certified in accordance with the Swiss and ETAG Guidelines for rockfall net approvals.

### 2 - Slope stabilisation

The TECCO® SYSTEM<sup>3</sup> is appropriate for stabilising steep soil, sediment and rock slopes as well as for retaining walls. The mesh is anchored with soil or rock nails behind the sliding layer pretensioned at a defined force using spike plates at the surface.



# We protect people and infrastructure from the forces of nature

### 3 - Rockfall drupe

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### 4 - Rock slope protection

The SPIDER® spiral rope net is suitable to protect rocks that threaten to break off or slide down from a slope, rock ledges and overhangs as well as unstable rock formations.

### 5 - Shallow landslide barriers

Comprehensive 1:1 tests in collaboration with the Swiss Federal Research WSL in three test installations have verified the function of our shallow landslide barriers. In contrast to flexible debris flow barriers, shallow landslide barriers are intended to be applied on unchannelised slopes.

### 6 - Debris flow barriers

Each of our flexible ring net barriers can stop as much as 1'000 m<sup>3</sup> of material derived from rocky torrents containing boulders, trees and other vegetation, while allowing continued water flow; culverts are kept from clogging; road and railway embankments are protected.

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# Providing the **HEAVIEST LIFTS**

Undertaking a heavy lift is not a case of 'one size fits all' but rather about selecting the most appropriate lifting solution for a given project or contract. This is according to Johnson Crane Hire, which boasts a heavy lifting capacity unmatched on the continent.

cranes and projects division at Johnson Crane Hire. "We are able to offer flexibility in terms of heavy lifting solutions because we operate a crawler crane fleet and a hydraulic mobile crane fleet as well as alternative lifting solutions."

Robinson points out that the three largest cranes in the Johnson Crane Hire fleet are its 750 ton and 600 ton lattice crawlers and its most recent addition – a 750 ton truck mounted lattice mobile unit.

"This level of heavy lifting capacity provides continuity and shows our level of commitment to the market by providing them with access to an unequalled combination of heavy lifting capacity and technical expertise."

### Advantages

Robinson cautions that there is a critical need to recognise that a lattice boom crawler crane offers a vastly greater lifting capacity when compared to mobile hydraulic crane lifting capacities. It is not uncommon to find people making the mistake of comparing one with the other as the nomenclature can be very misleading.

As an example, Robinson points out that

the 250 ton lattice boom crawler competes against a heavy lift 400 ton hydraulic mobile crane. These machines have equivalent lifting capacity, but this not obvious to those that do not understand the differences between lattice boom machines and mobile cranes. The nomenclature should not be used as the manner in which to differentiate between capacities and capabilities.

"In explanation, a hydraulically operated mobile crane's lift capacity is rated on what is referred to as the load moment. Most hydraulic cranes are rated at their capacity at 3 metres, whereas the rating for a lattice boom crane is based on a larger load moment, which can be anywhere between 7 to 14 metres and this capacity is based on its structural integrity. In essence, a lattice boom crawler crane is capable of performing far heavier lifts and offers greater flexibility in terms of its application because of its pick and carry capability," he says.

There are distinct limits with regard to the amount of counterweight that can be placed on a hydraulic mobile crane and this is where a crawler crane excels. The lattice boom configuration allows for the attachment of an additional counterweight most often referred to as the super-lift ballast. Crawler



"Ultimately, a successful heavy lift is determined by the technical expertise of the heavy lift supplier.

Johnson Crane Hire has a breadth of resident knowledge that enables it to provide best practice heavy lift solutions in a turnkey project approach that includes rigging and transportation," says James Robinson, heavy lift manager for the crawler

## GROWING HOMEGROWN RANGE

Africa's leading homegrown heavy equipment manufacturer, Bell Equipment, has spent the last several years developing partnerships with other respected global equipment brands and growing its product range across the entire spectrum of construction and mining earthmoving equipment.



At Bauma Conexpo Africa 2015 Bell Equipment will occupy a prime outdoor location, Stand ES 230, where it will showcase its diverse and comprehensive range, introduce new products and give the market a taste of future machine developments.

Bell Equipment executive general manager: group marketing, Stephen Jones, said: "Our stand will include a pre-production large Articulated Dump Truck from our latest E-series generation of trucks. These

trucks are absolute class beaters and have been 100% locally designed and developed by our team of engineers in Richards Bay to deliver the lowest cost per ton haulage solution on the world market complemented by some of the most advanced modern technologies to set the benchmark in safety, comfort and productivity."

Other exciting Bell products on display include the new L-series Tractor Loader Backhoe, which will go into production locally during 2016, as well as the E-series Rockscaler, which is an upgraded version of a product that has gained

much acceptance in underground mining and has a number of customer-focused improvements including a slewing boom and a sealed air-conditioned cabin as standard for improved safety. Continues Jones: "In addition we will showcase our partner products including models from John Deere, Liebherr, Bomag and Finlay."

Well established across the Africa as a one-stop equipment shop, backed up by one of the most comprehensive customer support networks on the continent, Bell Equipment has themed its stand at BCA 2015 "Come Home to Bell" and aims to not only showcase its product range but also to strengthen relationships with customers and reinforce the Bell brand as a leading equipment supplier on the African continent.

"BCA 2015 presents a unique opportunity to interact with a large number of customers and potential customers over a short space of time. It is difficult to get such a high concentration of decision makers together with your equipment in one place and we look forward to being able to display our products and technologies and engage with decision-makers," says Jones. ■

**A pre-production model from the Bell E-series large Articulated Dump Truck range will head up the company's extensive product offering that will be on display at Bauma Conexpo Africa 2015.**







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1. One of Johnson Crane Hire's 750 t crawler cranes installing a new 400 t furnace.
2. This Johnson Crane Hire 750 t Liebherr crawler is configured with super lift for a lifting project at Waterval Smelter.
3. Commissioning of a 750 t crawler crane at Liebherr.
4. A Johnson Crane Hire 550 t hydraulic crane fitted with super lift for a mill installation.

cranes are able to increase their load moment by balancing the load to be lifted against the super lift ballast.

Johnson Crane Hire has a 10 year history in the crawler crane market and has amassed a number of impressive lifts, including a recent heavy lift at Zimplats. "We were contracted to remove an old mill weighing 225 tons, with a radius of 31 metres, and to replace it with a new one weighing 170 tons. We then brought in an LR 1600-2 (600 ton) crawler crane from Europe to perform this work. The crane is now part of our permanent fleet," Robinson says.

Johnson Crane Hire also used the LR 1750 (750 ton) crawler crane to lift a 280 ton tippler in Mozambique for the Nacala port upgrade project. A notable feat achieved by the team was the lifting of the 280 ton assembly in one execution. The company is also actively

involved in heavy lifts for the major expansion underway at a diamond mine in South Africa. A recent lift at this mine required the lifting of a 110 ton structure with luffer and full super lift configuration at a 55 metre radius.

There are additional lifts planned for equipment of 200 tons at 35 metres in the same configuration.

### Full pre-lift feasibility study

On all lifts, the company provides a full pre-lift feasibility study that includes computer simulated drawings, generating method statements, full risk assessments and load studies. Operation of the well maintained crawler fleet is supported by an experienced technical team with in-depth knowledge.

Safety in the complex operation of heavy lifts is paramount. "Adherence to safe operation comprises a number of critical elements.

Firstly, our machines are current technology and well maintained, and our operators are skilled and comprehensively trained. In addition, we implement carefully documented and implemented safety systems, which comply with all industry safety standards.

"This is complemented by the risk assessments conducted before each lift. We are justifiably proud of the fact that safety as a culture is ingrained in every Johnson Crane Hire employee," says Robinson. Safety in fact forms part of the company's holistic lifting package, referred to as the 'SMART' (Safety, Maintenance, Availability, Reliability and Total cost effectiveness) philosophy.

Johnson Crane Hire has an acknowledged track record in delivering fit for purpose heavy lift solutions for the power, petrochemical, refinery, industrial, mining and civil infrastructure industries, throughout Africa. <



# Giving customers **CONFIDENCE**

New Holland Construction, in collaboration with its South African distributor MB Plant SA, will be present for the second time running at Bauma Conexpo Africa 2015, the International Trade Fair for construction machinery, building material machines, mining machines and construction vehicles.

## A line-up of innovative equipment solutions

The event will offer the opportunity to see a rich selection of units from New Holland Construction's equipment offering. The spotlight will be on its backhoe loaders and skid steer loaders, which are trademark product lines of the company in African markets.

Two entry-level 97hp B90B backhoe loaders will be on display to represent the company's renowned range of backhoe loaders. Combining the power of a wheel loader with the performance of an excavator, the versatility and compact size of these machines make them the ideal solution for a wide variety of applications. New Holland Construction backhoe loaders have been specifically designed to deliver impressive traction and performance together with exceptional fuel efficiency.

New Holland Construction 200 series skid steer loaders deliver a huge performance and manoeuvrability in a compact size without compromising comfort or safety. For over 40 years, equipment operators around the world have trusted these machines to tackle even the toughest jobs in many diverse applications, including construction, landscaping and agriculture. To date, more than 200 000 New Holland Construction skid steer loaders have been produced and have deservedly become synonymous with best-in-class productivity, superior stability and powerful hydraulic system.

The company will also showcase its heavy-duty C Series of crawler excavators with a 23-ton E215C unit. The E215C crawler excavator is designed to deliver the ultimate reliability and durability that customers expect. The long undercarriage provides dynamic stability and safe performance on all terrains. This exceptional stability and its optimal weight distribution enable the operator to make the most of the E215C's superior breakout force and lifting capacity. Combining highly advanced electronic technology with

a sophisticated hydraulic system, the E215C crawler excavator maximises performance and optimizes fuel consumption according to the job requirements.

The massive pushing power and high precision of New Holland Construction graders will also be represented on the stand by the top-of-the-range F200B motor grader. With a powerful and fuel efficient engine, heavy-duty axles and its unique design with the cab at the rear, the F200B provides impressive pushing power and is capable of tackling even the harshest conditions and the biggest jobs, when high power and a high traction capacity are needed.

Completing the display will be a W190C wheel loader. The New Holland Construction wheel loaders are designed to give the biggest bucket payload in the industry and to get the job done with fewer loading cycles: with just 3 passes the W190C can load a 19.2-tonnes payload truck. Also on the stand will be the company's telehandlers, masters of versatility that stand out for their performance, safety, and cost efficiency. Their outstanding stability and manoeuvrability, powerful traction and breakout force drive productivity to new heights while the perfect visibility to the top of the arm fully raised allows to operate in complete safety.

African customers demand robust construction machinery to get the job done even in the most extreme conditions. New Holland Construction equipment solutions are built around the customers' needs for productivity, reliability, safety, and fuel and cost efficiency. New Holland Construction's wide offering makes it the ideal choice for a variety of operational needs, including specific applications for key industry sectors such as infrastructure, residential building and mining.

## Giving customers the confidence

In partnership with MB Plant SA, its official distributor in South Africa, Lesotho and Swaziland, New Holland Construction supports customers for the full life cycle of their equipment, from sales support and qualified product knowledge to after-sales services, technical trainings and timely parts supply.

"With regional offices located in Johannesburg and Durban, a new fully operational office in Cape Town and a growing network of branches and dealers, MB Plant SA is able to provide comprehensive services and technical support to its highly diversified customer base throughout the country and Southern Africa," stated Franco Invernizzi, Africa and Middle East business director. "In other African markets we provide the same level of support through strong importers - for example, Rex Quip in Namibia, Ivecar in Angola or Achelis in Kenya and Tanzania." <



With about 800 expected exhibitors taking up 80 000 square metres of exhibition space and nearly 20 000 expected visitors, the

second edition of Bauma Conexpo Africa is well placed to confirm its role as the biggest industry event for the sector in Africa.

"The construction sector holds significant growth potential in the Maghreb and sub-Saharan Africa, where South Africa remains a key market", stated Andy Blandford, vice president CNH Industrial Construction Equipment for Europe, Africa and the Middle East. "But the entire African continent is extremely important for us. With 34 countries having participated in the first edition and the high expectations for this year's show, we are sure that Bauma Conexpo Africa will serve as a prime opportunity for networking.

"We will be able to present New Holland Construction's latest innovations and technologies to our African customers and show we are able to support them with our products and services built around their needs."





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# Work-at-height INDUSTRY'S RENAISSANCE

According to the United Nations, by 2030, almost 5 billion people, or 60 percent of the world's population, will live in cities. This accelerated urbanisation trend is the key indicator for significant growth in urban and industrial development.



Brett Fleming, CEO of Eazi Group.



In the context of mega-cities, expansion is no longer outward, it's upward. Brett Fleming, CEO of Eazi Group, Africa's market leader in work-at-height solutions comments, "This industrial growth underpins the need for a shift in the trend of work-at-height solutions, where safety, efficiency and cost are key."

Recently, Eazi Access Rental landed Southern Africa's first JLG 1850 telescopic boom lift that reaches 58,5 metres in height, in layman's terms that equates to 17 stories. This colossus is the shape of things to come and reflects the rising volume of projects and tasks being performed at height.

With cities booming across the African continent, construction and infrastructure opportunities continue to thrive and legacy equipment like traditional mobile or tower cranes will continue to be seen for many years. But with technological advancements, Eazi Access Rental has seen the need for smaller nimbler cranes, like the Maeda Mini Crane. With expansion trend being upwards, space becomes increasingly constricted, and this is where this mini crane has no equal. Its specialist lifting capability is unsurpassed, and sports a cost and time performance that's the envy of the industry.

The drive for flexibility and efficiency

on site increases demand for mechanical hybrids that would not be out of place in a Transformer movie. Machines like the 3-in-1 Magni telehandler operates as three different solutions: as a rotating telehandler for on-site offloads, as a crane and as an access platform at height.

Another major trend is the demand for increasingly environmentally friendly machines that reduce the risk for hydraulic spills and run on electric supply or low-emission diesel engines.

According to Marcus Green, national asset manager for Eazi Access Rental, powering machines with Lithium ion batteries has now become standard, due to their efficiency and environmental performance. For these reasons, Green also opts for AC rather than DC drive motors.

The urbanisation push allied with the continued pressure to drive down cost and drive up productivity, has made flexible, mobile elevated work solutions the next generation in construction development, leapfrogging the yester year of scaffolding.

"While traditional work-at-height solutions still remain relevant in many industries, powered access machines and mobile elevated work platforms should be considered as the modern alternative –

## About Eazi Access Rental

Founded in 2003, Eazi Access Rental is Africa's market leader in the rental, sale and servicing of work-at-height solutions, including access platforms, mini cranes, rotating telehandlers and accessories. It has the largest and most diverse fleet of boom lifts, scissor lifts, telehandlers and vertical personnel lifts on the continent.

Born from a vision to make working at heights safer and more efficient in the workplace, Eazi Access Rental is a 100% South African owned company that provides their products and services to all sectors of the construction, shipping, manufacturing, FMCG, transport, entertainment and mining industries.

With a fleet always at the forefront of technological developments and the largest and most qualified team of technicians in the industry as well as its partnerships with the best global equipment suppliers, Eazi Access supplies equipment to its customers anywhere in Africa and prides itself in ensuring that all its customer requirements for service and support are met 24/7.

being more than just a trend, they offer the latest technology with safety, flexibility and efficiency in mind," says Fleming. ◀

The 3 in 1 Magni Telehandler.



The Maeda mini crane.







## FROM PIT TO PROFIT

**“With a relatively buoyant outlook, and a number of economies across the continent experiencing some of the fastest and highest growth in the world, it is no wonder that current investment in infrastructure is so significant and growing. This is very good news for earthmoving equipment companies operating in Africa,”** comments Elaine Crewe, CEO of BAUMA CONEXPO AFRICA.

➤ The recently published report, Deloitte on Africa: African Construction Trends 2014, notes that investment by value of mega projects under construction in Africa grew by 46,2% in 2014 (from USD222-billion in 2013 to USD326-billion in 2014). Average project value increased by 84%, from USD689-million in 2013 to USD1,27-billion in 2014.

“Power will be one of the continent’s biggest opportunities for the construction industry in Africa going forward because the ability to source power comes in many different formats, all of which present huge opportunities for the construction industry,” comments Terry Gillham, Bell Equipment director of sales and marketing. The development of road infrastructure is another substantial opportunity for construction in Africa, he says.

For construction players, quality equipment is integral for the success of these projects. “The right choice of the right equipment is very important because a contractor doesn’t want to be going into any major construction project in Africa in particular, with incorrect or inferior equipment,” says Gillham. “It must be good, reliable equipment that is well supported by a company with the ability to service that equipment because of the remote locations of these projects,” he adds.

“Customers are looking for durability and equipment that works well and performs under stress – this is critical in all African countries,” comments Riccardo Balma, Africa marketing manager at CNH Industrial Construction Equipment, one of the exhibitors at BAUMA CONEXPO AFRICA 2015.

Investment in technological advancements is another pertinent factor for equipment suppliers. “Research and development (R&D) is very important for all equipment suppliers, particularly those servicing the mining and construction sectors, not only to retain their place in the market, but to continue meeting the needs of their customers, whose requirements are constantly evolving to tackle the new and interesting challenges that come with working in Africa,” says Crewe.

“Today the construction industry focuses on latest technology developments and CNH Industrial Construction Equipment is at the forefront of the industry.

“After sales service is of great importance to us and this is why we offer extended warranty coverage and a wide range of maintenance plans that can be customized with the dealer. Dealers play a key role to build this customer satisfaction.

CNH Industrial construction equipment focuses not only on technology to improve equipment performance,” says Balma, “but also on keeping equipment as cost effective as possible.”

“BAUMA CONEXPO AFRICA looks forward to having new technologies and developments in earth moving equipment on display in September. An equipment trade fair of this nature will assist construction players to optimise their operations, and therefore contribute to the growth and development of the continent,” says Crewe. “As an African manufacturer

we are proud to be able to showcase our products at an African trade show of this stature,” concludes Gillham.

Balma says that BAUMA CONEXPO AFRICA 2015 offers a big opportunity for CNH Industrial Construction Equipment as the company has a strong focus on Africa. “BAUMA CONEXPO AFRICA provides continent-wide opportunities for customers to meet us and our dealer, and we will be present to showcase the strength of both our products and our services,” he concludes. ❏

**Elaine Crewe, CEO of BAUMA CONEXPO AFRICA.**

## STRATEGIC ACQUISITION

**Isuzu Truck South Africa recently announced the acquisition of Port Elizabeth based KANU Commercial Body Construction and Automotive Chassis Technologies (ACT) in a 100% buyout of each entity, effective from August 2015.**

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➤ This transaction will see Isuzu Trucks change from being a typical commercial Original Equipment Manufacturer (OEM) to an enterprise type of business that has the capacity to initiate and build products according to client specifications.

“This acquisition complements our growth strategy. We believe the acquisition of KANU and ACT will definitely enhance our current business structure. The move to acquire these entities will centralise the process of buying our trucks where everything will be processed from one central point of contact,” says Isuzu Truck South Africa COO, Craig Uren.

The directors of Isuzu Truck South Africa, with full support of Isuzu Leadership in Japan, have developed new strategies and plans with structures in place to lead the business into this new business cycle.

“Our scope of work and business is no longer only focused on what leaves the factory gate. Together with our dealers and supplier base, Isuzu Truck South Africa will have a more integrated relationship with current and future customers in the life of their trucks,” says Uren.

This acquisition also comes with a new appointment within the business. Current plant manager, Siphso Sandla will move into a new role as general manager leading the KANU/ACT operation in Port Elizabeth, with outgoing owner of KANU, Tony Wright, staying on in an advisory capacity for a minimum of 12-months

to ensure a smooth transition. In 1991, Sandla graduated with a Higher National Diploma in Mechanical Engineering (B.Tech). To date, Sandla has been working as an engineer in the automotive manufacturing sector for over 23 years and has vast experience in all aspects of the assembly line.

“Isuzu Truck South Africa will continue to be one of the major contributors in the Eastern Cape’s Gross Domestic Product (GDP). We believe that every truck we sell into the market possesses an economic opportunity with great return on investment. The more we sell, the more economies we create, and with that, the creation of new job opportunities. South Africa and the continent at large need greater and stronger growth for our economies to develop,” concludes Uren. ❏

**Siphso Sandla, new general manager of KANU/ACT and Craig Uren, COO of Isuzu Truck South Africa.**



# LIFTING SOLUTIONS

## suited to the African market

Torre Lifting Solutions will use its presence on the Torre Industries stand at Bauma to showcase its comprehensive lifting solutions to the local and African market. Incorporating SA French and Elephant Lifting Equipment, Torre Lifting Solutions offers a large and diverse footprint of customised lifting and materials handling solutions from respected leading brands.

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The company's quality-centric business philosophy is underpinned by its solid base of applications knowledge and experience which is enhanced by the extensive distribution network of Torre Industries. The end result is a total lifting solution from consumables to tower cranes and overhead cranes.

**Torre Lifting Solutions has been recognised as an Elite Dealer by Potain of France, which means a guarantee of 80% availability of spare parts on first call.**

**The ultra-compact Tusker Low Headroom Hoist is reputed to be the lowest headroom hoist available on the market.**

The company offers a genuine single supply source for tower cranes, purpose built overhead cranes, slings, shackles, concrete buckets pallet forks and brick baskets. It is the sole Southern African distributor for the reputable Potain range of tower cranes. According to technical director of Torre Lifting Solutions Quentin van Breda, it has been recognised as an Elite Dealer by Potain of France, which means a guarantee of 80% availability of spare parts on first call.

"Access to parts and consumables is critical as many of the projects on which our equipment works are of a fast-track nature. In addition to the Potain tower cranes, we also distribute a hoist range from Orbit as well as offer this product on rental. Dieci tele-

scopic handlers and self-loading mixers are a new addition to the product line up, and we operate a rental fleet of tower cranes, telescopic handlers, hoists, slings, concrete buckets, pallet forks and brick cages, with a very high utilisation rate," Van Breda says. The smallest machine in the tower crane rental fleet is a Potain IGO 22 self erecting crane with a 28 metre radius, while the largest is a Potain MD310 with a 70 metre jib and a capacity of 3 tons at 70 metres.

Notably, Torre Lifting Solutions operates a manufacturing facility in Pretoria West where lifting and material handling solutions are customised for specific application requirements.

Products include EOT cranes, monorails, electric chain hoists, chain and lever blocks, winches and wire rope pulling machines, lifting and spreader beams, mechanical grabs and clamps, slings (chain, polyester and steel wire rope), shackles and rigging accessories. This market offering was recently extended with the addition of 30 ton capacity overhead crane and an ultra-compact steel wire rope hoist, which is suitable for lifting in areas where height restrictions or confined spaces are an issue.

An LME (Lifting Machinery Entity) accredited company, Torre Lifting Solutions is a complete single source solutions provider supplying customers with the design, fabrication, engineering, installation, commissioning, support and service, load testing, inspections, repair and refurbishment of all lifting equipment. All equipment is mechanically simple without compromising on the features that are required to provide reliable and safe lifting capability.

"Torre Lifting Solutions is able to leverage years of experience in the harsh operating conditions of the African market to devise customised solutions for every lifting requirement across a number of industries. Access to a highly knowledgeable technical team provides fit-for-purpose solutions that achieve increased productivity and safety, with decreased downtime and maintenance," van Breda concludes. <





## MINI EXCAVATOR ADDS A NEW DIMENSION

Manufactured at Caterpillar's Athens factory in Georgia, USA, the latest generation Cat 305.5E2 CR (Compact Radius) mini excavator has now been launched into the Southern African market for diverse, high performance applications across the building, construction and allied industrial segments, including the refractory and mining sectors.

➤ A multi-task workhorse suited for anything from trenching to tunnel wall scaling (when fitted with a hammer), the Cat 305.5E2 CR has an operating weight of approximately 5 335 kg (with cab and standard stick) and a transport length (with boom) of 5 330 mm, making it well-suited for towing or truck loaded transport, and rapid deployment. The shoe width is 400 mm, with rubber tracked undercarriage fitted as standard.

Like all E2 Series models, the Cat 305.5E2 CR comes equipped with a new, innovative cab design and a high definition hydraulics system. The pin back door on the cab offers a wider entry into an operator environment with industry leading comfort, ergonomically designed 100% pilot controls, adjustable arm rests, updated air and heat controls, and excellent visibility for superior productivity and safety on the job site.

Other key features include 200 degree bucket rotation; dozer blade floats; the Cat 305.5E2 CR's compact radius design (the upper body stays within the width of the undercarriage during rotation); and two way hydraulic lines, which makes the machine work tool ready. The Cat 305.5E2 is compatible with all 5 tonne Cat E Series work tools, including couplers, thumbs, buckets, hammers, augers, shears and rippers. An optional hydraulic quick coupler further extends their versatility, enabling rapid tool changeovers for diverse on-site tasks.

"Two hundred degree bucket rotation allows deeper flat back trenches without having to reposition the machine; plus more material retention is achieved at the top of the lift cycle while truck loading," explains Barloworld Equipment product marketing manager, Design Naicker.

Power is provided by a Cat 2.4 model engine generating a rated net power output of 32,9 kW (ISO 9249). Excelling in mass excavation roles, the maximum bucket breakout force is 50,9 kN, with a maximum dig depth and height of 3 470 mm and 5 330 mm.

On the ground, precision is delivered by the machine's high definition hydraulic system. This load sensing, flow sharing set-up provides improved efficiency, controllability, and reduced operating costs. Additional savings are achieved by the Cat 305.5E2 CR's new Power on Demand feature, which replaces the previous generation Eco mode. Power on Demand ensures optimal fuel burn by automatically selecting the appropriate engine rating selection to match each work task. ■

**The Cat 305.5E2 CR can be fitted with an optional rear view camera. In addition to maximum workplace safety, this improves operator productivity and efficiency through a 360 degree view of the job, making tasks easier to execute.**

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# CAPACITIES EXTEND THROUGHOUT AFRICA

As a leading construction chemicals specialist, the Chryso Southern Africa Group continues to implement plans that will see customers in Africa having direct and immediate access to both the entire product range as well as a team of technical product specialists. An example of this is the establishment of a subsidiary company, known as Chryso Eastern Africa, in Nairobi, Kenya.

> The Chryso Southern Africa Group has established a distributor network and distribution outlets across the African continent and Indian Ocean Islands for its market leading concrete and cement admixtures and ancillary products.

Chryso South Africa supplies a vast range of products to the readymix, precast, mining, cement and construction industries that are produced at three of its manufacturing facilities operating in Johannesburg, Cape Town and Durban. The company is also the exclusive distributor of Lanxess pigments for the construction industry in South Africa. With the capability to service roughly 80% of the African continent, Chryso products are readily available and can be transported to customers using the most appropriate mode of transport, road, air or sea freight.

Chryso Southern Africa has amassed an extensive reference base of projects, with product supplied into Africa for more than 15 years, through close partnerships with its customers. This is achieved through the company's ability to assess each project on its own merit and then recommend a fit-for-application solution that takes into account all aspects such as climatic conditions, raw materials (including aggregates and cement), the time allocated for the project schedule and any other relevant



Chryso supplies a vast range of products to the readymix, precast, mining, cement and construction industries.



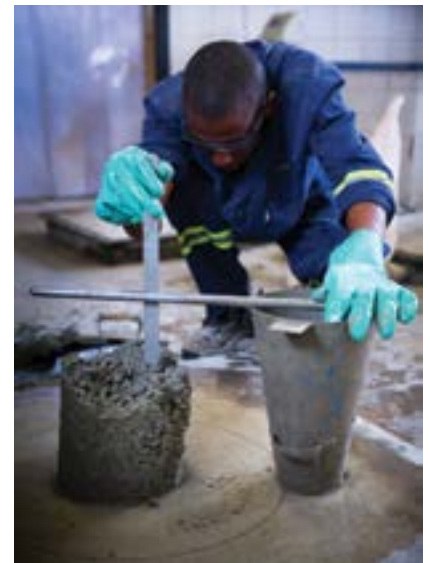
Chryso Southern Africa's operation in Jet Park, Johannesburg.

factors that may affect the timeous completion of the contract.

In addition to its own experienced technical team Chryso Southern Africa also has access to extensive global research and development facilities. An in-house laboratory in Johannesburg, where specialised mix designs are tested to determine the most appropriate solution for each project, is complemented by alliances with a number of concrete laboratories in various African countries.

Chryso Southern Africa is becoming the Chryso springboard into the African continent and Bauma will provide the company with the opportunity to showcase its capabilities and extensive range products to the African market. ■

**Chryso Southern Africa operates an in-house laboratory in Johannesburg, where specialised mix designs are tested to determine the most appropriate solution for each project.**





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RC35 bits.

## GETTING TO THE CORE

Glass and stainless steel products specialist Fedglass has successfully installed 2 500 m of balustrading and 200 privacy screens at a high rise building in Mozambique, which consists of commercial offices and residential apartments.

Johannesburg-based Fedglass successfully completed its scope of the project by drilling 12 000 holes, each 22 mm in size, using equipment supplied by Diamond Products – a leading specialist in the manufacture, assembly and sale of diamond tools and equipment for industrial applications.

Fedglass managing member Jürgen Ewert notes that the company did not encounter any major challenges, thanks to the quality of the 120 Diamond Products RC35 core barrels and three Shibuya 1011 core drills being used throughout the duration of the project.

"The team of 15 Fedglass experts were able to successfully drill all the holes problem-free, thanks to the reliability of the equipment. The Shibuya core drills were highly-impressive, and proved to have an extended operational lifespan, compared to similar products in the market," he states.

The Shibuya range of core drilling machines are distributed exclusively in Southern Africa by Diamond Products. Director Brian Clark points out that the Shibuya core drill is lightweight and easy to handle. "It is also highly-durable, making it ideally-suited to numerous applications."

Shibuya core drills also come standard with a water collection ring to contain any water that may be spilled while drilling. This excess water can be collected by a vacuum cleaner. Another user-friendly aspect of the drill is that there are no gears, and the user simply has to turn the drill on and off.

Clark adds that the RC35 core barrels are used in drilling to make clean holes quickly and precisely in concrete, masonry, asphalt and stone. "They are highly cost-efficient, and require little clean-up or patching compared to other methods of making openings in floors, walls, ceilings or pavements."

Given the success of this project, Ewert is confident of the future outlook for Fedglass. "Our high-quality work and competitive pricing have enabled us to grow from strength-to-strength across Southern Africa. With reliable, value-adding partners such as Diamond Products, I believe we can increase market share, particularly in frameless glass applications," he concludes.

The Shibuya range of core drilling machines are distributed exclusively in Southern Africa by Diamond Products.



## MINE WATER RECLAMATION

Sika recently supplied its world renowned products to seal and protect a huge, newly constructed Mine Water Reclamation Plant (MWRP) in Middleburg, Mpumalanga. Although not the first such plant in this coal mining area, it is the largest of its kind and will purify millions of litres of toxic mine water that will be safely returned to local municipal waterways.

Realising the restrictive work environment on this project, Delf Consulting Engineers had no hesitation in specifying Sika's Sikadur-Combiflex SG system. With its international approval for drinking water suitability, the Sikadur-Combiflex SG system was used to seal all construction and expansion joints within the water retaining structures, including all water tanks and clarifiers.

Sikadur-Combiflex SG is a high performance joint sealing system consisting of a modified, flexible Polyolefin (FPO) waterproofing tape and Sikadur-31 CF Normal, an advanced thixotropic, moisture-tolerant, structural two-part adhesive based on a combination of epoxy resins and special fillers. When fixed to a joint, the Sikadur-Combiflex SG system allows for irregular and high movement in more than one direction whilst still maintaining a high quality seal.

Working under extremely difficult conditions that included confined spaces and rigid safety requirements; contractor Liviero Civils installed 2 000 metres of the Sikadur-Combiflex SG system. Since it is extremely flexible, easy to install, and provides excellent adhesion on either dry or damp concrete surfaces, it was the ideal product for this challenging situation.

For highly effective chemical protection of the pump stations, chemical dosing areas and clarifier launders at the plant, Sika's Sikagard-63 N (2 000m<sup>2</sup>) was specified. This 100% solids, two-part epoxy resin coating, designed for normal to aggressive chemical environments, is simple to apply, liquid-proof and solvent-free.

Since the application of these Sika products was a high priority project that could not afford any delays, a restrictive time schedule was imposed. Unfortunately, severe weather conditions prevailed which caused major delays.

With increased emphasis on protection of the environment, Aveng Water, who constructed this plant, is playing an important role in combating the problem of acid mine drainage (AMD), while the use of Sika's products ensures the durability of the plant and thereby the provision of millions of litres of potable water.



## ALL-ROUND OFFERING

Focusing on finding cost effective solutions that do not compromise on quality will be the differentiating factor for cement suppliers in the future. Working collaboratively with customers to devise customised solutions that consider specific application needs is critical to future sustainability.



Mike McDonald, manager at AfriSam's Centre of Product Excellence, says that the Centre has a number of key drivers that all work towards increasing customer satisfaction and productivity. An ongoing hot topic is environmental stewardship and a number of AfriSam initiatives underpin the company's intent.

"Cement and aggregates are scarce resources and AfriSam believes that their use should be optimised. By gaining a thorough understanding of the material properties and how to apply them as well as an understanding of concrete technology, we can ensure viable solutions," McDonald points out.

The Centre of Product Excellence is therefore actively involved in day-to-day customer interactions in terms of technical queries and support needs. This support function is undertaken by a team of skilled and experienced individuals who fully understand the application of product.

Leveraging its intimate knowledge of its own products, AfriSam works closely with commercial admixture companies to develop activators that will ensure normal concrete performance even when high levels of supplementary cementitious materials are added.

A further function of the Centre of Product Excellence is ongoing product development. "We invest in finding fit for purpose concrete solutions, a journey that begins with a detailed site visit by one of our experienced technical consultants," says McDonald.

The consultant collects samples of material and ascertains specific information on curing temperatures, mixing temperatures, as well as any additives and accelerators being used. The gathered data and samples are subjected to analysis at the AfriSam's material laboratory at the Centre of Product Excellence and the consultant is then able to draw up possible solutions.

Aligned to producing customer centric solutions is the Centre of Product Excellence's emphasis on knowledge sharing to maximise product implementation. "By familiarising our customers with our products and solutions we can together uplift the standard of concrete solutions in the industry," says McDonald.

Courses facilitated by the Centre of Product Excellence range from a high level course for engineers who already have a working knowledge of all



AfriSam's Centre of Product Excellence undertakes ongoing product development in order to provide fit-for-purpose concrete solutions.



As part of the company's service offering, an AfriSam technical consultant will visit a customer's site to assess the specific intended position of the product and any challenges that may be encountered.

## THE IMPORTANCE OF LIGHTNING PROTECTION

Lightning is an unpredictable force of nature, which is a constant danger to structure, electronic equipment and human life. Therefore it is imperative that lightning protection systems be installed to limit the risk of damage.



A risk analysis and lightning protection system has been completed by Advanced Lightning Protection, a proud partner of DEHN AFRICA at BASF South Africa's Performance Materials' plant in Elandsfontein.

The design, supply, installation and maintenance of the earthing and lightning protection systems at BASF has been implemented and will provide adequate protection to the plant.

Advanced Lightning Protection compiled a risk analysis at the plant before designing the protection system. The protection level was calculated by means of a risk analysis of the plant, including soil resistivity surveys, which determined the soil resistivity values prevailing on the plant. It was also necessary to determine the corrosiveness of the area, in order to determine the conductor types suitable for the plant.

The design of the earthing and lightning protection system for

the plant was performed in accordance with SANS 62305, 10313 and 10199 specifications.

The total protection design at the plant consists of a structural lightning protection system, high quality earthing system, electrical earthing system, surge protection system and equipotential bonding of all protection systems. The structural lightning protection system comprises an air termination system, designed to intercept a lightning strike and dissipate the lightning current into the ground mass safely by means of the down conductors and lightning protection earthing systems. The electrical earthing system was designed to allow the safety devices to operate correctly and for the dissipation of any fault currents that may occur. Its purpose is to save equipment from damage and to protect personnel from injury.

For further protection of electronic equipment, it is essential that the power supply, telecommunications and data lines are equipped with adequate surge protection devices. It is vital that the entire electronic system is at the same potential to ensure that the lightning protection is effective. This is achieved by equipotential bonding of the different earthing systems onto a common earth bar. The installation of the protection system was performed under strict quality control measures to ensure that the conductors, types of connections and bonding was installed correctly.

Advanced Lightning Protection highly recommends that all lightning protection system installations be inspected and tested on a regular basis. ■



# ASHBURTON BRIDGE REPAIRS

Three a.b.e. Construction Chemicals' concrete repair and protection products were used for the repair of the Ashburton Bridge over the N3 highway between Pietermaritzburg and Durban.

> The SA National Road Agency Ltd (SANRAL) bridge experienced substantial fire damage after a truck crashed into it – and subsequently burst into flames – in October last year. Deon de Kock, KZN Regional Construction Sales Manager Consultant for a.b.e. - which is part of the Chryso Southern Africa Group – says three a.b.e. products were selected for the fast-track repair project carried out by Lowazi Projects.

"After extensive consultations with SANRAL engineers, a.b.e.'s durarep Fluid Micro Content (FMC), epidermix 345, and silocoat, were specified for the repair project, which was completed in mid-June this year," De Kock stated.

"a.b.e.'s durarep FMC is a cement-based, non-shrink concrete reinstatement grouting, applied by pouring or pumping. The select grading of aggregates and special additives prevent segregation during pouring, and also ensures that the thermal coefficient of the cured product matches that of the concrete. The end-result is improved and a decrease in permeability," De Kock explained.

Particularly specified for repairs to bridges, dams, weirs, and concrete structures in general, durarep FMC strongly adheres to substrates

without the need for primers, while its fluid properties prevent honeycombing of concrete, even without vibration or additional compacting. "The product's high strength and low permeability, provide protection against chloride and carbon dioxide corrosion, and its alkaline nature protects the reinforcing steel against corrosion. Shrinkage control - both during the plastic and hardened stage - has been built into the durarep FMC formula," he stated.

"durarep FMC is one of a growing range of a.b.e. 'dustless' cementitious products, manufactured in a specialised plant with adapted formulas and raw materials to eliminate unhealthy dust emanating from the product on building sites," are now dust

De Kock says the final a.b.e. product used for the Ashburton Bridge repair was silocoat, an elastomeric two-component polymer modified cementitious coating primarily designed to protect and repair silos but also suitable for other concrete structures. "The silocoat coating withstands hydrostatic pressures, and can easily be mixed on site, prior to application with brush, roller or spray. It provides an effective barrier against sulphates and chlorides and will bond to damp concrete." ■



A column of the Ashburton Bridge on the N3 pictured after a blazing truck had caused extensive fire damage last year, and in its new repaired state after the use of three a.b.e. Construction Chemicals concrete repair products.



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# CONVENIENTLY FIXING GAPS

Continuing to identify the needs of the local construction industry and DIY market for technically advanced but user-friendly chemical building solutions, Mapei South Africa now offers MapePUR Universal Foam M. This one-component expanding polyurethane foam is the practical, convenient solution to use for general gap filling, soundproofing and thermal insulation.

> MapePUR Universal Foam M comes in a handy 750 ml spray can with a trigger operated nozzle that delivers up to 45 litres of polyurethane foam in free expansion. The foam hardens quickly and, subject to the prevailing temperature conditions, can be sanded after 30 minutes, or cut, ground, drilled, or skimmed with cementitious products, or painted.

The foam expands when it comes into contact with humidity and to increase the expanded foam volume, the substrates around the gap are dampened by spraying with water prior to applying MapePUR M. Similarly, to increase polymerisation in the foam and achieve a higher expansion level after injection into a gap, the foam can be sprayed with water.

Buildings are made from numerous different materials and structures and it is inevitable that gaps exist or are formed when they are put together. MapePUR M adheres well to all materials normally used in the building industry such as brickwork, concrete, gypsum, wood, metal, glass, foam polystyrene and PVC.

The hardened foam has excellent mechan-

ical properties, high insulating and soundproofing properties, as well as having good resistance to the formation of mould and mildew.

Some typical applications for MapePUR are insulating and soundproofing door frames, window frames and roller blind housings; fixing support frames in place for door and window fittings; insulating through pipes for heating, air-conditioning and cooling systems; fitting and insulating construction features and fittings on roofs; and sealing formwork to make it leak-proof when pouring in concrete.

MapePUR Universal Foam M is another technology innovation from the international Mapei group, world leader in the production of adhesives, sealants and chemical products for building.

In line with the group's focus on sustainable development and the production of environmentally-friendly products, MapePUR M foam is made from a mixture of polyurethane



prepolymer, foaming agents and special additives, and does not contain any ozone layer damaging CFCs.

"MapePUR M is such a convenient to use, versatile product that it is destined to be a standard item in every builder's toolkit," comments Mapei South Africa's product manager, Paul Nieuwoudt. ■

# AFRICA RAIL CONVENTION EXPERT

The annual Africa Rail Convention at the Sandton Convention Centre, held from 30 June to 1 July, is heralded as Africa's largest and longest running transport event attracts over 5 000 attendees from the transportation industry country-wide.

> This year, the conference had a cast of 600 delegates and 300 speakers, and comprised of innovators and industry leaders at the forefront of development on the continent, who shared insights to facilitate interaction and knowledge transfer with the aim of driving progress and development in Africa.

South Africa's leading black-owned engineering and consulting firm GIBB, had its own esteemed technical executive electrical engineer, Dr Willem Sprong presenting a paper on his team's design of the new containerised traction substation. With a focus and theme of reliability in the industry, Sprong reinforced innovative solutions into the sector aimed at displaying and educating attendees on the new technology that addresses the resource and skills shortage across the country.

"Being innovative refers to an action that causes one to create something that is not the norm. Innovation is usually met with reluctance, mostly because of our fear of the unknown. We tend to trust in the old technology because we think it has been proven but that is just

an excuse not to take a risk," stated Sprong.

Engineers become creative with their thoughts when faced with unique conditions that do not allow for traditional approaches. "The containerised traction substation displays an innovation that has created a unique solution to problems in the traction substation design. The substation is essentially a portable unit that provides power through its simple plug and play design. This new innovation will reduce operational costs, time, constructability and maintainability issues that were previously experienced," shared Sprong.

The unique containerised traction substation design is not only much less costly to install than the traditional big building type substations, but it is also much more reliable. The technology used inside the substation is the latest and test results prove that switching capability will drastically increase with this new equipment. The containerised traction substation is also better secured against theft and vandalism and this innovation will enable railway operators to reduce the down time caused by substation failure.



**Dr Willem Sprong, technical executive electrical engineer from GIBB.**

"New technology was implemented to complement the traditional approach in traction substation design. The result was a containerised substation that can be assembled and tested in the factory and shipped to site where it is commissioned resulting in a more reliable system at a fraction of the cost," commented Sprong.

With over 95 free educational seminars, this year's Africa Rail conference aims to inspire attendees, enable vast networking opportunities and educate those in the transport industry on current challenges and solutions with the accompanying exhibition, showcasing hundreds of the latest solutions in Rail. ■

# APPOINTMENTS

## Legrand SA



**Johan Bosch, general manager.**



**Brian Ndlozi, export manager.**

## Wacker Neuson South Africa



**Thammy Lang, marketing.**



**Francois Griesel, national sales manager.**

## Aurecon



**Dr Kourosch Kayvani, global director, excellence and expertise.**



**John McGuire, chief innovation officer.**

## UWP Consulting



**Vuyo Booi, appointed manager of UWP Consulting's Northern Region.**

## Lafarge South Africa



**Unathi Bатыshe-Fillis, country manager: communications.**





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The Formwork Experts.

**Faster, and  
safer too**

Panel floor formwork Dokadek 30

### Extraordinary fast forming

High forming rate thanks to large, 3 m<sup>2</sup> Dokadek 30 panels and seamless connection with Dokaflex



### Extra-safe working

Panels can be put up and taken down easily and safely without walking on top of the slab formwork



### Easy handling

No need to calculate or measure up, as the positions and numbers of props are all made clear by the system



Designed as a lightweight steel construction with powder-coated frames, this beamless hand-set formwork system is faced with wood/plastic-composite sheets and makes possible three different working methods: with or without drop-head, and early stripping based on proof of concrete strength.

Dokadek 30 combines the advantages of panel floor formwork system with those of Dokaflex floor slab formwork, that means its 3 m<sup>2</sup> large panels make it fast in typical zones, yet – thanks to Dokaflex – it is also quick and flexible in the infill zones. Dokadek 30: Slab formwork at its most evolved.



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