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FEBRUARY 2015

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# EDITOR'S COMMENT



**South Africa is currently in the grip of an energy crisis. Households and businesses are increasingly generating power on their rooftops with solar photovoltaic systems at a cost per kilowatt that now rivals the power that will eventually be generated by Kusile and Medupi power stations.**



**The 1.2 MW Black River Park Solar Project has broken new ground in becoming the largest integrated PV plant in Africa and the first to legally transmit electricity back into the City of Cape Town's electrical distribution network.**

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According to the CSIR (Council for Scientific and Industrial Research) this cost is 81 cents per kilowatt hour while the costs of generating a similar kilowatt hour by Medupi and Kusile will be 80 cents. This has led to an increase of photovoltaic installations – the National Energy Regulator of South Africa (Nersa) maintains that the combined capacity of these installations is 10 megawatts at present.

If one considers that Germany – that has only half the amount of sunshine South Africa has annually – is aiming to generate 52 gigawatts of solar power by 2017, one realises the significance of such power generation. Germany has already achieved significant solar energy generation: on a specific day in June 2014 solar energy was responsible for half of the country's power needs.

In South Africa, Cape Town is one city that allows customers to produce solar energy while excess power that may be produced is sold back into the national energy grid. Eskom, however, has restrictions as to the size of photovoltaic installations and the amount

of energy that is sold back to the grid. This is because the selling of excess power back to the grid has implications for municipalities: these derive a part of their revenue from electricity sales.

Nersa believes that those who generate electricity with photovoltaic panels should pay more for electricity as they will boost demand from the grid when the sun goes down. Those that are for photovoltaic power maintain that it can alleviate strain and should not be a disincentive. It will, according to the Southern African Photovoltaic Industry Association, also create a new industry.

From an outsider's point of view it seems to be a case of Eskom asking clients to reduce consumption, but then penalising those that find alternative ways to reduce consumption.

Nersa does justify its stance: it says that rooftop installations without storage make no contribution to reducing peak demand because of load shifting: the demand for electricity will pick up at a steeper rate than before as solar users switch back to the grid.

A second reason, they maintain, is that lower consumption during the day means municipalities will lose revenue and will be unable to cover fixed costs. For this reason a time-of-use tariff is suggested as this will encourage users to include storage in their installation rather than export power back to the grid.

The mass adoption of photovoltaic panels will lead to a drop in revenue for municipalities. However, the CSIR does suggest a way to stop this loss in revenue.

Whatever the case: there does seem to be a lot of red-tape and contextual issues that stand in the way of improved energy use. One can only hope that such issues will be sorted out soon and that South Africans can harvest alternative energies without being penalised ... or negatively affecting other bodies.

**Wilhelm du Plessis**

**Twitter: @ConstWorldSA**

## EDITOR

Wilhelm du Plessis    [constr@crowm.co.za](mailto:constr@crowm.co.za)

## ADVERTISING MANAGER

Erna Oosthuisen    [ernao@crowm.co.za](mailto:ernao@crowm.co.za)

## LAYOUT & DESIGN

Lesley Testa

## CIRCULATION

Karen Smith

## PUBLISHER

Karen Grant

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# ACCELERATING ROAD REHABILITATION



## Reducing Project Cost, Duration and Disruption

The main factors driving the financial viability of soil stabilization or cold recycling is the need for high flexibility, high daily output and low operating costs. Based on 40 years of experience, Bomag continues to set new standards in the development and manufacturing of soil stabilizers.

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# BID TO AVERT power line industry crisis

In a paper recently presented to the industry and representatives of Eskom, Southern African Institute of Steel Construction (SAISC) affiliate, the Power Line Association of South Africa, POLASA, laid out a plan for engagement between the Power Line Industry, Eskom and the Government to address the identified challenges of the industry in an effective and collaborative manner.

becoming part of the transmission integration aspirations of the Southern African Power Pool and ultimately the NEPAD development goals for Africa.

“In short we need to find a way of meeting the challenges of providing the necessary infrastructure for: a reliable transmission grid; increased transmission capacity; expansion of the grid in support of ‘electricity for all’; unlocking identified development areas; and regional integration as defined by Eskom in its Transmission Development Plan (TDP) within the context of the Presidential Infrastructure Coordinating Committee’s (PICC) defined goals contained in various Strategic Integrated Projects (SIPS),” says Whalley

## The local power line industry – the burning platform

The local power line industry is comprised of 11 contractors currently undertaking construction projects (or recently completing projects), supplemented by three contractors not currently active on new build projects. The industry employed about 6 000 construction personnel and constructed 737 km of new lines in financial year ended 31 March 2013.

“However,” says Whalley, “the completion of many of the mainstream Eskom jobs and the fact that in the current environment there is no new work coming on stream, the industry is on a ‘burning platform’”.

He adds that the hampering of new work coming into the market and the failure to identify and properly address the consequent challenges has already produced well-nigh catastrophic results.

For example, a number of well-known South African companies have in the recent past been forced into liquidation or business rescue programmes: These include Transdeco GTMH – voluntary liquidation; Edison Jehamo Power (now Symbion PNC) – business rescue; Towertel trading as Optic 1 – liquidation; Umakho Power – business rescue then liquidation; Linear Power – liquidation and AC Towers – liquidation. In addition, Stefanutti Stocks recently announced their intention to close down their transmission line construction operations.

Whalley estimates that, based on a premise of about 300 jobs per 100 km of line under construction, direct job losses that have eventuated from the drop off in



Gary Whalley POLASA chairman.

volume of work is between 4 500 and 5 000.

“This does not take into account associated industries such as transport, plant hire, conductor, insulator, line hardware, fuel, concrete, reinforcing and tower steel supply all of which have already been impacted by the lack of demand.

“Moreover the very limited number of projects identified for issue to the market in the next six months could result in a loss of industry participants, either to foreign markets or, for smaller local contractors, through business failure. This eventuality would further constrain the industry’s capacity to deliver the required kilometers identified in the TDP,” says Whalley.

## Policy contributing to lack of work

Several policy areas are contributing to the hampering of work for the industry. These include: *site access* – where the current regulatory environment within which servitudes are identified and secured is onerous adding a component of time to the project cycle; *landowner* – where landowner’s resistance to accepting servitudes across his land has been bolstered by a more complex legal framework and an increasing inclination to the litigious approach to conflict resolution; *community unrest and demands* – where an increasing pressure on service delivery has resulted in community pressure on line route access. Community actions have even included violence toward both Eskom and contractor personnel as well as the destruction of equipment and infrastructure; *environmental approval* – where the Environment Impact Assessment/Environment Management Plan/Record of Decision process has added significant time to the project cycle; *permit requirements* – where evolving legislation results in unexpected requirements that are identified late in the project process and result in work stoppages or an inability to commence work at all; and *‘Compact’* – where Government signs an annual ‘Compact’ with Eskom to construct a target amount of kilometers of line per annum. Yet, it is processes within Govern-

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➤ “We need urgently to sit together to develop a robust, competent and sustainable industry capable of delivering on the transmission requirements of the country and the region while protecting skills and jobs,” says Gary Whalley POLASA chairman.

Whalley says that the transmission line industry in South Africa is at a critical point in its evolution in relation to the Eskom Transmission Build Programme (TBP). “The industry is in crisis having suffered significant job losses in the past few years and with up to 5 000 jobs shed in the last twelve months,” he says.

He adds that the power line industry supports the Eskom TDP in the short and medium term, with the vision of



## ENGINEERS WITHOUT BORDERS GETS BOOST

In order to help develop engineering skills in South Africa, WSP in Africa has entered into a sponsorship agreement with Engineers Without Borders (EWB), an on-campus organisation that provides student engineers with the opportunity to work on community projects.

> According to Mathieu du Plooy, CEO of WSP Africa, "Engineering skills are a scarce commodity the world over. However, to put this in context in the local environment, currently there are too few qualified and experienced engineers in the country to meet the targets of the Strategic Infrastructure Projects (SIPs) aligned to the National Development Plan (NDP)."

The impact of what this shortage – not only for the engineering and construction sectors, but for the country in terms of reaching the goals and targets as laid out in the NDP by the 2030 deadline – is very real.

"Being one of the largest professional engineering consulting firms in Africa, we believe it is our duty to give back by supporting the development of young engineers – not only to future secure talent, but to be a part of the change we want to see in our industry and the country," adds Du Plooy.

The projects selected by EWB's student chapters give its members

the opportunity to practice the theoretical knowledge they gain at university and to make a meaningful difference in communities throughout the country. In addition, these budding engineers gain the soft skills that will aid their further growth and professional advancement when they enter the workplace.

"This is an incredibly exciting chapter for us as it reflects our passion for cultivating this important skill set in South Africa. Without engineers, no country is able to develop the infrastructure needed to meet the demands of the modern age," adds Du Plooy.

To date, WSP has mentored the EWB project team from the University of Pretoria during the mid-year break, and has sponsored the annual EWB Summit that took place in Johannesburg at the end of November. Besides hosting 35 student engineers at its premises in Bryanston, WSP's experts were involved in a number of panel discussions, including the socio-economic impacts of good engineering in Africa and the importance of mentoring and coaching in career development.

"Our involvement extends to more than just financial support. Looking at 2015, we will be supporting various EWB project teams across the country. We will also be giving our professional engineers the channel to coach and mentor these bright students as they work on their chosen projects," Du Plooy concludes. ■



**Mathieu du Plooy, CEO of WSP Africa.**

## A DOUBLE-EDGED SWORD

With the government having spent over R1-trillion in infrastructure development in the five year period leading up to the 2013/2014 budget year and R827-billion targeted to be spent over the next three years, Tunga Changamire, executive: claims and risk management at PCBS, says this creates significant opportunities for construction guarantors to participate in infrastructure development programmes.

> "Performance guarantees and retention money guarantees are a mandatory requirement in buildings and civil contracts with contractors required to provide one or both in favour of the respective department or mandated government representative.

"Here guarantors such as banking institutions and insurance companies continue to report a strong and positive correlation between investment in infrastructure and the amount of business in guarantees. This trend relates mainly to guarantors involved in providing security for the construction sector," he comments.

Changamire says it is insurance companies in particular that have become major players in this space. "They have become the major providers of guarantees for small to medium infrastructure projects as they do not require full collateralisation of their risk. Local and international banks on the other hand are actively involved in the mega infrastructure projects such as the Eskom coal-fired plant projects," he explains.

However while the guarantee business is booming, Changamire says it is a double edge sword in that it comes with significant risk. "Guarantors have incurred guarantee claims and losses due to genuine non performance by some contractors on these infrastructure projects.

"Guarantors also continue to experience significant setbacks as a result of delays in effecting payment to contractors due to the bureaucratic decision-making processes within some government departments. Here delays in payments have left smaller contractors

cash-strapped leading to their ultimate demise with guarantees issued on their behalf being called up from the guarantors," he explains.

With contract prices fixed on certain mega infrastructural projects, Changamire says delays due to red tape further disadvantage contractors. "Delays may see input costs soaring in the period awaiting the final decision. This reduces profitability on the contract, thereby negatively affecting the contractor's overall profitability. Consequently this often leads to contractors being placed under liquidation and generates increased guarantee claims," he says.

Going forward, Changamire says having already incurred significant losses on current power projects, these challenges will likely see insurance companies avoiding exposure to any planned mega infrastructural projects such as the upcoming nuclear power station projects.

"A further complication is that the guarantee wordings required on these government infrastructural projects have become what can be regarded as unconditional demand wordings, leaving little to no room for claims mitigation," he adds.

However while these challenges continue to plague the guarantee Changamire emphasises that they are not common to all projects. "Ultimately you have to consider the bigger picture in that these government infrastructure programmes in addition to fulfilling socio-economic development goals, provide vital premium generating opportunities for guarantors. As South Africa works towards adopting a countercyclical economic policy together with the current economic slow-down, it is essential that government invest in infrastructure programmes so as to boost economic activity," he concludes. ■

**Tunga Changamire, executive: claims and risk management at PCBS.**



# GLOBAL ACCOLADE

In November last year, Lafarge South Africa, the local presence of the international Lafarge Group, paid tribute to the company's six local winning teams as well as its global winning team in recognition of their excellent performance during the 2014 annual Global Lafarge Awards. The programme was designed to promote and transfer best practices and processes within the Lafarge Group.

➤ Lafarge South Africa, won in the global 'Capital Allocation' category – its Moregrove Quarry's "Innovative fines management gives better returns" initiative, executed under team leader and quarry manager, Peter Willemse, was chosen as one of the six worldwide winners out of 170 top project submissions from 35 countries.

Says Ken MacLean, country CEO of Lafarge South Africa: "Winning this Global Award shows that commitment to the success of our company, through hard work and creative initiatives will be recognised at the highest level. It means we have the ability to compete against any other country in the world."

Moregrove Quarry's award-winning project addressed the problem of the high fines content of its stone that was limiting sales of asphalt sand. After an investigation it was found that the quarry's air separator

had the ability to remove much of the fine sand particles. The asphalt sand's quality was improved and a profitable outlet for the recovered fines in the manufacture of bricks, blocks and other precast concrete products was determined.

The project's benefits were numerous:

- Successful reduction in fines -0,075 mm from 16% to 10%.
- The fines are separated and can be blended with another product (-4,75 mm) to produce a blend which is in high demand from a brick and block precast producer.
- The improvement in fines quality was cost effective.
- Low maintenance solution.

This proactive thinking resulted in R8-million revenue per year and an increase in asphalt sand sales.

The global winners were announced at a Lafarge Awards Group ceremony in October 2014 during the Lafarge Group's Country CEO meeting in Sitges, Spain. The judges of the award submissions praised the quality of this year's entries, saying they were high impact, results driven programmes. ◀

Lafarge South Africa's global winning team.



The six winners of the final global Lafarge Awards were:

- **Category: Capital Allocation – winning country: South Africa. Initiative: 'Innovative fines management gives better returns and has opened up a new business opportunity'**
- **Category: Health & Safety – winning country: Morocco. Initiative: 'Aimed to promote strong, committed H&S leadership at all levels. Conducted programmes that promoted responsibility and accountability among managers in the field. Safety knowledge and risk analysis skills were enhanced'**
- **Category: Cash flows and EBITDA – winning country: France. Initiative: 'Facing a declining and increasingly competitive market, Lafarge France did a total review of its operation to reduce variable and fixed costs, while also steering cement price negotiations'**
- **Category: Managers Leadership – winning country: India. Initiative: 'Implemented WAVE (Women Adding Value & Excellence) to create a more inclusive workplace. A variety of programmes contributed to India achieving a higher maturity index and a greater sense of belonging among female employees'**

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➤ ment that, to a large degree, control the ability of Eskom to actually release projects for construction and thus deliver on its 'Compact'.

"The bottom line," says Whalley is that if there is a substantial increase in jobs coming on stream in the very near future, it is unlikely that Eskom will build more than an estimated 300 km of transmission lines in the financial year ending 31 March 2015. This represents only 24% of current construction levels of 837 km and 13% of the 1 500 km per annum aspired to in the TDP over the next five years. This will be catastrophic for the local power line industry," he says.

He adds that as much as business is

dynamic, it requires a degree of certainty in terms of its future ability to generate returns on investments made. "The recent decline in enquiries to market, compounded by the lack of work currently available, has called into question the reliability of Eskom's TDP as a forecasting tool for new build plans. Industry investors and boards of directors alike are sceptical and uncertain, resulting in a reluctance to invest and an increased appetite to exit the industry," he says.

## In closing

The economic development imperatives in South Africa clearly demand a robust and expanded transmission line grid to enable

the effective transport of electricity from the point of generation to distribution.

"The need is paramount to ensure that the learning curve that the industry and Eskom have paid dearly for, is not lost due to lack of roll out of new projects in the immediate future.

It is imperative that the power line industry, in collaboration with its key customer Eskom and Government, find effective ways to avoid job losses while developing a strong and sustainable industry capable of delivering on Eskom's requirements, and matching its aspirations to support the SADC region and in turn Africa," Whalley concludes. ◀





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# BEST PRACTICE

## for infrastructure resettlement

Involuntary resettlement due to infrastructural development has for the past 20 years seen more than 10 million people lose their homes on the African continent.



GIBB's sustainability consultant, Shantal Rampath.

While infrastructure remains a foremost priority in Africa and particularly in South Africa with the National Development Plan topping the national agenda, GIBB's sustainability consultant, Shantal Rampath stresses that a more detailed consultative approach needs to be taken in relocating people, especially where livelihoods are concerned.

Employed within the multi-disciplinary engineering consulting firm's environmental and sustainability sector, Rampath presented a paper at the 2014 South African National Committee on Large Dams (SANCOLD) conference held recently in a bid to prescribe a guideline to manage the community consultation process more effectively.

While the focus at SANCOLD was sustainable dam developments in Southern Africa, the guidelines Rampath and GIBB sustainability manager, Karien Erasmus presented may be adopted and tailored for any infrastructural development.

"The model takes an approach aimed at addressing the potential negative impacts associated with resettlement at early stages of infrastructure projects. This model is particularly relevant to vulnerable communities in rural areas," she says.

Rampath says that while there are international standards like that of the World Bank and International Finance Co-operation, these do not adequately address post resettlement taking the longer term time frame into account.

### The model

"Our model speaks to the post resettlement scenario, where development and poverty is a critical element once infrastructure projects are complete," she stresses.

In her research Rampath found that often, people are moved with little consid-

eration for their future and this ultimately impacts negatively on quality of life, which is in stark contrast to what infrastructure development sets out to achieve, i.e. convenience and improvement.

Rampath cites examples of dam projects where communities were evidently not consulted properly: "The Construction of Sèlinguè Dam in Mali affected people who lost their land due to new irrigated plots. In addition, they were provided with very little support and could not form adaptive capacity and form new farming techniques in their new areas," she revealed.

"As a result, many farmers were faced with disastrous crops and had their land taken away because they were failing to farm properly in new land plots. This impacted on loss of livelihoods and income generation from subsistence agriculture."

Another example was the Tokwe Mukosi Dam project in Zimbabwe.

"Displacement of host populations and forced migration has led to the diminishing of cultural resources, livelihood displacement and increased vulnerability of local communities," she adds.

### A long term view

According to Rampath many affected people lost their livelihood strategies and became exposed to various risks and stress during resettlement.

She advises that the long term view takes cognisance of assistance and services that last beyond the project completion phase, and the generic long term impacts of resettlement are not just about losing infrastructure – it is also about losing livelihoods. "It is important to remember that a lot of resettlement cases involve women and child headed households who are vulnerable and not adequately equipped to rebuild

their lives after resettlement," she maintains.

Some of the challenges relating to infrastructure projects include: poverty, service delivery issues, social exclusion and the fact that project affected people lack opportunities and experience to make the best decisions and form adaptive capacity in resettled locations.

"The guidelines and sustainability model fulfils a comprehensive requirement for post project monitoring. This has been identified as one of the gaps in most resettlement cases where post project monitoring was not addressed holistically taking into account long term issues," says Rampath.

### First pillar

"The first pillar which refers to localised sustainable economic growth should be centered on policies and programmes which stimulate economic activity. These activities should benefit long term development and the welfare of the affected person/s during resettlement. Applied early in a project, this pillar should lead to societal benefits that contribute to addressing social issues," she explains.

The benefit, she claims is that growth in turn produces an increase in income levels and wages improves public revenues.

"Growth and infrastructure development will increase capacity and efficiency and allow people to develop their skills while providing employment."

### Second pillar

The second pillar, which represents inclusive social development, refers to access to basic facilities such as education, healthcare and necessary social services, which establish opportunities to increase participation and the overall welfare of affected communities.

*"The key to effectively integrating sustainability into an early resettlement planning process relates to measurability and applicability,"*

## STALWART HONOURED

Neil Duncan, chief financial officer of Kevin Bates Albert Carpets, has received a special Master Builders Association North Presidential award for his 'Extraordinary Contribution' to the MBA.

Presented at the 2014 MBA North President Dinner by current MBA North president, Lea Smith, the award honours the efforts of Duncan, who was president of the Gauteng Master Builders Association from 2006 to 2007 before the association changed its name to MBA North. He has for many years been Honorary Treasurer of the MBA North and serves on the association's executive committee, and is also extremely active in the MBA training initiatives.

The framed 'Extraordinary Contribution Award' praises Duncan's dedication to the building and construction industry and states that his contribution and perseverance helped the MBA to maintain its exceptionally high standard of both quality and ethics in business.

Commenting afterwards on MBA North's award to Neil Duncan, the association's president Lea Smith, stated: "The Boy Scout's motto is 'Be Prepared' and this is how I would describe Neil Duncan, who was involved with the movement for many years. He has been an active member of MBA North for more than two decades and throughout, when asked to contribute, he did not provide 100% assistance but 110%. Perhaps his organisational skills stem from his auditing background – but whatever the source of his expertise, he always brings his 'A-game'. All of us at MBA North believe he is a true, inspirational leader to look up to and respect."

Smith said the special MBA North Presidential Award was not an annual accolade but only presented when the association felt an individual deserved such an honour. "I can think of no more worthy case than Neil Duncan who, in his low-key, self-effacing manner has been such a tremendous ambassador for MBA North for so many years," he added. ▣



Neil Duncan (left) receives an MBA North special award for his 'Extraordinary Contribution' to the association from MBA North president, Lea Smith.

### Third pillar

"Finally, the third pillar, local authority support, stresses the importance of good governance and a local support regime by using indicators such as public capacitation, forming partnerships with civil society and mainstreaming good governance," she says.

"I believe that sustainability should form the cornerstone of resettlement as outlined in the guidelines. However, sustainability could easily be seen as vague due to its broad definition. The key to effectively integrating sustainability into an early resettlement planning process relates to measurability and applicability," she concludes. ◀



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# Poised for **FUTURE GROWTH**

South Africa's construction industry faced a challenging year in 2014, fraught with labour unrest, substantial delays on some of the country's major construction projects, as well as recent setbacks in the economy.

➤ "The 2014 financial year started with a lot of promise despite adverse findings by the Competition Commission and various challenges to the industry," says Andries Rossouw, PwC Partner.

Order books were strong and margins were recovering for the first time in five years. However, the lack of recovery in the economy meant that this promise was not fulfilled and 2014 proved to be a tough year for most construction companies.

Rossouw says: "The past few years have highlighted the need for better coordination and monitoring within the construction industry – a challenge that the South African Government has welcomed with the roll-out of its National Infrastructure Plan. Implementation of the plan will require significant input from the construction industry."

PwC's second edition of *SA Construction* highlights some of the trends in the South African construction industry. The study's findings are based on the financial results of the leading construction and construction materials companies listed on the Johannesburg Stock Exchange (JSE) for financial year ends to June 2014.

## The South African construction industry

The construction industry is cyclical in nature. However, the 2014 market capitalisation of the heavy construction and building materials and fixtures compa-

nies saw mixed results. Ten companies reflected an increase and five a decrease. In aggregate, for the 16 companies analysed, market capitalisation had slightly decreased to R67,4-billion as at 30 June 2014. The market capitalisation of the 16 companies had decreased further after 30 June 2014 and as at 30 September 2014 had declined to R66,3-billion.

Actual government construction expenditure in 2013 was R12,7-billion below the 2012 forecast. This decrease in anticipated expenditure underlines the challenges experienced by the industry.

Growth in the order book for 2014 was 16% in line with the percentage experienced in 2012 after a flat 2013.

## Financial performance of the industry

Total revenue increased by 9% to R172-billion on the prior year mainly as a result of an increase of R4,1-billion from Group Five, R1,5-billion from Murray & Roberts and R1,3-billion from Aveng. These increases were largely as a result of increased revenue from energy, oil and gas projects and a weaker rand partially offset by weaker demand from the mining sector.

"Retention of key skills to serve prospective contracts is one of the construction companies' biggest investments in anticipation of the potential upswing. Although tender activity has been very high according to a number of companies, there were limited tenders awarded.

"Companies therefore have to decide whether they can continue carrying excess staff or whether they need to downsize," comments Rossouw.

## Integrating risk for performance

The common key risks identified by construction companies include risks to growth and expansion of the industry; industrial unrest; loss of key skills and expertise; health, safety and environmental sustainability; project execution; transformation; tender risks; credit risk management; and compliance with the laws and regulations.

In addition to these risks, the construction industry remains under pressure from the public and regulators to significantly improve its safety performance, with challenges prevailing across the industry. There is also the added risk of non-compliance with the Construc-



Andries Rossouw, PwC Partner.

tion Charter, and concerns around the retention of talent and skills shortages.

## Tax challenges

A new withholding tax on service fees will be introduced on 1 January 2016. A large number of construction companies are engaged in projects throughout Africa as a result of the expansion of business opportunities on the continent.

Therefore it is important for these companies to understand in which instances the new withholding tax on service fees will apply to ensure proper cash flow planning and project pricing.

## Improving value to stakeholders

The construction industry adds significant value to South Africa and its people. The monetary value received by various stakeholders is often summarised by companies in their value added statements.

The value received by heavy construction employees represented 69% (2013:71%) of the value created. This is a significant contribution. According to Stats SA, more than 1,18 million people are employed by the construction industry either on a contract basis or permanently.

The state received 19% (2013: 17%) of value created in the form of direct taxes. The reality is that the state receives significantly more if one takes into account the tax on employee income deducted from employees' salaries and net indirect taxes like VAT.

"The South African construction industry is well placed to cope with new growth requirements. However, companies will need to manage short term liquidity needs," Rossouw concludes. ◀

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# 20 YEARS of great business

One of South Africa's most esteemed property businesses, the Atterbury Group, celebrates 20 years of successful operation at the same time as the country marks two decades of democracy in South Africa.



> Twenty years after its founding, Atterbury, the driving force behind a growing number of SA's landmark commercial property developments, continues to build quality properties and deliver performance for its investors.

Atterbury's business is conducted through two main companies: Atterbury Property Holdings for developments and, for investment, Attacq Limited, which successfully listed on the JSE in October 2013. Atterbury now comprises about 58 trading companies.

Together Atterbury and Attacq have over 150 employees and offices in Pretoria, Johannesburg and Mauritius.

However, Atter-



bury was not always the property powerhouse it is today. It has grown from humble roots. Louis van der Watt and Francois van Niekerk formed Atterbury in 1994, at the same time that SA's democracy was born.

Van der Watt is a natural entrepreneur. His first property transaction was at the tender age of 11.

From a young age, he was fascinated by buildings – their design and location. He met Francois van Niekerk as an article clerk for Deloitte at Van Niekerk's computer business, Infotech. The latter had recently developed his first building and had more land available.

## Humble beginnings

When completing his articles in 1994, Van der Watt joined Van Niekerk to form Atterbury Property Group with capital well below R1-million. For five years they were Atterbury's only employees.

The founders each held a 33% share

**Atterbury's new head office building called Bloukrans, located at the landmark Lynnwood Bridge precinct, developed by Atterbury in Pretoria.**

**Louis van der Watt, CEO of the Atterbury Group, a company he formed with Francois van Niekerk back in 1994. Today Atterbury is one of South Africa's foremost property businesses.**

## CONSTRUCTION BOOM IN MTHATHA

Established in 1883, Mthatha, the capital of the former Transkei, is a hive of bustling activity and recognised as the leading city of the area. Situated on the N2, almost midway between Durban and East London, this colourful and lively city is the gateway to the area and the world-famous Wild Coast, with regular flights to and from Johannesburg, says Wayne Rubidge, Pam Golding Properties area principal in the Mthatha area and North Eastern Cape.

> Says Rubidge: "With a population of around 500 000 people, Mthatha is undergoing a construction boom visible everywhere you go, from the upgrading of airports to the building of roads, bridges and at least three new shopping malls. There is excitement in town, with the new and biggest shopping mall Mthatha has ever seen currently underway." Ninety percent of construction work on the BT Ngebs Mall is completed, with the mall scheduled to open its doors in April

2015. Comprising 58 808 m<sup>2</sup>, the mall will have 1 975 parking bays and will service about 390 000 households. It will be the largest shopping centre in the Mthatha region, which has a retail undersupply of 477 341 m<sup>2</sup>," says Rubidge.

"In 2013 the government earmarked R5-billion to rehabilitate the city's infrastructure over a 20 year period. Projects include a runway completed four months ago at the Mthatha airport, while a new terminal building is underway. A two-lane bridge opened in

November 2014 to ease traffic congestion around the city and streets are being upgraded with robots. Also included in these projects is the new 60 bed Mthatha Hospital which recently opened."

Mthatha has a variety of large suburbs, with the more affluent being Hillcrest, Southernwood and Northcrest, where properties sell for anything between R1-million and R2-million, with vacant stands selling between R200 000 and R250 000. In more affordable areas like Ncambedlana and Mbuqu, residential properties sell for between R400 000 and R650 000.

It is appropriate that Pam Golding Properties has established a presence in Mthatha, as founder and life president Pam Golding was born and schooled there, in later life being awarded an honorary doctorate from the Walter Sisulu University.

Says Zuki Khumalo, Pam Golding Properties resident agent in Mthatha: "We are still experiencing huge stock shortages and that has really pushed up prices, particularly in popular

in Atterbury, and 34% was held by the Atterbury Trust. This started a generous distribution of ownership in the company and an energetic involvement with disadvantaged communities.

Van der Watt recalls: "Our biggest challenge initially was funding. Fortunately Van Niekerk's strong balance sheet secured Atterbury's early developments."

From the outset, building and owning buildings was a key focus for Atterbury to ensure development profits and long term capital gain.

"Our first development was the office of the Auditor-General in Brooklyn, Pretoria. As the portfolio expanded, new funding was hedged using already completed buildings as security," explains Van der Watt.

In 2002, Atterbury co-founded Attfund, an unlisted regional shopping centre fund of which it owned 43%. Attfund was sold to Hyprop in 2011.

## Taking a confident approach

Challenging economic circumstances emerged for the SA property sector with the global economic crisis in 2008. Banks were withholding development funding. Despite this, Atterbury secured a R1,3-billion loan – the biggest for a private developer at the time – to develop Lynnwood Bridge.

Contrary to the defensive strategies many companies adopted at this time, Atterbury took a proactive, innovative approach and concluded the largest property transac-

tion in SA to date. "In 2008, Atterbury also acquired 1 730 000 m<sup>2</sup> of commercial property development rights at Waterfall, which will provide a consistent pipeline of development profit for at least the next decade, with 1 400 000 m<sup>2</sup> of developable bulk available," notes Van der Watt.

Its focused, aggressive approach to property development, supported by innovation, creativity and a strong entrepreneurial spirit makes Atterbury SA's leading property developer, even in challenging markets.

"The global economic climate, slow SA growth, increasing interest rates, declining consumer spending and challenges surrounding government policy motivated Atterbury to expand its focus to attractive regions on the African continent and Europe," explains Van der Watt.

## Pioneering new markets

Atterbury has led the way for property development in other African countries. "We are focused on retail opportunities in African countries outside South Africa," reports Van der Watt. "Several investors have partnered Atterbury as developer to build a portfolio of prized retail and commercial assets."

In 2009, Atterbury acquired a 50% stake in the Bagatelle land, Mauritius, where it developed the first regional shopping centre in Mauritius, which opened September 2011.

In Europe, Atterbury has compiled a portfolio of direct, income-yielding and capital growth investments and plans to partner with a listed company to expand

this portfolio. Atterbury International is also involved in a new £150-million mixed-use development in Edinburgh, Scotland.

As a commercial real estate investor, Attacq, formerly Atterbury Investment Holdings, was listed on the JSE in 2013. It focuses on sustainable capital appreciation through the development and ownership of a balanced portfolio of properties with contractual income streams. Attacq has gross assets valued at more than R18,4-billion and presently has a market capitalisation of R14,7-billion.

Over 20 years, Van der Watt and Van Niekerk have crafted and grown a leading company and an exceptional team at Atterbury, nurturing a reputation of remarkable credibility with a consistently high standard of ethical business conduct.

## Award-winning performance

Atterbury's developments, asset management performance and social impacts have won numerous industry awards for excellence and innovation. Among these are various construction awards for its properties, numerous PMR Diamond Awards for 'Best Developer' (2003 - 2013) and the Investment Property Databank (IPD) award for best commercial and overall performer for three consecutive years (2008 - 2011).

Unsurprisingly, both Van der Watt and Van Niekerk are well-recognised for their remarkable and ongoing contributions to business and property. <

suburbs such as Northcrest, Ikwezi and Mbuqe Extension. However, from 2015 onwards this will be alleviated to some extent with a number of developments focusing on middle-income houses and gap houses planned and to be approved. Currently, Mthatha is landlocked in terms of housing developments as a result of the peri-urban areas also termed 'rurban' areas along the urban fringe. These transitional areas, between rural and urban, are the constraints for new developments as the city has been boxed in by the peri-urban settlements.

The city's economy is substantial as there are at least 15 towns whose economy is linked to that of Mthatha. The city supplies goods and services to towns like Flagstaff, Mvezo and Libode, where facilities that Mthatha offers are not available, making Mthatha the key economic hub in the region."

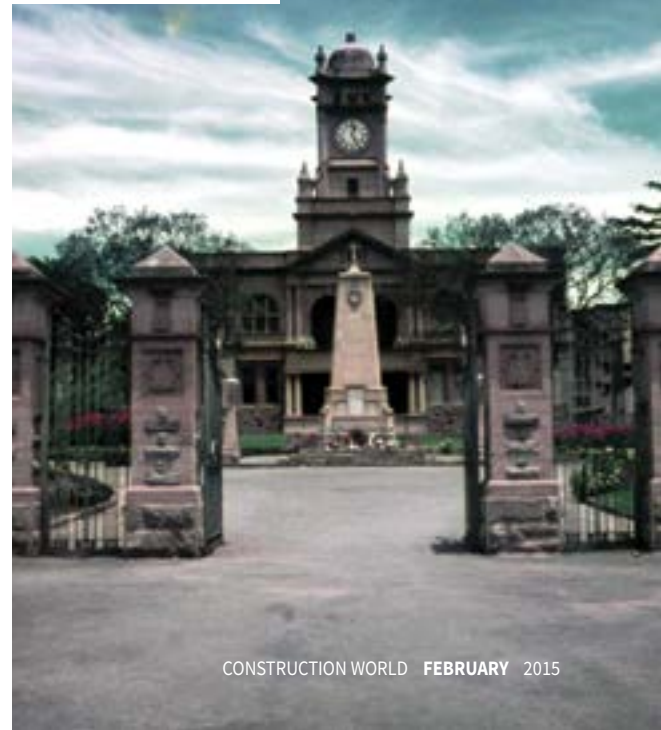
She says at present Mthatha is abuzz with a couple of new full title developments underway. One developer who has made his presence known in the city has completed

49 housing units which were quickly sold out in a development called 'The Palms' in the suburb of Ncamedlana.

"Another new housing development in Ncamedlana, 'Fernhill' – comprising 88 units and catering for the medium income market, which was also launched in 2013, is about to commence construction, with services already being installed.

"For investors there is a great deal of opportunity in Mthatha and surrounds because within the current property market, not many in the lower LSM groups can afford to buy, making small apartments the ideal investment to cater for this market. The rental demand is also substantial in this sector, with entry level rentals achieving rentals in excess of R4 500 per month," says Khumalo. <

Mthatha's historical town hall.





## PRESTIGIOUS AFRICAN PROPERTY AWARDS WINNER

Waterfall Estate is amongst the winning companies of the prestigious African Property Awards 2014-2015 – winning the 'Best Mixed-use Development in South Africa and Africa' awards, in association with Rolls-Royce Motor Cars, announced in Dubai recently.

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> Says Stuart Shield, president of the International Property Awards: "Attaining one of these coveted awards is indisputable evidence that Waterfall Estate is capable of outperforming some exceedingly strong contenders within the highly competitive African property arena."

The African Property Awards form a part of the long established International Property Awards and the award winners' logo is recognised as a symbol of excellence throughout the global industry. To this end, Waterfall Estate competed against a number of developers in the African region to receive this recognition.

"We are delighted at this great achievement and believe this recognition is testament to the world class development we, and our partners,

are building within South Africa – an estate that promotes an integrated live/work/play environment that provides a new standard in quality estate living.

"Acknowledgment must also be given to one of our partners on the residential side of the estate, Century Property Developments, for their contribution towards the submission of this award nomination, as well as to our commercial partner Attacq who continues to play a major role in the successful development of this Mixed-use Development," explains Willie Vos, CEO of Waterfall Management and Operating Company.

"Once again, the competition this year has been of a very high standard and brought the very best of Africa's property professionals to the fore," concludes Shield. ■



### About Waterfall Estate

Waterfall has emerged as the largest property development in South African history, combining between 8 000 – 10 000 residential units, which will eventually house an estimated 35 000 to 40 000 people, as well as accommodate commercial and office space that will accommodate a further 60 000 people.

## TACKLING WIDER STRATEGIES

Attacq Limited, a JSE-listed capital growth fund invested in a quality portfolio of income-generating commercial real estate assets and a value-creating pipeline of property developments, successfully closed a R640-million capital raising recently.

> Originally seeking to raise capital of around R500-million through an accelerated bookbuild, strong demand resulted in increasing the capital raise to R640-million through the placing of 29 629 630 shares at a price of R21.60 per share.

The R640-million was raised to allow Attacq the ability to acquire the remaining 18,8% of its key asset, the Waterfall pipeline, and take full control of the strategic planning of Waterfall, including the roll out of its infrastructure. This strategy has been formulated jointly with Atterbury, which is increasing its deployment of development capacity in other markets including Central and Eastern Europe, a direction which supports Attacq's diversification strategy.

Atterbury's exclusive right as developer of Waterfall will also be amended to allow Attacq the option to partner with other developers as a means of accelerating the Waterfall development. This will come into effect as from 2018. Atterbury will still retain a 20% undivided interest in the Mall of Africa, Waterfall's super-regional mall opening in April 2016.

In keeping with the continuing strategic relationship between Attacq and Atterbury, Attacq has secured a pre-emptive right for defined material developments to be undertaken by Atterbury, locally and internationally, ensuring Attacq's continued access to Atterbury's development pipeline.

Morné Wilken, CEO of Attacq, comments: "The excellent result of Attacq's capital raising reflects a healthy appetite in the market for Attacq shares and demonstrates strong support for our strategic direction." ■

**Morné Wilken, CEO of Attacq.**







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# DEBUNKING the myth

In the last five years, the cost of energy has become a growing concern for SA business and is especially troublesome for companies that are heavily dependent on Eskom's electricity supply. However, while business leaders know that energy efficiency is already critical for business survival, many avoid following through on the implementation due to the misperception that it is too complicated or a costly process.



**>** This is according to Manie de Waal, head of sales at Energy Partners, a leading energy solutions provider in South Africa, who says that the hike in energy costs by the state owned utility should not be taken lightly." SA has seen a more than 200% increase in electricity tariffs since 2008 and could be looking at more than a 1 000% increase between 2002 and 2020. Businesses should focus on both the demand (efficiency projects) and supply (generation) side of energy to minimise their exposure to hiking prices."

De Waal explains that prior to the energy crises in 2008, SA enjoyed abnormally low electricity tariffs and as such both behavioural patterns and optimisation of energy intensive operations did not develop gradually (as they did globally) towards cost effective sustainability. "While behavioural change, i.e. literally getting people to switch off, forms the building block for overall energy optimisation, this will usually only result in 10% reduction – at most. To reach a 20% – 50% reduction in consumption, businesses must invest in their operational asset base, preferably partnering with a reputable energy solutions provider."

There are multiple funding options available to assist businesses with the transition, the least risky of which is a Gain Share agreement whereby an energy solutions provider invests in an organisation and is rewarded only based on results achieved.



Manie de Waal, head of sales at Energy Partners.

He explains that in Gain Share, or Performance Rental, funding models the energy solutions provider invests in a client's energy efficiency by funding the solution – be it solar Photovoltaic (PV), heating, cooling systems or outsourced steam generation – and is responsible for the operation of the equipment. "Only when savings are realised, the solutions provider is rewarded for its results. These types of agreements should be structured that the client is cash flow positive from day one, without carrying performance risk or investing any of its own capital."

## Choosing the right partner

De Waal warns however that businesses must be sure to partner with a reliable and experienced energy solutions provider, because even though the financial risk is mitigated, operational risk is involved in outsourcing critical business processes.

He explains that currently, Energy Partners is working on number of Gain Share funding initiatives including, for example, a recent steam outsourcing project in Wadeville, Johannesburg. "Energy Partners invested in and installed a boiler on the premises and appointed a dedicated team to manage the operations. The client is not invoiced for the service or the hardware, but only for the steam generated. Savings were achieved from day one and the client is set to save more than R10-million annually. This is from a single contract and looking across the client's portfolio many more opportunities have already been identified."

Alternative funding options include self-funding; external financing and 'Green' funding. "If the operation is self-funded, the buyer enjoys the full benefit of the installation and the savings are not off-set against

finance charges." De Waal adds that this option is often chosen by corporates that do not have a tightly constrained cash flow and are comfortable carrying the performance risk of the asset. This type of investment should however always be weighed up against other available investment opportunities which clients 'understand' better.

External financing is a bank loan, typically issued at the corporation's overdraft rate. 'Green' funding works on a similar principle, but a preferential interest rate is offered as these funds come from sources that are earmarked for energy saving initiatives. "With Green funding, measurement and verification (M&V) requirements are sometimes demanded of the organisation to ensure that the asset is performing at the desired level."

De Waal says that business owners should ensure that they understand the full cost implication of financing options, especially when the company invests its own capital. "The savings from solar power should, for instance, be very carefully considered against both the opportunity costs of other investments and also against the true cost of Eskom power during the time of day when solar is generated."

Business owners must understand that bills may go up even while the company is saving, because energy costs are dependent on usage patterns, tariffs and climate. "It is thus imperative to measure energy consumption prior to the optimisation initiative to establish an agreed upon baseline against which savings can be determined.

"At Energy Partners, we very seldom see a site where saving potential is less than 20% on the current bill and it is not uncommon to find sites that exceed 50%. The biggest mistake a company can make is to do nothing when there are low-risk solutions available that require no capital investment," concludes De Waal. **<**

## HUGE PRIESKA SOLAR PROJECT

juwi Renewable Energies, the South African subsidiary of the international juwi group, is to build the Mulilo Sonnedix Prieska PV solar park in the Northern Cape Province for Independent Power Producer (IPP) Sonnedix.

> The PV power plant has a total generation capacity of 86 MW. Financial close was achieved on 11 December 2014. The commencement of construction is scheduled for the first quarter of 2015. For the juwi group, the utility-scale project in the Northern Cape is the company's largest single solar EPC-project in the world. juwi is also providing operation and maintenance services for the plant.

"We are proud to realise this milestone project and delighted to be playing a key role in adding substantial amounts of clean energy to the South African electricity grid," says Greg Austin, juwi South Africa managing director. Over the past years, juwi Renewable Energies has realised four utility-scale PV projects in South Africa and has built up a substantial reputation as a leading specialist for green energies in the country.

The Prieska project was selected by the Department of Energy of South Africa under the third bidding window of the Renewable Energy Independent Power Procurement Programme (REIPPP) in October 2013.

"We are also very pleased that our efforts in designing the economic development aspects of the project brought the desired outcome", Austin continues.

Of all six projects in bidding round three, the Mulilo Sonnedix Prieska PV solar park had the highest economic development score. juwi will also provide Operations and Maintenance services for the plant.

Commenting on the closing, Franck Constant, president of Sonnedix said: "This first closing in South Africa is a considerable milestone for our company. It confirms the growth strategy and added value of Sonnedix in new markets where clean renewable electricity is in high demand and cost effective compared to conventional power."

Olivier Renon, Sonnedix South Africa country manager, adds: "We are happy to be working with juwi, one of the world's most experienced EPC providers in the field of renewable energies to build our solar park. We feel confident that our project construction is in very good hands."



Greg Austin, juwi South Africa managing director.

### About juwi Renewable Energies

juwi Renewable Energies is a full-service partner in all aspects of project development. It plans, constructs, and operates renewable energy power plants with a particular focus on the wind and solar energy sector in South Africa. The company's vision is that of 100% clean energy, security of supply, and independence from energy imports. Its network of international investors and a proven track-record across the globe are some of the keys to its success.

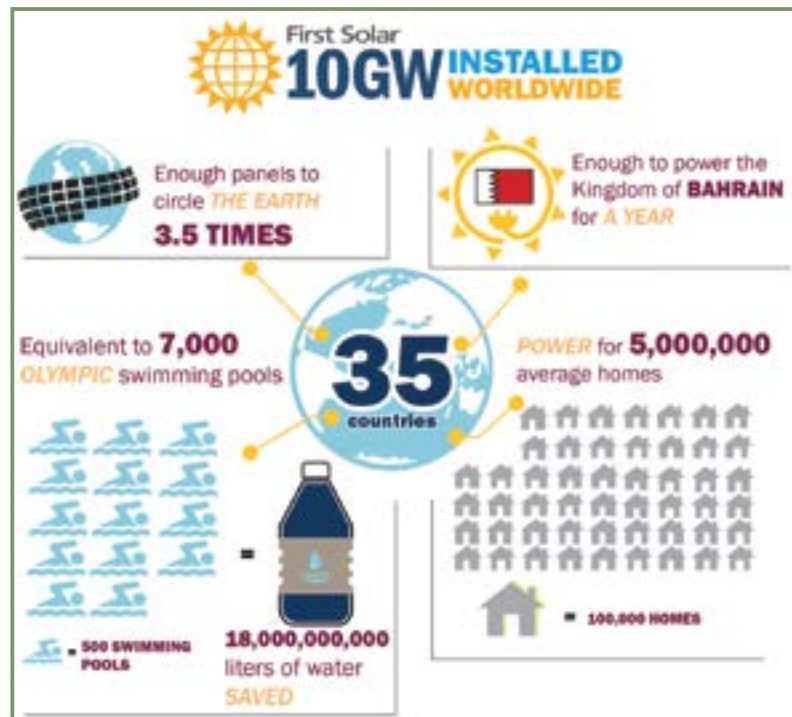
## SOLAR MILESTONE

First Solar announced recently that it has achieved 10 gigawatts (GW) of photovoltaic (PV) solar capacity installed globally, making it the first thin film PV module manufacturer in the world to achieve this milestone.

> The announcement was made at the start of the World Future Energy Summit in Abu Dhabi, where First Solar was showcasing a comprehensive range of solar energy solutions.

Founded in 1999, First Solar made its first commercial shipment in 2002 and, since then, its advanced thin film modules have been used in a wide range of applications, from kilowatt-scale mini-grid and rooftop applications, to multi-megawatt utility scale solar energy plants. With enough modules installed worldwide to circle the planet three-and-a-half times, First Solar's 10 GW of installed capacity produces an estimated 14 000 gigawatt hours (GWh) a year. This is equivalent to the annual energy consumption of the Kingdom of Bahrain or the city of Washington DC. It is also sufficient to power five million average households and displaces the need for as many as 20 average coal-powered plants.

"This is much more than just a celebration of First Solar's track record, and the trust that our customers have placed in our technology," said James Hughes, chief executive officer, First Solar, Inc. "Thanks to our commitment to continuous improvement, we have been able to contribute towards the global transition to renewables by offering



our customers solutions to their, very specific, energy challenges."

Significantly, with the smallest carbon footprint of all solar technologies, First Solar's installed capacity displaces an estimated seven million metric tons of carbon dioxide per year, or the equivalent of planting 180 million trees. Additionally, with the lowest water use on a lifecycle basis, the use of First Solar's advanced thin film modules helps displace an estimated 18 billion litres of water per year; sufficient to fill 7 000 Olympic-sized swimming pools. ■



ABOVE LEFT: Ross Demolition's fleet of FAW vehicles, mainly extra-heavy tipper trucks, is integral to their success. ABOVE RIGHT: Portland cement is well-known for its fleet of FAW 33.330 FC 6 m<sup>3</sup> mixer trucks driving on the provincial roads, operated by considerate and well-trained drivers.

# Total customer **SATISFACTION**

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AW's core vision is 'total customer satisfaction'. No stone is left unturned to ensure that the company has the best cutting-edge technologies, production methods and management systems to fulfil this vision.

In South Africa for 21 years already, FAW SA has established itself as a leader in the local commercial truck market. Proof of this is the success stories of three customers: Ross Demolition, Portland Cement and Mix Masters.

## On time – every time

"Survival of the fittest through business acumen, keeping your promises and a resilient attitude manifested by every employee – that is the recipe for success." This is the message from a company that has been going strong for 116 years. Ross Demolition, headquartered in Cape Town, has survived many tough economic times spanning four generations of a family of engineers. Since it was established in 1898 by Henry T. Ross, the Ross Demolition group has followed a consistent motto – 'On time, every time'.

At present, Robert Ross, and his son, John Ross, manage the family owned business which engages in contract demolition work across the whole of South Africa and sub-Saharan Africa.

While this is only one of six arms of their business operations, it like the other five divisions, depends heavily on a competent and efficient fleet of trucks to ensure all

projects remain profitable, and the company continues to uphold their reputation for delivering on their promises.

This is where their fleet of FAW vehicles, mainly extra-heavy tipper trucks, is integral to their success. The FAW reputation for durability and efficiency matches that of Ross Demolition.

"The first FAW trucks to join the RD fleet were purchased to service specifically contracts in Africa where uncomplicated, easy-to-drive/easy-to-maintain trucks were the main criteria for getting our excavation contracts done with minimum downtime," explains Robert Ross.

"At present we operate 28 FAW units, mostly the proven and robust 28.280FD tippers. I am very happy with the operational efficiencies we are getting. In most cases we are realising superb fuel consumption at 2,3 to 2,8 litres per kilometre.

"Working in difficult and dusty uneven terrain, steep gradients on and off-site, and heavy payloads, we opted for a shorter wheelbase configuration and a 400 litre fuel tank adjustment.

Ross Demolition also provides the construction industry with mine rehabilitation, plant hire, asbestos removal and earthmoving services. "For every site we clear, we recycle 98% of all the materials – bricks, wood, windows, steel, glass, and roof trusses. We recover it and resell this to the secondary construction tier who is desperate for affordable, good second-hand material."

Robert Ross says that one of their

most challenging projects was working against the clock on the demolition of the Valkenburg Bridge – it had to be done in only eight hours.

"Our fleet of FAW trucks is efficient, robust and reliable. Our drivers are well trained. We employ sound fleet management systems, like trackers to monitor and ensure that we get the necessary performance to maintain our margins," he explains.

"We need our fleet to run at the highest uptime rate possible with the minimum of problems in vehicle maintenance and service requirements. Our FAW fleet stays on the road, is undemanding in its simplicity of operation and great for our bottom-line with their low maintenance cost and minimum downtime. This is crucial to our profit margins," he concludes.

## Strong and honest

Nico Heyns is the managing director of Portland Holdings, owner of Portland Readymix. While the business today primarily focuses on the construction industry, since starting its ready mix division in 2002 and the Portland Hollowcore® division in 2007, Heyns and his partner have led the group over 26 years and remained true to following only tried and tested business principles: fair and honest. It is apparent that Heyns' word is his bond, and that he expects the same from others, including his vehicle supplier – FAW Trucks South Africa.

"I bought my first six 28.380FTs with flat decks as a trial to test the company and its product. I had to see first-hand the



*“I think it is the simplicity of the vehicles that contributes to so little going wrong with them.”*  
– Norma Mansoor



Norma Mansoor is the sole owner of Mix Masters, a ready-mix concrete supplier.

The China FAW Group Corporation, based in Changchun Province, is China’s oldest and largest vehicle manufacturer and over the last five decades has evolved into one of the world’s leading vehicle producers.

good reports I had heard about its durability, reliability and overall cost efficiencies. We tested costs through fuel consumption, parts and maintenance costs, warranty promise and FAW’s service back-up. I was not disappointed and that is why my entire fleet is now converted to only the FAW brand,” says Heyns.

As a major supplier of readymix concrete to building sites across the entire Cape Peninsula, Portland Readymix is one of the most reputable suppliers to the regional construction industry. It is well-known for its fleet of FAW 33.330 FC 6 m<sup>3</sup> mixer trucks driving on the provincial roads, operated by considerate and well-trained drivers.

As the company also produces and supplies precast concrete products, it runs a number of robust and durable FAW 28.380 FT 6x4 truck tractors with flat deck trailers. These vehicles are equipped to run up and down the Cape Peninsula with payloads of up to 28 tons, and GCM of about 63 tons.

“While most of our ready-mix vehicle runs are not over very long distances, the terrain in the Cape from our quarry in Durbanville is very hilly which is demanding on the vehicles with steep and long inclines. We chose to remain with manual transmission as these suited the drivers best, all of who are well trained by FAW themselves.”

Choosing not to load over 5,5 m<sup>3</sup>, the optimal operation per mixer truck is four trips a day. This presents Portland with the best return on investment and optimised logistics for both the fleet and the quarry production.

Heyns believes in the rewards gained

from honest, hard work and expects the same from his business partners. “FAW has provided me with a good product which has increased in quality over the last few years. They give me the best after sales service I have ever had and they are ‘on call’ when I need them. FAW gives me good total cost of ownership, with affordable and strong quality product, backed by good people and great service.”

## Good business is built on good relationships

Norma Mansoor is the sole owner of Mix Masters, a ready-mix concrete supplier. She started her own business three years ago with a loan of R450 000, one FAW 33.330 FC 6 m<sup>3</sup> mixer truck, a truck owner-driver and a small plant in Olifantsfontein, outside Pretoria.

Her unique ‘Iron Lady’-like attitude, combined with empathy for others, have set her apart from many other larger competitors. “Good business is built of good relationships,” she says. She has earned the loyalty and respect of many customers – even from some competitors too. This can be attributed to her unflinching tenacity to supply only the best product for a particular job without compromise on her business values.

Today she runs a fleet of 10 personally owned FAW 6 m<sup>3</sup> ready-mix vehicles, an 8-tonner FAW flatbed and owns two plants. Her business is continuously growing, based on quality concrete without compromising on service.

“The FAW 33.330FC mixers in my fleet provide great cost efficiencies and are real ‘die-hard’ trucks,” says Mansoor. “They are robust, get the job done and seldom have downtime – critical in my line of business.”

The 33.330 6x4 mixers are powered by a hardy 9 726 cm<sup>3</sup>, six-in-line, water-cooled turbo-charged and intercooled Weichai engine, which produces a solid 245 kW at 2 200 rpm and a healthy 1 250 kN torque at 1 400 rpm. “The chassis are sturdy and strong, the drivetrain is simple and easy to maintain. I think it is the simplicity of the vehicles that contributes to so little going wrong with them.”

Vehicles under warranty are serviced through the FAW network, while a full-time diesel mechanic services older ones on-site.

“Honesty, integrity, respect and self-belief have contributed to my success,” she claims. “I have been privileged to have had a number of superb mentors. All of them believed in my passion for the business saw that I was prepared to learn and work hard.

“My dream was to own my own business someday.” In 2011 she took the plunge and with a great track record in hand and a lot of guts she approached aggregate supply companies, who were prepared to extend a line of credit from the beginning.

“The FAW people are on call when I need them, they understand me and my business. I only buy FAW and only genuine parts, I expect the same loyalty from FAW when I need them and I get it. No issue is too small for FAW to come to my aid when I need it. This is what I want from a partner and what I get from FAW,” she concludes. <



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The new office for the Department of Environmental Affairs entailed a Public Private Partnership between Imvelo Concession Company and the Department of Environmental Affairs (DEA) for the new head office accommodation of the Department of Environmental Affairs in Arcadia, Pretoria. The project consisted of a design, build, finance, operation and maintenance contract of which the Aveng Grinaker-LTA Keren Kula DEA JV was appointed as the design and construct contractor.

**D**esign and construction comprised of a three storey office building including basement parking, ministerial suites, conference facilities, with landscaped cafeteria areas totaling 44 539 m<sup>2</sup> in size. It had to take into account the energy reducing measures and state of the art building management systems to maintain a maximum overall energy consumption of 115 kWh/p<sup>2</sup>/annum.

Strict contractual requirements were adhered to and limited resources carefully managed in order to ensure delivery of an innovative and sustainable designed building within fixed price, fixed duration and to deliver a building of highest quality.

The building received a 6 star Greenstar (Office Design v.1) rating from the GBCSA, and boasted sustainable innovative technology such as green concrete; solar energy harvesting; water saving techniques as well as receiving full five credits in the innovation category by the GBCSA.

**Achieving a six-star rating**

*Concentrated Photovoltaic (CPV) Vehicle Charging*

The DEA has provided the project with the opportunity to showcase an advanced Concentrated Photovoltaic based electric car charging system. The CPV system





is based on leading global concentrated photovoltaic technology that uses multiple Fresnel lenses to focus a beam of sunlight onto a small section of silicone at up to 500 times the original intensity.

### *Efficient water management*

The building will utilise 30% less water than a conventional building through dedicated recycled water systems. This is achieved through the use of rain water collectors which collect all roof rainwater runoff, which is stored in storage tanks and used to feed evaporative coolers and irrigation systems. Grey water systems were utilised to further minimise demand for fresh water consumption. Grey water was designed to be collected from wash-hand-basins and sinks and fed through water treatment plant and reused for toilet flushing.

### *Off-shutter concrete finish*

Grade 1 off-shutter finish green concrete which consists of reduced natural resources and increased fly-ash content, dominates most of the buildings external face.

### *Design Integration & Building Information Modelling (BIM)*

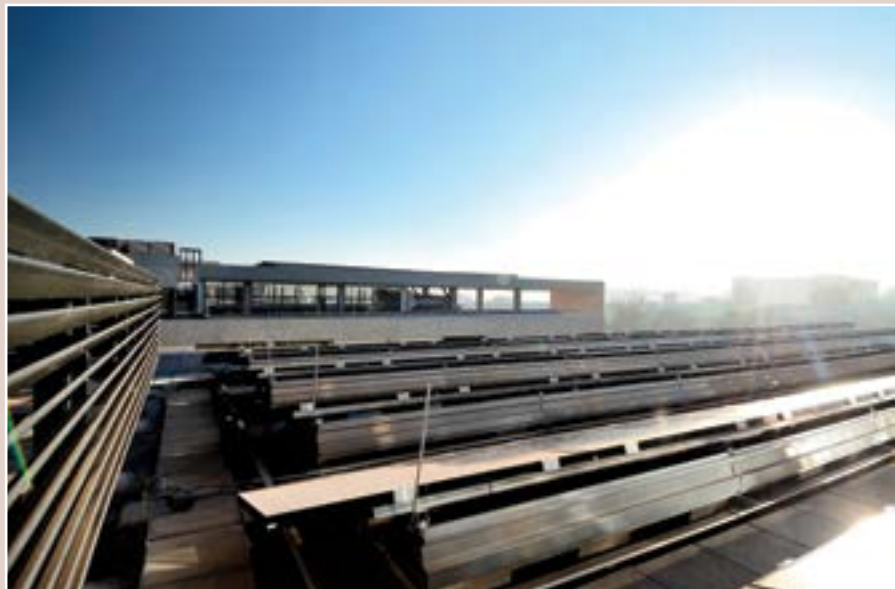
A key imperative for the design and construction of the DEA project was to ensure that performance was optimised and any potential waste was minimised while ensuring all opportunities to maximise the building performance were explored. The entire project team across all disciplines adopted the Autodesk REVIT platform as the basis for

undertaking the design as a building information model (BIM) rather than a collection of independent 2D drawings. The project team reaped the benefits that began to emerge and this painted a clear picture of progress and the validity of BIM as an appropriate tool in support of sustainable design.

The BIM process has provided a visual platform to optimise the building structure, fabric and services in such a way that material wastage and the inherent environmental impacts of this wastage have to date been limited, as well as recorded in a visually

accessible three dimensional communication medium furthering the integrated design approach.

As the building will be operated by the development consortium for a period of 25 years the BIM benefits have provided the ability, on completion of construction, to hand over to the operator a fully documented 3D model and database of the building to assist with the optimal management and lifecycle cost optimisation of the building over time.





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**Daylight and lighting controls**

The project was subject to a stringent energy target that assigned a maximum allowed energy consumption per square metre per annum. In order to meet the demands of this, and given that lighting has been identified as contributing between 30 and 45% of the energy demand of a commercial building, the building incorporated extensive lighting controls that featured occupancy sensing, continuous dimming, addressable lighting components, photometric based control and integration with the BMS.

The lighting solution maximised the use of natural daylight where possible.

**BMS system controls and sensing**

The large scale of the DEA Building and the contractual obligation to run the building for a period of 25 years required that a robust data monitoring, trending and analysis system be put in place. The BMS system selected was based on the open source KNX protocol allowing a multi-vendor supply of components over the life of the project and enhancing the long term maintenance adaptability of the system.

**Night flush ventilation**

Venting of the area between the soffit and the partial ceiling allowed cool air drawn in through the automated window system to create a natural convective stack within the atrium, thereby removing heat from the soffits overnight in preparation for the following day.

**Renewable energy systems**

The DEA project has incorporated one of the largest roof top mounted PV systems in South Africa on a commercial office building. The original request for proposal from the DEA stipulated that at least 10% of the building energy was to be produced on-site from a renewable source. The DEA building utilises both high efficiency solar-thermal systems for hot water, and photovoltaic for direct electrical energy production. The selected photovoltaic system utilises a direct feed into the building without a battery store and is utilised as generated.

**Indoor environmental quality**

The project has specifically excluded volatile organic compounds in the specification of

paints, adhesives and carpeting as well as the reduction in the presence of formaldehyde. Comfort has been addressed through the inclusion of high performance double glazing improving the thermal performance of the space as well as providing significant improvement in the indoor noise levels and acoustic disruption.

**The wider impact**

**Job creation**

Approximately 300 jobs were created for and awarded to the local community (labour) in the development of the project. Furthermore, through AGLTA KKC DEA JV utilisation of a skills development plan, the following was also executed:

- 4 learnerships offered for degrees in construction management;
- 37 candidates received on the job training and practical experience (internships);







- 60 candidates received general life skills training in basic literacy, money management.

### SMME development

- More than 3% of payroll spent on black employees;
- More than 50% of capital expenditure was allocated and spent on black enterprises;
- More than 10% of capital expenditure was allocated and spent on black women owned enterprises; and
- 2% of procurement cash flow spent on Qualifying Small Enterprises (QSE).

### Poverty alleviation

The Imvelo Consortium has provided its detailed Local Socio Economic Development Plan (LSED Plan) to the Department. The plan focuses on the development of youth in the City of Tshwane. The aim of the programme is to foster self-reliance and empower unemployed youth with specific skills being computer based skills, entrepreneurial and life skills to enable them to become part of the economically active population and participate in the mainstream economy.

## Architectural design

The new departmental headquarters for the Department of Environmental Affairs which is located in the Arcadia, Pretoria (City of Tshwane).

In the design of the building, the key considerations were to respond to the spatial and organisational brief of the client, to provide an environmentally sensitive and sustainable architecture, and to design a functional yet memorable and beautiful building to inspire generations to come.

The site location is regarded as a gateway to the Tshwane inner city therefore the architect was expected to design a facility with suitable prominence that reflects its importance even to international visitors.

The new office was to communicate an architectural language that reflects the Department's environmental and sustainable ideologies. The proposed building was to, through its architecture, express to the public as well as the building users the core values of DEA and its willingness to live up to its environmental values through clearly demonstrating aspects of sustainable design, energy and resource.

Due to the size of the building site it was possible to distribute the floor space relatively evenly to create a general height of only three storeys, which is comfortably accessed by stairs. Each office wing includes a central atrium with internal planting at ground level and clerestory windows above the roof to enhance natural light into the building. This also encourages natural ventilation using the stack effect and night flush ventilation.

The building concept comprises three distinct elements: the central reception building, the office wings and the bridge structure connecting the elements together. The nautilus shell concept as one of nature's timeless shapes was used as inspiration for the design of the central arrival space and ministerial wing.

The main offices comprises three wings to the south and two shorter wings to the north of the site, the regular form and repetition improved constructability and minimises potential wastage.

The structure is expressed externally in the form of a concrete frame that provides shading, with off-shutter finishes intended to reduce maintenance and introduce an aspect of dematerialisation by means of reduced finishing required. Decorative screens on the façade serve a dual function as aesthetic and functional solar shading devices, supporting energy efficiency through reduced thermal loads in conjunction with glazing placement and envelope design.

## Project information

- **Client:** Imvelo Concessions Company
- **Main contractor:** Aveng Grinaker-LTA KKC DEA JV
- **Architect:** Boogertman + Partners
- **Principal agent:** Aveng Grinaker-LTA
- **Project manager:** Aveng Grinaker-LTA
- **Quantity surveyor:** Pentad QS
- **Consulting engineer:** Mott MacDonald PDNA
- **Project value:** R653 636 000 (excluding VAT)

## Health and safety

Health and safety is a core objective at Aveng Grinaker-LTA. The Aveng group and Grinaker-LTA H&S policies took precedence.

### Awards

- 2<sup>nd</sup> Place H&S Award in the MBA North Regional Awards for projects over R500-million.
- Achieved 1 000 000 LTI-free man hours, on a project site with more than 1 000 employees.

## Quantifiable time, cost, quality

The PPP project consisted of a fixed time and fixed price design and construct subcontract. The D&C subcontractor (Aveng Grinaker-LTA Keren Kula DEA JV) accepted all the risks involved in this R653 636 000, 22 month fixed price contract. It was to be a 22 month fixed time contract, but extended to 15 July 2014.

The contract facilities specification set the benchmark for which the project had to meet, and all national building legislation had to be closely adhered to. A quality assurance team ensured that designs and construction adhered to all specifications and any non-concordances were remedied.

This PPP project also entailed the appointment of an independent external engineer to inspect and sign off the works in accordance and ensuring compliance with the contract specifications. <

# ESD

## principles produce first for Tshwane

Engineering, management and specialist technical services company Aurecon achieved a first in Tshwane in 2011 when its Lynnwood Bridge Office Park building, situated just off of the N1 highway, achieved a 4 star GreenStar SA – [Office Design v1, Office Design v1] rating from the Green Building Council of Southern Africa.

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The company recently undertook work on another ‘green’ office building in the same precinct, with this building achieving yet another first in Tshwane when it received a 5 star GreenStar SA – [Office Design v1, Office Design v1] rating. “Aurecon’s experience in delivering integrated sustainable design projects contributed significantly to achieving this result,” says Marni Punt, environmentally sustainable design (ESD) consultant at Aurecon.

The project, developed by Atterbury, with Studio 3 Architects International as architects, comprises five basement levels, as well as ground plus five floors. Aurecon was responsible for the majority of engineering design disciplines on the project, including mechanical, structural, civil, wet services, fire, traffic, as well as ESD consulting.

### Knowledge of ESD principles

“Critically, Aurecon was able to drive an energy efficient agenda throughout every phase of the project lifecycle, due to the integration of conventional engineering disciplines with sound knowledge of ESD principles,” comments Ashley Underwood, Aurecon engineer. “This integration was key

in terms of making design decisions that positively impacted on the building’s performance at the very outset of the project, as opposed to simply designing the building and then awaiting feedback on how to optimise its performance at a later stage.”

The optimisation of the performance of the building during design phase included detailed modelling of all building services using complex modelling software which helped the team understand the building’s use of energy and enabled them to check the sustainability of each decision and then tweak the design to ensure enhanced performance. “Each and every design decision was made with energy in mind, and we were able to direct investment to the areas which offer the best payback,” adds Underwood.

Just some of the key optimisations that resulted from this modelling included:

- A basement monitoring system that controls ventilation to the various basement zones based on the carbon monoxide concentration, only providing ventilation when and where it is necessary. The design of this system required strong collaboration between the traffic engineer, the mechanical engineer and the energy modelling team.
- Air side economy cycle on the fresh air system, allowing the air-conditioning system to take advantage of free cooling when outdoor conditions are conducive.
- CO<sub>2</sub> demand control of fresh air, allowing only the necessary amount of free air to be supply during operation.
- Optimising the mix of glazing properties, external shading and building insulation.

Underwood stresses that it was this knowledge of the impact of design decisions on performance that enabled the team to achieve 12 points for the ‘energy’ category during round one of the team’s submission to the GBCSA. “Because of Aurecon’s integrated design approach, the project achieved higher points for energy than initially expected. This enabled the project to target a 5 star rating with minimal additional investment,” says Marni.

### Project challenges

The entire project team has tackled multiple challenges, including an adjacent wetland and the two podiums being rated as a single development.

“A wetland in close proximity to the building threatened registration with GreenStar SA, unless a viable solution to mitigating potentially harmful water run-off, which could negatively affect the surrounding flora and fauna, was found,” explains Punt. Aurecon’s building makes use of various species of plants affixed to the building’s northern car park façade to act as a natural filtration system. “This system, although effective, was a costly solution for these offices,” explains Punt. “This building makes use of a mechanical water filtration system which is more cost-effective and integrated with the building’s other water systems.”

Punt adds that because the building consists of two towers, many of the tower’s systems could not be fully integrated. “The two towers were submitted as one development with a single rating, which means both towers were jointly required to achieve a high level of performance.” She explains that this was achieved through careful modelling of the towers’ performance and constant tweaking of the building systems to achieve desirable performance levels.

### A worthwhile investment

“The energy saving alone would make the investment in the five star building feasible”, says Underwood.

“It is critical to realise that a green building is a long term investment. Pay-backs such as increased productivity and decreased sick rates, although difficult to quantify, represent significant, ongoing future gains. Both Aurecon’s current offices and this ‘green’ office building in the same precinct demonstrate that it’s possible to deliver a superior, integrated end product that is an asset to the people who use it and the natural landscape which surrounds it, for a similar cost to that of a conventional building,” says Punt. ◀



## VISUALISING THE FINAL PRODUCT

One of Africa's top law firms will be the anchor tenant in the brand new 18-floor office building currently being constructed on the corner of Alice Lane and Fifth Street in Sandton's commercial centre.

➤ It is set to include showrooms, retail elements and concept stores on the ground floor which are accessible from the piazza – a tranquil space nestled between the three buildings that complete the enclosure.

Phase one tenants include an international leader in global business and finance information, a major South African bank and a new flagship gym.

Paragon Architects had already designed two of the three buildings around the future piazza, which created a canvas from which to draw. Working with generated site line analyses and sun studies the conceptual design was specifically created to allow sunlight into the public space, essentially using sunlight to chisel form.

From the outset, Paragon Architects was aware of the requirement of cellular office space. To ensure that all offices were exposed to natural light, two wings were generated so that external offices and internal offices were equally exposed, essentially ensuring that every office is a perimeter office.

This building is much higher than the first two phases and while a common design language binds the three buildings, the

construction materials define their individuality. While unitised aluminium panels are the dominant material in the Marsh building, in the Bowman Gilfillan building it is glass.

"The glazing reflects the latest glass technology in terms of light and dark and also day and night experiences – creating a

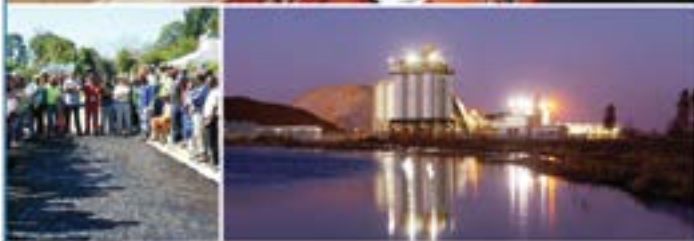
striking visual effect," says Anthony Orelowitz of Paragon.

"As this building is only set for completion in a couple of years' time, by making use of Autodesk Revit we are able to not only design the shell of the building, but completely visualise the finished effect, ensuring that the building is not only functional and environmentally friendly, but also aesthetically stunning as well."

The entire precinct is aimed at achieving a Four Star Green Star rating. ■



Visualisation reflects the vision in the new 18-storey glass creation in Sandton CBD.



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# RE-USED MATERIAL

## in extensive upgrade

Murray & Roberts Infrastructure was awarded a construction contract by Transnet Capital Projects for new concrete paving, civil services and electric lighting at its City Deep Container Terminal in Johannesburg, claimed to be the largest dry or inland port in the world. Transnet's refurbishment vision for the City Deep Terminal fitted Murray & Roberts Infrastructure to a tee from the outset.



Murray & Roberts Infrastructure as part of the Construction Platform is a civils, roads and bulk earthworks contractor. As such its primary input materials into its products include cement, flue ash, aggregates, soil and water. Increasingly these input materials have either legal or financial restrictions placed upon them. As an added restriction, not all projects have these materials, in quantity and quality, readily available from close markets. Finally an ever increasing number of clients who have Brownfield sites (existing but aged facilities) require Murray & Roberts Infrastructure to find innovative ways to recover used materials and feed them into the new product.

As such Murray & Roberts Infrastructure and Murrays & Roberts Buildings, which have similar challenges with regard to green buildings, have been developing innovative products at its Concrete Centre of Excellence (CCE) over the past few years that use large quantities of recycled product at exacting quality and performance standards. The major challenge has been to show clients that recycled materials are not substandard and will meet quality criteria and cost.

### Scope

The specific scope of the City Deep Container Terminal project required the demolition and removal of +/-144 000 m<sup>2</sup> of existing concrete floor (250 mm thick), a 100 mm stabilised floor and 350 mm of on-site mine sand. This was then replaced with 300 mm of new layer works (150 mm G5 and 150 mm G3) and a 450 mm concrete pavement. The original job specification required the reuse of about 10 600 m<sup>3</sup> of old concrete as G5 for layerworks, after breaking it out and crushing it to a G5 specification. The remainder of the 25 400 m<sup>3</sup> generated from the demolition as well as the 64 800 m<sup>3</sup> (on site mine sand and stabilised layer) would then be disposed of at various landfill sites in the area.

However, this was amended with the permission of Transnet, with the remaining 25 400 m<sup>3</sup> of removed old concrete and 64 800 m<sup>3</sup> of layer works combined to be reused wherever possible on site (layer works, backfill around structures) with an approved G5 classification. The remainder would be sold as a commercial G5 for reuse on other projects. In total 140 000 t of material was crushed to a G5 specification. Of that, 60 000 t was used on site while the remaining 80 000 t was sold for reuse as a commercial G5.

### Innovation

Transnet required that the old concrete paving broken out of the site be recycled into the new project. Murray & Roberts Infrastructure proposed crushing this material to produce a G5 foundation aggregate to be used as the supporting structure in the new pavement design whereupon the new concrete paving would be laid. This strategy allowed either company to maintain its sustainability and acceptable risk profile.

In addition Murray & Roberts Infrastructure presented two innovative concrete designs. In addition to the high volume pulverised flue ash concrete (HVPAC) design, a several slabs of geopolymer concrete were poured for Transnet Capital Projects for long term evaluation at City Deep, a first for South Africa.

#### Geopolymer concrete

Geopolymers are a type of inorganic polymer that can be formed at room temperature by using industrial waste or by-products as source materials to form a solid binder that looks like and performs a similar function to Portland cement. Geopolymer binders can be used in applications to fully or partially replace Portland cement with important environmental, technical and often cost benefits, including an 80% to 90% reduction in CO<sub>2</sub> emissions and improved resistance to fire and aggressive chemicals.

#### High volume pulverised fly ash concrete

The specification for the Transnet City Deep Container Terminal was a maximum of 35% Pulverised Fly Ash (PFA) replacement. This is considered a high replacement of clinker/cement. The concrete used on this project used approximately 63% to 70% replacement of raw milled clinker with siliceous PFA, almost double to the maximum specified limit on most construction projects.

Through the deeper understanding of advanced re-crystallisation (ARC) technology attained at the Murray & Roberts' Concrete Centre of Excellence (CCE), Murray & Roberts Infrastructure understood the capabilities and limitations of high volume PFA substitution.

### Time and costs

Murray & Roberts Infrastructure broke up and reused about 86% of the old worn concrete pavements at the City Deep Container Terminal,



## Project information

- Project start date: September 2012
- Project end date: October 2014
- Client: Transnet Freight Rail
- Main contractor: Murray & Roberts Infrastructure
- Principal agent: Murray & Roberts Infrastructure
- Project manager: Transnet Capital Projects
- Consulting engineer: Transnet Capital Projects
- Project value: R230-million

which amounted to about 123 840 m<sup>3</sup> of the 144 000 m<sup>3</sup> concrete, which would otherwise have been disposed of at landfill sites. The quantity that was not recycled came from structural concrete with a high level of rebarred material. However, the rebar was recovered for off-site scrap metal processing.

The old pavement was crushed to a G5 material specification and reused as base and sub-base quality material. Apart from the positive environmental benefit of reusing the old pavement, the use of a great deal of virgin aggregate was prevented. It is estimated that about R14-million would otherwise have had to be spent on the procurement of new aggregate and on transport.

Placing geopolymer concrete is very similar to placing Portland cement, meaning no additional training for workers or extra equipment. In addition, recycled materials such as slag and fly ash can be used to make geopolymer concrete, thereby reducing the carbon footprint of the material by 80% to 90%.

Murray & Roberts Infrastructure achieved 51 MPa in 28 days, with compressive strengths up to 80 MPa at six months. Fifty MPa is equivalent to the pressure exerted by the weight of 10 pockets of cement concentrated on the point of a single finger. The carbon footprint of a cubic metre of cement is 350 kg to 400 kg of carbon dioxide equivalent per cubic metre, and 100 kg/m<sup>3</sup> for geo-polymer concrete. This means geopolymer concrete reduces greenhouse gas emissions by 60% to 70%.

## Specific deconstruction processes

Deconstruction processes were as specific as the construction process. The demolition of the existing infrastructure and feeding of this resource as a material stream into the crushing areas and reprocessed stockpiles meant a clear understanding of the quantities scheduled for the foundations upstream. Planners and engineers thus needed to understand the rates of the demolition, earthworks and processing of the G5 to ensure that none of these processes entailed any delay.

## Environmental impact

The resource-intensive traditional way of making cement has seen the industry rank among the top environmental offenders, leading to increased calls for more sustainable solutions.

The concrete used on this project achieved a 63% to 70% replacement of raw milled clinker with siliceous PFA, almost double the maximum specified limit on most construction projects. Using this quantity of PFA alters the concrete hydrate formed in such a way as to increase the durability/service life of the elements.

In terms of concrete technology, the reliance on coal fired power stations for the majority of electricity in South Africa in addition to the large metal resources, mean that large quantities of PFA and slag materials are readily available. The efficient uptake of such waste by-products can assist in economic growth by slashing the cost of construction and increasing the durability of the structures being built.

From a client perspective Transnet, which operates multiple sites countrywide, can incorporate the possibility of the reuse of existing infrastructure in future refurbishments, in order to produce new products of high quality and durability that are also environmentally sound. Murray & Roberts Infrastructure, in conjunction with Transnet, can therefore reference this project as a benchmark case study.

## Health and safety

Murray & Roberts' values of safety, integrity and accountability as well as the group's STOP.THINK.ACT 24/7 zero harm culture is embedded in the Environmental Framework, which is divided into four environmental programmes, forming part of the larger Integrated Management System (IMS):

- Integrated waste management
- Emissions and pollutants minimisation in construction
- Sustainable material and resource management
- Energy efficiency through mass balancing

The Murray & Roberts' Exco has endorsed the SHEQ policy and Environmental Framework and requires performance reporting. Significantly, as at the end of June 2014 the contract had been running LTI free for 12 months. <



DCD Wind Towers manufacturing facility, the Eastern Cape is set to become a leading wind energy hub.

# A NEW ERA FOR SA manufacturing

DCD Wind Towers has officially completed its first in-house manufactured wind tower, which was transported to the Grassridge Wind Energy Facility in Nelson Mandela Bay in September 2014. Following this historic feat, the company plans to step up production volumes in the coming months.

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> The establishment of the R300-million, 23 000 m<sup>2</sup> DCD Wind Towers manufacturing facility marks a new era for South Africa's renewable power generation capabilities, while contributing to the long term stability of national electricity supply.

The DCD Wind Towers manufacturing facility, located at the Coega Industrial Development Zone (IDZ) in the Eastern Cape, is a joint initiative between the DCD Group, the Industrial Development Corporation (IDC) and the Coega Development Corporation (CDC).

The facility was specifically established in the Coega IDZ to support the localisation of wind tower manufacturing in South Africa, which essentially ensures the long term and sustainable creation of an estimated 150 to 200 operational positions and 628 construction jobs.

DCD Wind Towers general manager Gerrit Viviers notes that the direct operational jobs created through the establishment of the DCD Wind Towers factory include; boilermakers, shot-blasting operators, cutting operators, chamfering operators,

roller operators, coded welders and fitters.

"A number of unskilled and semi-skilled individuals will be employed for sand blasting, painting and plasma cutting. The benefits to the local economy will penetrate beyond local skilled jobs and training to include logistics opportunities and additional value chain opportunities, thus creating a new industry in the Eastern Cape, Western Cape and Northern Cape too," he explains.

DCD Wind Towers is also contributing positively to sustainable and renewable power generation, as set out by the Department of Energy's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). DCD Wind Towers has already signed co-operation agreements with the turbine manufacturers that have been successful in round two of the REIPPPP.

The DCD Wind Towers factory is expected to manufacture between 120 and 150 towers per year for the successful bidders in the REIPPPP programme. These towers will be manufactured to the highest international standards of quality and to exact OEM specifications, while remaining uniquely local.

CDC head of marketing and communications Ayanda Vilakazi, notes that the DCD Wind Towers manufacturing facility will diversify the traditionally automotive sector reliant Nelson Mandela Bay industrial base.

"We want to attract investors to the Coega IDZ who are able to add value to the supply chain and align with national government's drive for localisation of manufacturing, especially in the renewables sector where there are many gaps for high-tech innovation and manufacture. A prime example of the success of this approach is DCD Wind Towers."

IDC senior account manager for the metal, transport and machinery products unit, Joseph Sithole, believes that the manufacturing sector is of tremendous importance to South Africa's long term economic prospects, and suggests that the establishment of the DCD Wind Towers manufacturing facility is the first step in boosting investor confidence within the renewables sector.

"Facilities such as this create direct jobs, and sustain a largemany jobs in raw material supply and service sectors. DCD Wind Towers is vital to deepening the techno-



ABOVE FROM LEFT: Construction work on the DCD Wind Towers project first began in March 2013; DCD Wind Towers factory is expected to manufacture between 120 and 150 towers per year. LEFT: DCD Wind Towers general manager, Gerrit Viviers.

logical base of the country and its growth, and the REIPPPP will add capacity to the national electricity grid. This will also have a positive impact on poverty-stricken rural areas, where community members are being trained and skilled for jobs in previously unknown technologies," he states.

Due to increased renewable energy investments as a result of projects such as the DCD Wind Towers manufacturing facility, the Eastern Cape is set to become a leading wind energy hub. The Coega IDZ, including the deepwater Port of Ngqura, is also set to become the core through which renewable

energy parts and sector logistics are co-ordinated and managed for the entire province.

Construction work on the DCD Wind Towers project first began in March 2013, with an official sod turning ceremony hosted by the company in May 2013. ◀

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## UPGRADE TO GRAVEL ROADS

Murray & Roberts Infrastructure has been awarded a contract by the North West Provincial Government's Department of Public Works and Roads to upgrade various gravel roads in the Ganyesa area, north west of Vryburg. The contract, which is being overseen by Aurecon as consulting engineer, forms part of the province's concerted efforts to upgrade its road infrastructure.

“The scope of work comprises the upgrading of gravel roads D327 and Z389 to a surface standard, plus appurtenant works,” Junior Nortje, Murray & Roberts Infrastructure site agent, says. The contract covers 58,4 km and was awarded in May 2014, with completion anticipated by May 2016.

The pavement specification for the project is a 13,2 mm/6,7 mm double seal, with layer-works consisting of a G5 natural gravel base, a C4 stabilised sub-base, a G7 selected layer and a G9 fill. “There is a mobile crushing plant, consisting of a jaw crusher and a gyratory cone crusher, on site,” Nortje says. “We are still determining the need to crush material for the base and sub base.”

The fleet on site at present encompasses a full range of road construction equipment, from graders to rollers, tipper trucks, water carts, excavators and TLBs. “The challenges posed by the project at this initial stage are mainly the remote location in the former Bophuthatswana, about 70 km north of the town of Vryburg in the North West Province, in terms of logistics and supply chain management,” Nortje says.

This is a flagship contract for Murray & Roberts Infrastructure in the area as the North

West Province local government has embarked on a major infrastructure development drive. In his ‘State of the Province’ address in June, North West Province Premier Supra Ramoetsi Mahu-mapelo said: “Brand North West has suffered major reputational damage due to the bad condition of most of our roads.

“We are going to do everything with the limited resources available to local government to improve the general condition of our roads.”



**ABOVE LEFT AND RIGHT:** A load-and-haul operation to produce fill material for Murray & Roberts Infrastructure's contract to upgrade various gravel roads in the Ganyesa area of North West Province; Filling a water cart at a water point. Other equipment on-site includes graders, rollers, tipper trucks, excavators and TLBs.

**BELOW:** Installation of precast culverts, part of the appurtenant works associated with the contract.



## SAFER SITES

**Multi-disciplinary construction group Liviero has designed and manufactured its own edge protection system, which is ensuring that Liviero contracts are even safer for employees, subcontractors and clients. In addition, the new system offers cost savings over imported edge protection.**

Liviero technical design manager Rudi Freislich was responsible for developing Liviero's edge protection system, which is tailor-made for the South African construction industry.

He outlines the problems with using European-designed edge protection on SA sites: “Throughout the SA building industry, European brackets used in conjunction with steel hollow tubes serve as balustrading. These European brackets are, however, designed to be used not with steel tubes, but with high grade timber properly bolted to them for balustrading and knee bracing. The use of steel tubes in SA has created dangerously ineffective edge protection. The European brackets are designed for maximum spacing of 2 m,” he explains. “Since the steel tubes are available in lengths of up to 6 m, the brackets are incorrectly spaced in SA – at distances between 4 and 6 m.”

Freislich says that in addition to the safety risk posed by the brackets' incorrect spacing, the European system also has significant limitations and the brackets are very expensive. “In Europe, the system is only designed for use on temporary formwork platforms, while in SA, it is used as temporary edge protection on concrete slabs, too. But the limitation of the European system is that it cannot be used on concrete slabs or beams in excess of 450 mm. The European system also does not allow for horizontal clamping.”

Freislich has designed a full range of edge protection, including vertical, horizontal, free standing and bolted systems. The vertical brackets can accommodate slab thicknesses of 800 mm. “To date we have only manufactured and used the vertical bracket system with two balustrading options,” he reveals. “The first option is currently in use at Liviero's Razomart site, and consists of brackets and telescopic tube balustrading. Our brackets could be used safely and easily on the coffered slabs at Razomart, accommodating the 600 mm slab thickness,” he says. “This system is limited to a maximum of 2,4 m extensions, ensuring compliance to SA standards in all regards,” Freislich notes. Special hinge clamps were also designed to ensure easy and secure assembly and the systems are light-weight, to ensure easy erection and dismantling.

The second vertical bracket option is being used successfully at Liviero's Simon Vermooten site. It comprises meshed panels attached to the brackets. “These panels are specially designed to ensure that no objects can fall through the bottom of the footplates and endanger workers or property below,” Freislich states.





A tipper truck tipping fill material onto the road area.



Traffic accommodation in the construction area. The location is about 70 km north of Vryburg.

Rudi Freislich was responsible for developing Liviero's edge protection system.



Liviero's edge protection offers cost savings of up to 60% versus the European system, which translates into cost benefits and unrivalled safety on site for Liviero employees, subcontractors and clients.

"Liviero is currently the only user of this system, but the range can be applied in any situation demanding barricading, edge or falling protection, including mining, industrial and construction sites," Freislich concludes.

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# TRIO OF OFFICES for Menlyn Maine

Already home to leading companies like BMW, Nedbank and SAGE VIP, the multi-billion rand Menlyn Maine green city development in Pretoria is set to get 26 500 m<sup>2</sup> of new office space in three new buildings from the end of 2015 to the end of 2016.

➤ Menlyn Maine Investments is pioneering the Menlyn Maine development – Africa's only green city. In the latest tranche of developments to be announced, it will invest R750-million to develop three top-class, green A-grade office buildings.

Henk Boogertman, main architect of Menlyn Maine confirms the trio of quality office buildings will all achieve at least a 4-Star Green Star SA rating from the Green Building Council of South Africa (GBCSA), in line with Menlyn Maine's exceptional sustainability benchmarks.

Menlyn Maine is South Africa's first green, mixed-use city. It is more than a collection of award-winning green buildings in one place; everything between the buildings is designed to be environmentally sustainable too, from sidewalks and streets, to parks and squares. The benefits go beyond a lighter carbon footprint and lower electricity bills, to the enjoyment of a quality experience in a distinguished address of choice for working and – in soon-to-come future phases – shopping, entertainment and living, all designed to promote responsible, healthy lifestyles.

As a partner of the Clinton Climate Initiative, Menlyn Maine is one of 16 green cities being built in various countries, and the only one in Africa.

"Its superb location has been a key factor in attracting top business names to Menlyn Maine," notes Linda Riley, leasing and investment advisor at Menlyn Maine.

Menlyn Maine is minutes away from the N1 motorway's Atterbury and Garsfontein interchanges, right off the main arterial of January Masilela Road, and 500 metres from the main entrance of the super-regional Menlyn Park Shopping Centre.

Its bustling location also means it benefits from exceptional transport connections. This includes access to excellent transport links, including three Gautrain bus stops, the new BRT bus system and a taxi terminus. Menlyn Maine is designed to welcome pedestrians. Fewer cars on the roads also mean lower carbon emissions. It is also surrounded by medical facilities, schools, and all the amenities that come with being in the heart of the upmarket, growing eastern suburbs of Pretoria.

Already under construction, the landmark 13 500 m<sup>2</sup> West Tower Office Block is at the heart of Menlyn Maine's vibrant future retail and entertainment epicentre. This A-grade nine-storey office tower has been designed to create flexible space for corporate headquarters or a bustling multifaceted business environment. Located on the corner of Aramist Avenue and Dallas Road, it will be ready for tenant occupation in September 2016 and offer ample parking at a ratio of 4,5 bays to every 100 m<sup>2</sup>.

Opposite this iconic tower, The Indus Building will provide 9 500 m<sup>2</sup> of A-grade office space across five floors, allowing for the flexible subdivision of offices. It is set for completion in late 2016. "Like the other two new buildings it comes with naming rights for a major tenant taking up more than half of each building," explains Riley.

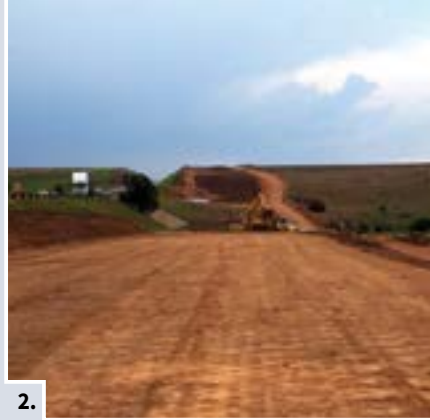
The Orion Building will be developed opposite the 3 200 m Regus Building, which was completed in June this year. Standing in a prime position at the new gateway to Menlyn Maine from January Masilela Road, The Orion Building mirrors its neighbouring offices. The four-storey building will provide 4 500 m<sup>2</sup> of environmentally innovative and flexible lettable A-grade offices, suited to either a single or multi-tenant environment. Its development will be demand driven, with completion delivery possible as soon as late 2015.

"The benefits of offices in a green city go beyond simple environmental responsibility," explains Riley. "It also means smart building design for energy efficiency, recycling, environmentally friendly waste management and roof gardens. All this adds up to less operational costs and more savings over a company's lease period." ◀





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1. Cleaning operations after a blast at cutting km 25,3.
2. Approach to the B1329 at Klein Olifants River.
3. Rock fill for new alignment at Middelburg Dam.
4. Temporary berm construction for dewatering at Middelburg Dam for the construction of C1637.
5. Work in progress on culvert foundations for the new road.



4.



5.

## N4 CAPACITY INCREASE

Murray & Roberts Infrastructure has been awarded a 22 month contract by Trans African Concessions (TRAC) for upgrade work on the strategically vital N4 toll road connecting South Africa with Mozambique. The N4 toll road stretches for 570 km from the Solomon Mahlangu off ramp near Pretoria to the Port of Maputo in Mozambique and includes six toll plazas. The contract handover date was at the beginning of September 2014 with completion anticipated for July 2016.

➤ The scope of work for Murray & Roberts Infrastructure focuses on the section of the N4 near Middelburg, just east of the Rockdale interchange, and ending just west of the Arnot interchange. It involves increasing the carrying capacity of an 18 km section of the toll road by constructing a new double-lane eastbound carriageway with associated infrastructure such as a bridge overpass at the Klein Olifants River and various other structures, as well as the rehabilitation and reconfiguration of the existing section of the N4 to a new three-lane westbound carriageway.

This section of the N4 is a Build, Operate and Transfer (BOT) toll road owned together by South Africa and Mozambique, which will

both reassume responsibility for the project once TRAC's 30 year concession expires in 2027. While the economic lifespan of a road is about 20 to 25 years, TRAC's ongoing maintenance and rehabilitation measures mean that ultimately the toll road will be handed back in an 'as new' condition.

"Murray & Roberts Infrastructure will construct a new dual carriageway in an easterly direction. Upon completion of the new eastbound carriageway, the existing westbound carriageway will be converted into a three-lane carriageway," project manager Derek Brink says.

The new carriageway will feature a 40 mm thick asphalt pavement layer while the existing westbound carriageway will be reha-

bilitated and surfaced with a 13,2 mm single seal layer.

In addition the contract includes construction of a new bridge, the extension of an existing bridge, minor rehabilitation to existing bridges and construction of six large on site culverts and associated drainage works. The most challenging aspect related to the ancillary infrastructure is the location of the bridge over the Klein Olifants River and the fact that one of the culverts is at the entrance of the Middelburg Dam.

"The latter is probably the biggest challenge associated with this project, not just from a construction point of view but also from an environmental point of view," Brink comments.

"The client and its consultants have compiled its environmental management plans while we have our own in-house environmental manager to assist us, if need be.

"The contract commenced effectively at the beginning of the rainy season, which in itself does pose a challenge," Brink says. He adds that the bridge over the Klein Olifants River is not expected to pose any specific problems. The full scope of the contract is a good benchmark for Murray & Roberts Infrastructure's expert capabilities and total service offering. ◀

# WORLD-CLASS PETROLEUM depot and pipeline completed

Stability of fuel supply is set to improve dramatically following the successful completion of the Engen Petroleum Depot Terminal Upgrade Project, located in the CFM Port in Beira, Mozambique, in November 2014.

The upgrade project involved the implementation and connection of a pipeline from the Engen depot to the Companhia Do Pipeline Mozambique – Zimbabwe Limitada (CPMZ) Pump Station inside the port. Leading fluid conveyance products and solutions expert Incedon supplied a wide range of world-class products to the project, which is now operational after a two year construction period.

The company was subcontracted to provide valves and above-ground mechanical infrastructure to the project by petrochemical installation specialist company Atmei Construction. Incedon's scope of work included the supply of pipes, valves, gaskets, flanges, bends, T-pieces and reducers.

Incedon valves product manager Craig Thomson notes that the company supplied the project with a range of Teji WCB Cast Steel Valves, which are fully compliant with American Petroleum Institute (API) standards. The valves – comprising gate valves, ball and check valves, as well as basket strainers – range in diameter from 10 mm to 350 mm. The gate valves are available in pressure class 150 and class 300.

"Incedon is the sole South African importer and distributor of the Asia-based Teji range of industrial and petrochemical valves, which are highly durable, reliable, and easy to maintain and operate. These valves will be used to control, isolate and regulate the flow of hydrocarbons at the petrochemical depot," he explains.

Incedon was also contracted to supply valves for the fire-suppression reticulation system, which consists of butterfly valves and wafer check valves, with water and foam used as the medium. Atmei Construction logistics project and drafting manager Riaan Wiessener states that the company has been utilising Teji valves for the past eight years, owing to competitive prices and good quality.

"The valves, pipes, weld-on fittings and screw fittings meet international standards and are being installed not only on fuel depots, but on fuel and lubrication depots that Atmei



**ABOVE:** The Engen Petroleum Depot Terminal Upgrade Project, located in the CFM Port in Beira, Mozambique.

**LEFT:** Incedon is the sole South African importer and distributor of the Teji range of industrial and petrochemical valves.

**BELOW:** The upgrade project involved the implementation and connection of a pipeline from the Engen depot.

constructs for mines throughout South Africa, Namibia, Botswana, Zambia, Mozambique, Lesotho and Swaziland. This is indicative of Incedon's excellent quality of materials and Atmei's highly standardised expertise in the international petrochemical industry," he states.

Wiessener believes that the success of this high-profile Beira project will provide a major competitive edge to both Atmei Construction and Incedon moving forward. "A lot of international attention was placed on this project, and the proven performance of the working relationship between the two companies will be recognised on a global scale, which is good for future business," he concludes. <



## NEW PINEHAVEN HOSPITAL

Aveng Grinaker-LTA's R199-million contract to build a new, 100-bed hospital in Pinehaven, Gauteng, for Netcare Properties is well underway.



Marc Meire, divisional managing director of Aveng Grinaker-LTA Building, reports that the bulk of the structure is nearing completion. Brickwork, plaster and other wet trades, as well as first fix services and bulk services installations, are in progress.

"We are exceptionally pleased to have been awarded another contract through our established relationship with the Netcare Group," he comments. "Despite the steelworkers strike and recent rainfall, the project is on target for completion in August 2015."

The 14 000 m<sup>2</sup>, double-storey building, which is situated west of Johannesburg, near Krugersdorp, comprises a reinforced concrete frame with flat slabs, while the external envelope is mostly made up of brickwork. In addition to the construction of the building, all associated works, including the specialised installations and finishes, are being undertaken by Aveng Grinaker-LTA.

The company has previously completed hospitals in Lesotho and in Mitchell's Plain in the Western Cape. The 425-bed Queen Mamohato Memorial Hospital in Lesotho was built for the public-private partnership consortium Tsepong, in which Netcare has a stake, while the 230-bed Mitchell's Plain hospital was a contract that was successfully completed for the Department of Transport and Public Works.

"Aveng Grinaker-LTA's extensive experience in this specialised

area is being brought to bear in this contract for the new Netcare Pinehaven Hospital, and we look forward to playing a fundamental role in providing Netcare with the infrastructure it requires to continue to grow its business," Meire concludes. ■



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# NEW CONTRACTS BOOST REPUTATION

Nine new contracts have provided Aveng Ground Engineering (formerly known as GEL) with a significant boost to its order book and reinforce the operation's burgeoning reputation as an industry leader in the installation of limited headroom piles.

➤ At the new Vantage Apartments development in the Rosebank CBD, Aveng Ground Engineering's tender team netted the R10-million contract for lateral support and piling amid stiff competition from other contractors, reveals general manager Wim van Zyl. "This project entails the development of a 10-metre-deep basement directly against the neighbouring buildings, so it is a technically complicated job that needs to be delivered on a very tight programme," he states.

Aveng Ground Engineering will also be working against the clock to meet the challenging timeframe on its new contract at the Witwatersrand Gold Fields acid mine drainage facility near Springs.

"Here we have been appointed by the CMC di Ravenna/PG Mavundla Joint Venture to install 1 800 m<sup>2</sup> of temporary lateral support for the development of the new treatment plant's clarifiers," Van Zyl explains. He notes that the restricted working area will require seamless co-operation and coordination between the civils and bulk earthworks contractors.

Four fast track contacts awarded to Aveng Ground Engineering have recently been successfully completed and handed over to the clients, Van Zyl says. In Salvokop, Pretoria, a preliminary geotechnical investigation was undertaken and approximately 175 open hole auger piles were installed for Statistics South Africa's new head office development.

This project was undertaken for the Dipalopalo Consortium. At the new Eagle Canyon shopping centre south of Johannesburg, the contractor installed 72 open hole auger piles for client Renico Construction. Aveng Ground Engineering has also completed 136 micro piles for Lyncon Construction on the Longlake, 1<sup>st</sup> Avenue Warehouse Project in Modderfontein.

Aveng Ground Engineering was appointed by Lyncon Construction to install

limited headroom micro piles for the upgrade of warehouse facilities for Davita Trading – also located South of Johannesburg. "Aveng Ground Engineering is making a name for itself as an industry leader in the installation of limited headroom piles, and this project followed close on the heels of our successful completion of the piling at the Women's Living Heritage Monument," Van Zyl notes.

Recently awarded projects include the piling for a new bridge at Van Zyl Spruit near Trompsburg, Giyani Bridge piling near Louis Trichardt and piling for the University of Mpumalanga, with further works to be negotiated.

Aveng Ground Engineering is part of Aveng Grinaker-LTA's Civil Engineering business unit. ◀



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## RACEWAY INDUSTRIAL PARK RESCUE

During construction of Raceway Industrial Park, in Germiston, Gauteng, a unique Kaytech geotextile solved a severe subgrade stabilisation problem.

When Advance Projects was awarded the contract to construct a platform onto which the new warehouse would be erected, the company was unaware that the geotechnical report on existing in-situ conditions were sub-standard. Confronted with variable soil conditions, it soon became evident to the contractor that surrounding projects had used this site as a 'borrow pit' for all their rubble and low-grade soils.

Difficult working conditions on site were rendered virtually untenable when sub-surface water and heavy rains wreaked havoc on excavation attempts, with heavy machinery getting stuck in the already weak material. The contractor persevered however, constructing layer upon layer a number of times without success.

It was at this stage of the project that Kaytech was consulted. At a site meeting held with BSM Baker Consulting and Advance Projects, Kaytech's technical field staff realised that this was an ideal situation for a high strength RockGrid PC to prove its efficacy. They also explained what amount of fill material and layerworks on site would be ideal to cover the RockGrid PC layer to place it under sufficient tension.

The first composite reinforcing geotextile to be manufactured in South Africa, RockGrid PC consists of a nonwoven layer in conjunction with high tenacity, bi-axially orientated, multifilament polyester yarns,



The 29 000 m<sup>2</sup> of Rockgrid PC was used to reinforce the substrate.

the combination of which guarantees the unique characteristics of the product. The high tensile modulus of RockGrid PC provides excellent reinforcement characteristics and minimum creep deformation compared to polyethylene or polypropylene grids or woven fabrics

When the technical field staff's recommendation was accepted,

Continued on page 39 >



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# Construction of a UNIQUE KIND

With its minarets gracing the skyline of Midrand in Gauteng, the Nizamiye Masjid, as the Turkish Mosque is known, is the largest mosque and also the only true example of Ottoman architecture in the southern hemisphere.

➤ Built on a 10 hectare site, the mosque is the heart of the Nizamiye complex that includes a variety of community and educational institutions. The basic plans were designed in Turkey as an 80% scale copy of the 16<sup>th</sup>-century Ottoman Selimiye Mosque in Edirne, Turkey, now a World Heritage site. Some adjustments were made by a South African architect to ensure compliance with local building regulations. Construction of the Mosque began in September 2009 and it was opened in October 2012 by President Jacob Zuma and Turkey's Minister of Economic Affairs, Zafer Caglayan.

The development is the realisation of a dream by 79 year-old Turkish businessman, Ali Katircioglu, to introduce Ottoman-style architecture to places that had not experienced it. Fondly called 'Uncle Ali', this humble man came with his wife each day to watch his project take shape. The local children knew him as the kind man who handed out sweets – time was not the priority: it was ensuring that the Mosque truly reflected its Ottoman origins and that meticulous attention was paid to quality workmanship and detail. To achieve this, 600 specialised craftsmen were brought from Turkey: at the peak of activity there were 500 on site, working with local artisans and passing on their knowledge and skills to them. More than a thousand local people benefited from this unique construction experience.

## Ready-mix supplier

Lafarge South Africa, the local presence of the international Lafarge Group, a world leader in building materials, was chosen to supply all the readymix concrete for the construction of the Nizamiye complex. "We had to ensure that the concrete came from a reliable and consistent source," says project manager, Orhan Celik, a Turkish civil engineer who also managed the Turkish construction team. The project was carried

out without appointing a main contractor. "We chose Lafarge because they are respected both internationally and locally.

"It proved to be the right decision as the speed of delivery from their Chloorkop batch plant and their general service could not be faulted," he adds. "When we needed help, they were there for us and worked hard with us. For example, the Mosque's 1 630 m<sup>2</sup> floor space has a 700 mm foundation slab joining the four 55 m high minarets. For this mass concrete pour, Lafarge supplied two pumps and delivered readymix around the clock to complete the 1 000 m<sup>3</sup> continuous pour. Another critical construction task was pouring the concrete for the main dome, which is 32 m high and 24 m wide. As we did not have a tower crane, Lafarge organised the largest mobile pump in South Africa at the time and completed the job in a 20-hour non-stop pour."

## Traditional formwork

Interestingly, the formwork for the dome was done in the traditional Turkish way with carpenters brought in from Turkey to build it out of timber. "It was our old way of building but still cheaper and faster than today's methods. The same technique continues to be used for constructing small buildings in Turkey," comments Celik. Another traditional building method used on the dome was applying 48 tons of 1,6 mm thick lead sheeting. While lead sheeting is expensive, it has stood the test of time: 1700 year-old buildings in Turkey still have their original lead covered roofs.

## Concrete requirements

The total concrete requirement for the mosque and associated buildings was 13 800 m<sup>3</sup> using mainly Lafarge's pumping and column mix designs, which are based on 70/30 cement/fly ash to achieve a 30 MPa concrete. With the extensive use of pumps, the pump mix required a minimum slump of 120 compared with 90 for the general work. The cement used was Lafarge's versatile premium technical CEM II product, Powercrete Plus 42,5N, that can be blended further with fly ash to achieve a range of customised mix designs. As recommended by Lafarge, the high quality classified siliceous fly ash DuraPozz® from Ash Resources' Lethabo Plant was used as a cement replacement in the mix designs.

When asked whether the recent earth tremor experienced in Gauteng had been a cause for concern, Celik smiles and says that there are two main differences between

The logistical challenge of getting all the specialised finished materials at the right stage of construction, involved shipping over 50 containers from Turkey. Some of the materials and the attention to detail that have gone into achieving the beautiful features of the Nizamiye Masjid include:

- Handcrafted marble tiles with real 24 ct gold leaf to ensure they will shine forever.
- Ceramic tiles with more than 40 different flower designs signifying peace and love. They were copied from old mosques and took a year to make in Turkey.
- Stained glass windows are formed from three layers of coloured glass.
- The dome is decorated with Turkish paintings and the ceilings in exquisite calligraphy.
- To ensure everyone can hear throughout the Mosque, over 100 loudspeakers are built into the walls and hidden from view by the tiles.
- Custom-made carpets in 100 per cent pure Turkish wool.

building in Turkey and building in Gauteng, the main one is earthquakes. The biggest challenge for the design of structural and architectural concrete in Turkey is the fact that the country has had more than 20 earthquakes in the last 100 years, most of which were way above six on the Richter scale. The centuries-old Selimiye Mosque stands unharmed despite having been subjected to a massive 9,7 earthquake. It means that building design is more complex and involves more concrete in Turkey. The second difference is that Turkey has heavy snow in winter.

## Ottoman architecture

The Nizamiye complex is more than a truly magnificent example of Ottoman architecture, it also opens its doors and extends warmth and kindness to all visitors – there have been more than 100 000 to date. The school is open to all cultures and religions and can accommodate up to 850 pupils, who are taught the South African education syllabus in English. Pupils are also offered Islamic studies, as well as Arabic and Turkish language lessons. The Nizamiye Clinic has been built – this was Nelson Mandela's personal request when 'Uncle Ali' showed him the plans for the Mosque. Once equipped, the clinic will provide day-care health services for the local communities.





A small shopping centre offers a delightful introduction to Turkish shops, a bakery and a restaurant. A university is scheduled for construction in the next two years.

Benefactor, Uncle Ali has quietly moved on to his next project and handed over the Nizamiye complex to be run by the Fountain

Educational Trust, a registered SA Non-Profit Trust run by South Africans. "Lafarge South Africa is proud to have been involved in this fascinating project," comments Lafarge key accounts manager, Mohammed Hajee. "It was not the usual fast track contract but rather an extremely specialised project, in

which we worked closely with the Turkish experts. It reflects the Lafarge brand baseline of *Building better cities*, which embodies the Group's ambition to use its innovative products and solutions to help construct more durable and beautiful cities." ❏

➤ Kaytech engineers were consulted to double check that RockGrid PC would indeed solve the problem. The 100 x 100 kN/m grade of RockGrid PC was considered most appropriate. One of the special features of this product is its polyester, nonwoven fleece component which offers high resistance to installation stresses as well as optimum hydraulic characteristics. Only RockGrid PC provides sufficient drainage capacity and, due to its water transmissivity, it facilitates the reduction of pore water pressure and improves shear characteristics, thereby increasing stability. Ideal advantages for the problems encountered at Raceway Industrial Park.

On completion of the project, 29 000 m<sup>2</sup> of RockGrid PC 100/100 had been installed allowing the contractor to rapidly construct the required platform without using the expensive conventional method of importing dump rock and exporting spoil material. Thanks to this time-saving, economical Kaytech geogrid, millions of rands were saved on this project. ❏



**Heavy rains and a mix of in-situ material rendered conventional reinforcing methods ineffective.**

# TOTAL SOLUTIONS PROVIDER

Torre Industrial Holdings SA French division, part of the Torre Industries Group, is positioning itself as a total lifting solutions provider. "We are progressing to the point where we will be able to offer everything related to lifting.

Whatever type of tool or piece of equipment that is required, we will be able to provide it," Quentin van Breda, managing director, SA French, says. "We will also be entering the mobile crane and harbour lifting equipment segments," he adds.

## Expansion strategy

This is part of an aggressive expansion strategy outlined for the next two years as SA French takes advantage of its incorporation into Torre Industries. SA French falls under the Plant & Equipment division of the holding company, along with Kanu Equipment and Manhand. The other two divisions are Services & Supplies (TGS and Torre Automotive) and Financial Solutions (Torre Capital).

## 2014

Van Breda says that 2014 was a highly successful year for SA French. It supplied a MC235 conventional crane and two MCT205 topless cranes to WBHO the WBHO/Tiber Bonvec JV building the new Discovery Health head office in Sandton, Johannesburg. "The first crane has been erected and the others will follow as earthworks progress," Van Breda confirms.

SA French sold two brand new MC125 cranes to M&T Developments, one for a construction contract in Centurion and the other for a project in the heart of Pretoria. Repeat customer Trencon Construction acquired another new MC125 crane for a university development in Kimberley, following its purchase of an IGO 50 self-erecting crane a year ago, in addition to an MC205 crane that is still active on the KPMG extension project off Empire Road in Johannesburg. Kulanati of the Eastern Cape could be a new customer for a shopping centre in Beacon Bay, highlighting the increasing geographic footprint of SA French.

## The rental division

Apart from new crane sales, rental is also booming. "Our larger listed clients are quite prepared to spend more money than they did in the past on rentals to cater for their needs during any boom period or uptick in business," Van Breda says the international split is a 60:40 owned versus rental ratio, a trend that is picking up locally. "There are not many

players in the rental market at present, which means there is a gap that makes for a good opportunity, although it is capital intensive."

SA French has 20 cranes in its rental fleet, with a 100% utilisation rate. It has 27 telescopic handlers and hoists, with a 75% utilisation rate. The smallest machine in SA French's crane rental fleet is an IGO 22 self erecting crane with a 28 m radius. The largest is a MD310 with a 70 m jib and a capacity of 3 t at 70 m, currently deployed at the Mall of Africa development in Midrand. "Our range covers probably 98% of all our rental requirements. More specifically, and a hope for 2015, is that there is an abundance of cross-border work, some of which will require larger cranes."

## Local growth

Van Breda says he is 'cautiously optimistic' about local growth. "We are seeing a mini building boom in terms of construction, though not so much in civils, roads and earthworks. Certainly this has legs to take it beyond 2015, but time will tell. However, we would rather focus beyond South Africa." Key countries in this regard are Namibia, Botswana and Mozambique. "Torre Industries is already established in West Africa, with Kanu Equipment, which will give SA French a springboard into this area."

In terms of new products, SA French now offers both Potain European and Asian tower crane ranges. "Our hoist range now includes Orbit as well as Torgar, with the new addition catering for increased heights and larger passenger and material loads. We have maintained the status quo on the balance of our equipment, including telescopic handlers and self-loading mixers," Van Breda says.

SA French's market focus has broadened beyond construction to encompass sectors such as mining and petrochemical. "There are permanent tower crane installations at some mines, while we also carry out retrofit work for power stations, traditionally the domain of large mobile cranes." SA French has already notched up extensive experience in this niche but growing market in Africa.

"On the service side, we have worked at around 100% utilisation from Q4 2013 to date and expect the same for this year." Van Breda says the spares side of the business is "very busy", with Manitowoc Crane Group's Potain division of France having accorded the local company Elite Dealer status, which means a

guarantee of 80% availability of spare parts on first call. "We have not dropped below 85% over the past three years," Van Breda says. "I love selling cranes, but our back-up support is really what sells it. So much of our business is repeat business."

## Latest trends

Looking at the latest trends, Van Breda says customers are requesting longer jibs on tower cranes. "This trend is driven largely by the increasing number of shopping centre developments. These are often widespread and therefore require cranes to cover the entire area, but not necessarily for heavy lifting."

Another trend is that modern cranes have become 'enormously cost effective' in terms of power consumption, due mainly to technical advances such as the use of frequency inverters. "A 2014 model tower crane probably uses 40% less power than its predecessors," Van Breda notes. He adds that top tower cranes are increasingly being replaced by topless cranes. "I predict that we will not see another saddle jib or top tower crane model within the next five to six years."

Topless tower cranes can be erected piecemeal, which is a major advantage on construction sites where both access and space are restricted. "Under normal circumstances, a 60 m jib needs to be laid out on a 60 m area on the ground. Modern construction sites are just too cluttered to allow for this, whereas a topless tower crane can be erected in 10 m sections." In addition, the absence of a top tower allows for more jibs in the same area to overfly each other.

Van Breda says the latter requirement is not yet critical in South Africa due to the availability of cheap labour. "A construction site in Europe would have no single area not covered by a minimum of two hooks. We could follow this trend here if the construction industry opts for increased mechanisation and therefore needs to reduce the amount of labour."

## Challenges

The biggest challenge facing SA French at the moment is the delay in the bulk power supply to many construction projects in South Africa. "We have erected many cranes on sites where we have had to return much later to commission them due to the lack of power," Van Breda says. He adds that this is a frustration bedeviling contractors and suppliers alike. "It is out of our hands. The construction industry really needs to return to some form of efficiency in the correct sequencing of bulk services in particular."

Going forward, van Breda says that geographic expansion holds the most opportunities for SA French's growth, hand in hand with broadening its market base. "There are



An MC205 crane from SA French on site at the KPMG extension project off Empire Road in Johannesburg for client Trencon.



An MCT88 crane (in the foreground) supplied by SA French to M&T Developments in 2008 at the Echo Park, Centurion development.



A close-up of the MC125 crane from SA French on site at the Echo Park, Centurion development for client M&T Developments.

still many suitable lifting applications where tower cranes are not being utilised. This is not to say that a tower crane is necessarily superior to a mobile crane, as each has its specific market sectors. However, we do distinctly see that tower cranes are being under utilised in general industrial applications. ▶

## NEW FLAT-TOP CRANE

The improvements made following the revision of the successful 21LC290 resulted in a new tower crane model with an optimised load diagram.

▶ In January 2015 Linden Comansa launched its new 21LC335 flat-top tower crane, part of the LC2100 series. This new tower crane is the result of the review of the 21LC290, a model that Linden Comansa successfully produced since 2002, and which will be replaced by the 21LC335. Both cranes feature similar characteristics in terms of range (up to 74 m), maximum freestanding height (64,5 m) and versions depending on the maximum load capacity (12 and 18 t).

The changes made as a result of this review have led to an important increase of load capacity with maximum reaches under 70 m. For example, the 21LC290 18 t with a 50 metre jib can load 5 300 kg at the end of the jib, while the new 21LC335 18 t with same jib length loads up to 6 600 kg – almost 25% more. With this same 50 metre jib configuration, the 21LC290 moved the maximum load of 18 tons up to 16,3 metres, while the 21LC335 moves the maximum load up to 19,6 metres, 20% more.

The tower sections of the 21LC335 are the S25, the same as the 21LC290, and the

jib and counterjib sections are also the same as its predecessor. There have been modifications only on the cat head and the upper turntable, allowing customers who would like to convert their 21LC290 into a 21LC335 to do it by replacing these two elements and modifying the configuration of the counterweights. These changes have also allowed to simplify

and shorten the assembly sequence of the 21LC335 in comparison to the 21LC290.

The 21LC335 crane comes standard with a Effi-Plus high speed hoist mechanism that reaches speeds of up to 150 metres per minute, although there are other optional engines that can reach 228 metres per minute. Like the rest of Linden Comansa's flat-top cranes, this new model includes the PowerLift system, that allows to improve the load diagram up to 10% with reduced speeds. ■



# COMPACT, SIMPLER AND BETTER

Replacing the previous five models from the T35100 to the T35120SL telescopic handlers, Bobcat has launched the company's new T35105, T35105L and T36120SL 10-12 m middle lift telescopic handlers.

> Sharing the same, easily recognisable counterweight design and chassis in black, the T35105, T35105L and T36120SL models are part of the new generation of telescopic handlers from Bobcat and incorporate many of the improvements already seen in the TL360/TL470 6-7 m and T40140/T40180 14-18 m models launched over the last 18 months.

The advanced features include the new Panoramic Cab which has a large parabolic windscreen providing panoramic visibility especially when handling loads at height. In the cab, there is a new dashboard with digital display and ergonomic controls including a joystick with integrated forward/reverse (FNR) control for improved productivity and safety.

The state-of-the-art electronics in the new telescopic handlers are based on can bus technology allowing smart machine management and monitoring of the main components for easier maintenance.

Based around a 100 l/min gear pump, the advanced hydraulics feature an active diagnostic system which ensures that in case of hydraulic failure, the machine always remains within safe limits.

Available in versions for markets with non-regulated or regulated emissions, high performance is ensured, respectively, by the 74,5 kW (100 HP) 410 Nm Perkins Stage IIIA or Deutz Stage IIIB diesel engines, providing plenty of power and torque even in the most difficult ground conditions.

The new telescopic handlers have a hydrostatic transmission offering a maximum travel speed of 30 km/h, complemented by an inching function for smooth driving and precise positioning. The T36120SL incorporates both stabilisers and the frame-levelling system while the T35105L features the frame-levelling system.

## Built for construction and rental

For construction and rental applications, the new telescopic handlers feature an auxiliary hydraulic line and are supplied with a 1,12 m wide foldable pallet forks carriage with backrest and 1 200 mm pallet forks as standard.

An important safety feature is the Aggravating Movement Arrestor (AMA) system which cuts off all aggravating movements to ensure safe use within the working envelope, whatever the attachment used and the type of load (palletised or suspended) being lifted.

## Increased safety and enhanced control

As well as the high visibility curved front window, the new ROPS/FOPS protected cab on the T35105, T35105L and T36120SL telescopic handlers has a larger back window increasing sight to the rear and a cab door with windows above and below the handlebar for optimum visibility when manoeuvring close to walls or other



obstacles. Overall the new cab is designed to provide an exceptional work environment and a new higher level of comfort for the operator, reducing fatigue and improving safety and performance on site.

## Optimum reliability and serviceability

For maximum uptime and serviceability, active diagnostics of the hydraulic main valve monitors three critical parameters – spool position, voltage control and sensor monitoring. The system ensures that operation of the machine remains within safe limits even in the case of hydraulic failure. Light indicators on the remote control show any issues related to hydraulics and the safe operation of the machine (hydraulic movements, stabilisers etc.) Stabiliser control is allowed if the boom position is safe (retracted or boom angle low).

New generation hydraulic and electrical systems ensure optimum performance and extended machine life. A new cooling package ensures a smooth and stable control of the hydraulic oil temperature and optimises hydraulic hose life. <



## INTRODUCING NEW ASPHALT PAVER

A new asphalt paver – the HA90C-2 – was introduced at the Shanghai BAUMA 2014. This is a fully restyled model for the world markets and is based on the HA90C which had a JPaver3075 screed.

➤ HA90C-2 is equipped with new screed – the JPAVER2875. This new screed was developed by reinforcing the rigidity of the existing JPAVER3075. The modifications has so far achieved high pavement precision and usability.

Additionally, its transportation width has been improved to 2,8 m, meeting the target of less than a 3 m transportation width.

This screed has a variable extension system from 2,8 m to 7,5 m and can be further extended up to 9 m by adding two sets of 0,75 m extension screed on both ends.

The board operation is now hydraulic-driven, leading to easier operation and further improvement of pavement precision. As for heating method, an electric heating system is available in addition to an LPG heating system.

The hopper length has been extended by 200 mm to adjust to the big-sized damp track commonly used in China. The height of the hopper front is lowered to 550 mm and the eager-

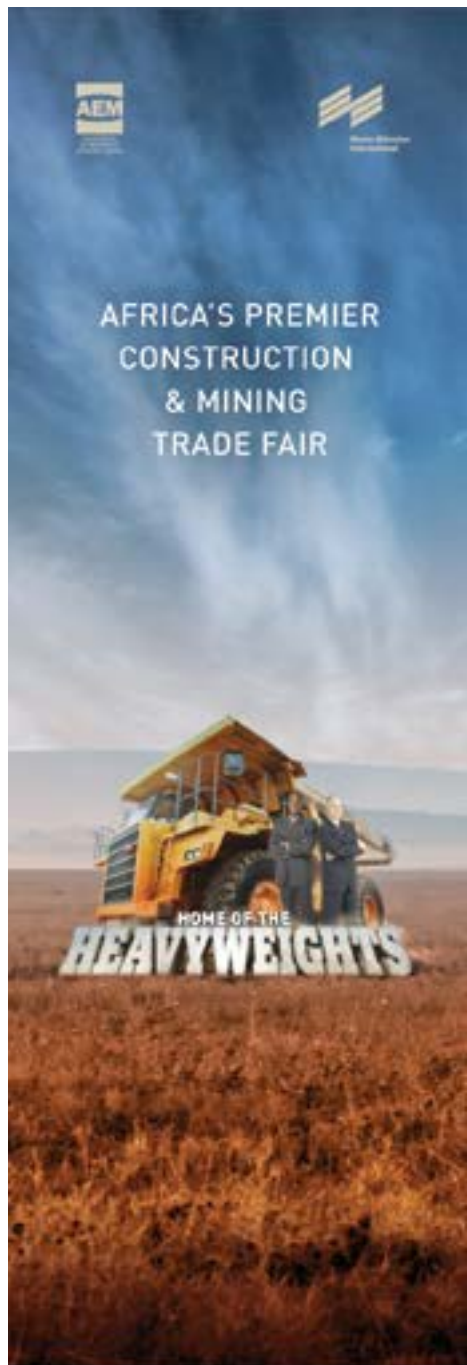
ly-awaited dial-style steering system is available. Combined with lever operation, it enables fine tuning in the pavement for curved or narrow roads.

The operating compartment and both sides of screed have colour monitors to display more information than ever including machine status and maintenance intervals.

In order to minimise time, workload, cost of preparation and clean up, the screw has been changed to a quick-release type that covers up to 7,5 m pavement while the retaining plate has been changed to optimise this new screw.

Currently, the total length of highways has exceeded 100 000 km in China and road repair and maintenance projects are expected to play an increasingly important role due to the increase of traffic and the aging road infrastructures.

The newly launched HA90C-2 is developed based on the study of the paving operation in repair projects and is in line with the requirements of new road building projects. As such it achieves maximum usability. ■



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# ACADEMY TRAINED

Each year, Barloworld Equipment's Operator Academy, based in Johannesburg, qualifies around 700 candidates, some of whom attend for refresher training, while others are brand new to the industry.



"We do not take short-cuts and every operator trained by the Academy will pass on measureable savings, both in terms of operating efficiencies and downstream maintenance costs," says Willie Haasbroek, who heads up the Academy.

In the following interview, Haasbroek responds to frequently asked questions on the services provided by the Academy, as well as the legal requirement for operator certification, and re-certification.

## What is defined by the term 'Full Training'?

The successful completion of the NQF Level 2 Plant Operation course presented by Barloworld Equipment's Operator Academy.

The Plant Operation programme comprises a five day theoretical component, which is classroom based, together with an additional 15 days (on average) of practical in-field machine operator training. This practical component will vary depending on the machine class, some being more complex than others to operate.

## What is defined as a 'machine handover' in the sphere of operator training?

No formal training takes place during a machine handover as it is done in one day. The purpose of the handover is to familiarise operators with the machine's features and benefits. That is why we do not issue a certificate, as this would imply that competency training has taken place, which would in turn have legal implications for Barloworld Equipment as a training provider.

## What is refresher training?

Here we focus on up-skilling experienced operators. We have also found that refresher training (or retraining) highlights and corrects bad habits that operators tend to pick up over the years. Retraining has resulted in immediate and measureable bottom line improvements in key areas such as slot dozing, truck loading cycle times, utilisation, mechanical availability and lower diesel consumption figures.

The training duration is typically three to five days, depending on the size of the group and customer requirements.



Willie Haasbroek, head of the Barloworld Equipment Operator Academy, goes through the set-up programmes on the new Cat articulated truck simulator.

## For how long are competency certificates valid?

Twenty four months. Thereafter, reassessment and recertification is required in terms of South African legislation for all earthmoving machine classes, irrespective of industry segment.

## What happens if a competency certificate is not renewed?

Operators without a valid competency certificate are legally non-compliant.

## Can I get my operator trained faster, in days rather than weeks?

There are two ways to do it: the short way, which takes into account 'Recognition of Prior Learning' (RPL) or the 'full training' route for those who do not qualify for the first option.

Please note that if the applying RPL candidate falls short of the Academy's minimum requirements on assessment, then full training will be required to obtain certification.

## Why does the full training take approximately a month to complete?

For each machine family, there is a unit standard that dictates how many hours of training needs to be completed. The average is approximately 120 hours, which equates to three to four weeks of training (theoretical and practical). ■



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# INCREASING output and efficiency

Danoher Contracting's bold decision to buy the first Sandvik UH450E ever to operate outside Scandinavia has been rewarded.

> The revolutionary mobile cone crusher and screening unit recently completed its first major contract well ahead of schedule, demonstrating its ability to deliver an exceptionally high output combined with outstanding fuel efficiency. According to Nicolan Govender, national sales manager for local Sandvik distributor Pilot Crushtec International, the UH450E passed its first test at a quarry in Verulam, KwaZulu-Natal, with flying colours.

"It was working in a mobile Sandvik train preceded by a UJ440 jaw crusher and US440 cone crusher, with the trio producing G2 sub-base material from blasted dolerite, which is no easy task," he says.

The trio processed a <500 mm feed and the new UH450E consistently produced a perfectly shaped 0 - 37,5 mm product

at a rate of 300 tonnes per hour. Not only was this sufficient to reduce time spent on site by a significant margin but the fuel economy shown by the Sandvik units was equally impressive.

The three machines' total diesel consumption over the duration of the contract averaged no more than 100 litres per hour.

Danoher Contracting bought the machine to increase the volume of output necessary to gain a competitive advantage in the contractor market. A visit to the Sandvik stand at Germany's Steinexpo 2014 left Danoher's director of operations Royden Webster in no doubt that the UH450E was the solution needed and wasted no time in placing an order for the 71 tonne machine.

Despite its impressive size, the Sandvik UH450E is relatively easy to transport and the machine is now working at Danoher's Standerton site producing technically challenging G1 sub-base material for a major road renovation project.

Initial experiences with the UH450E have created a very favourable impression on Webster and his team. "Apart from its

very high output, we have discovered that it is a user friendly and versatile machine, so we can definitely say that it has met our original expectations. Fuel economy is also vitally important in a cost sensitive business like contracting and for the duration of the Verulam contract it was using no more than 35 litres per hour. It is true to say that there are some products on the market with similar rates of fuel consumption, however they do not produce anything like the tonnages we are gaining from the Sandvik UH450E," he says.

This fuel efficiency is derived from the fact that the UH450E is powered by a diesel generator set as opposed to a conventional diesel engine. The Volvo TAD 1641 500kVA powers electric motors on the crushing and screening units enabling high volume outputs at a relatively minimal operating cost.

Service is also a crucial factor in the contractor market and Webster rates the service and support rendered by Pilot Crushtec International to Danoher's growing Sandvik fleet as 'the best in the country at this moment'. ■



## Sandvik UH 450E: specifications

- Sandvik CH440 hydrocone
- LF850 double deck linear motion screen
- SS1221 double deck pre-screen
- Maximum feed size 215 mm
- High performance recirculating conveyor
- Power plant Volvo TAD1641 GE 500 kVA
- Transport dimensions 19,50 m (L), 3,50 m (W), 4,45 m (H)



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# IMPLICATIONS

## of alcohol in the workplace

By Rhys Evans, director of ALCO-Safe

Organisations are required by law to comply with the Occupational Health and Safety Act (OHSA), which specifies a zero tolerance approach to intoxication in the workplace.

> Employees who are under the influence of alcohol are a danger to themselves and their co-workers, as alcohol lowers inhibitions, fuels aggression and affects judgement. In hazardous environments such as mining, manufacturing and construction, where employees need to operate machinery that requires sound judgement, alcohol use is a serious area of concern. Importantly, the ongoing behavioural impact of alcohol use in the workplace can have a negative knock-on effect to health and safety, increasing risk for organisations and their employees alike.

### Alcohol affects judgment

Employees operating with impaired judgement as a result of alcohol consumption disregard policies put into place for their safety, and make poor decisions regarding their jobs. In the 'Activator, Behaviour, Consequence' (ABC) model of behaviour, alcohol acts as an activator for undesirable behaviours. Employees who are under the influence of alcohol may fail to accurately assess a situation, underestimate the danger involved, and subsequently act in a manner that puts themselves and their fellow workers at risk.

### Creating negative feedback loops

The consequences of the action can also negatively impact the behaviour of the colleagues of the offender. If nothing negative occurs, the perpetrator may feel that they can continue with such behaviour. Colleagues may also see this and emulate the undesirable behaviour, which further increases the employees risk not to mention the company's. If someone is injured or even killed, the organisation is liable for damages as well as breaching the OHSA, impacting the morale of workers.

For example, an employee who is

qualified to lift a certain load with a forklift may feel, under the influence, that they are able to exceed the load limit. It is well known that alcohol can create a feeling of 'bravado'. This may cause them to injure themselves or damage equipment. If there is no consequence, it imparts the impression that this type of behaviour is acceptable. A vicious cycle is then created with employees ignoring processes and regulations put into place to ensure their safety. Neither of these situations result in a desirable outcome.

### Damaging the bottom line

Undesirable behaviours can also potentially impact the company's bottom line in a negative fashion. Loss of time and an overall loss of productivity in the long run can affect a company's profits and their production abilities, and thus has a corresponding effect on the bottom line. Addressing this challenge will help to ensure that businesses are operating effectively and with maximum productivity, which will therefore ensure profitability is maximised.

### A multi-faceted approach is needed

Alcohol consumption in the workplace remains a challenge for a number of reasons. Overcoming this challenge requires a combined approach of the right policies, education and equipment to curb alcohol use and abuse in the working environment.

Alcohol abuse policies are a crucial first step. These must clearly define and outline an organisation's zero tolerance approach to alcohol consumption, as well as all of the procedures involved. Policies must define the parameters for the company and employees to adhere to in order to ensure compliance with OHSA standards. The policy must also outline the full process for testing for alcohol consumption, as well as a complete explanation of disciplinary procedures should employees test positive.

In addition to creating policies, it is also essential to drive awareness – of the policy, the consequences of breaching it, and the effects of alcohol on behaviour. Often, employees are unaware of the harmful consequences of alcohol, on their health, their personal lives and the safety of those around them. Education needs to form a vital foundational pillar of any approach to reducing risk behaviour such as the



*It is well known that alcohol can create a feeling of 'bravado'. This may cause them to injure themselves or damage equipment. If there is no consequence, it imparts the impression that this type of behaviour is acceptable.*

consumption of intoxicating substances in the workplace.

The behavioural changes affected by the use of alcohol are often not understood, and education can help employees to understand the benefits of abstaining or reducing alcohol consumption.

Finally, policies and education should be backed by the use of appropriate technology for testing alcohol consumption. Without the ability to check employees, the policies will be ineffective in changing behaviours. The possibility of random testing or specific tests should employees be suspected of being intoxicated can be a significant deterring factor.

### In conclusion

Alcohol in the workplace is a serious challenge across many industries. It can have negative behavioural implications that can create a cycle of negativity that can adversely affect the organisation, and can also have a long term negative impact on productivity, profitability and the bottom line. Changing behaviours requires a combination of policies, education and appropriate technology to ensure that risk can be minimised and adherence to OHSA better assured. <



# NEW COMPOSITE MATS

Kaytech has recently signed a distributorship agreement with Concrete Canvas to supply Geosynthetic Cementitious Composite Mats into the South African civil engineering industry, including road and rail applications. Concrete Canvas is used specifically for the lining of culverts, channels, slope protection, and remediation of existing concrete structures.

## What is Concrete Canvas®?

Concrete Canvas® is part of a revolutionary new class of construction materials called Geosynthetic Cementitious Composite Mats (GCCM). It is a flexible, concrete impregnated fabric that hardens on hydration to form a thin, durable, water proof and fire resistant concrete layer.

Essentially, it is concrete on a roll. Concrete Canvas® allows concrete construction without the need for plant or mixing equipment. Simply position the mat and just add water.

Concrete Canvas® consists of a 3-dimensional fibre matrix containing a specially formulated dry concrete mix. A PVC backing on one surface of the mat ensures the material is completely waterproof. The material is hydrated either by spraying, or by being fully immersed in water. Once set, the fibres reinforce the concrete, preventing crack propagation and providing a safe plastic failure mode. Concrete Canvas® is available in two thicknesses: CC5™ and CC8™, which are 5 and 8 mm thick respectively.



Concrete Canvas can be rapidly unrolled to form a channel lining.



It can be used to rapidly reline and refurbish existing concrete structures suffering from environmental degradation and cracking.

## Concrete Canvas user benefits

### Rapid install

Concrete Canvas® can be laid at a rate of 200 m<sup>2</sup>/hour, up to 10 times faster than conventional concrete solutions.

### Easy to use

Concrete Canvas® is available in shorter rolls that are manageable by hand for applications with limited access. The concrete is pre-mixed so there is no need for mixing, measuring or compacting. Just add water.

### Lower project costs

The speed and ease of installation mean Concrete Canvas® is more cost-effective than conventional concrete, with less logistical complexity. Concrete Canvas® is a low mass, low carbon technology, which uses up to 95% less material than conventional concrete for many applications.

## Concrete canvas key properties

### Water proof

The PVC backing on one surface of the GCCM ensures that the material has excellent impermeability.

### Strong

The fibre reinforcement prevents cracking, absorbs energy from impacts and provides a stable failure mode.

### Durable

Concrete Canvas® is twice as abrasion resistant as standard OPC concrete, has excellent chemical resistance, good weathering performance and will not degrade in UV.

### Flexible

Concrete Canvas® has good drape characteristics and will closely follow the ground profile and fit around existing infrastructure. Unset Concrete Canvas® can be cut or tailored using basic hand tools.

# Concrete industry GETS TOUGH

Tightening specifications for readymix concrete has led to a substantial growth in the membership of the Southern Africa Readymix Association (Sarma) from companies seeking to obtain formal accreditation of their plants and processes.

> The association advocates using quality concrete only from suppliers that have been audited and accredited to have adequate safety, health, responsible road usage, environmental protection and quality systems in place. This would ensure that concrete delivered on site is of a sufficient standard for requirements on site and will minimise the risk of failures in future.

Recent high profile concrete failures, building collapses and the dismal state of certain low cost housing developments etc has caused the construction industry to become increasingly aware of the importance of dealing with accountable suppliers; and are insisting on procuring concrete from accredited suppliers only.

## Working together

Speaking at a recent Sarma regional meeting in Gauteng, general manager Johan van Wyk said that the association had begun engaging member organisations within the construction industry, as well as Government and local government structures, to work together to make the specification of Sarma accredited readymix concrete mandatory.

“This is beginning to pay dividends and already a number of these industry organisations, several municipalities, mines etc have begun to stipulate the use of Sarma approved readymix on their sites. A positive effect of this is that more and more companies are joining Sarma and undergoing our

separate annual audits for environmental compliance, as well as safety, health, quality and road safety compliance.

“These systems are based on ISO standards and are therefore internationally recognised and sufficient grounds to establish minimum standard for our industry. In addition Sarma has its own unique requirements and all our members are bound to uphold our codes of conduct, as well as abide by all relevant legislation governing the industry.

## Rising quality

“As a result of this the standard of readymix concrete delivered in South Africa is higher than ever before and provided users make use of Sarma accredited members they are assured of receiving concrete that complies (at least) to our very high minimum standards. Unfortunately there are still a number of unregistered readymix companies who do not want to abide by these standards and the quality of concrete in these instances can be a hit-and-miss affair, said Van Wyk.

He continued that membership of Sarma had grown to nearly 200 readymix plants this year with approximately 50 producer members. The increased collection of levies was assisting the association to reach out further to spread the awareness of the importance of dealing with accredited members, as well as continuing to work with Government and other structures to make Sarma accredited readymix the construction material of choice on all projects within Southern Africa.



Johan van Wyk, general manager of Sarma.

The introduction of unannounced audits on member sites would also be instituted from next year to ensure plants are running in compliance with requirements all year-round and prevent any ‘window-dressing’ that may occur around audit times. Training workshops for members would also be stepped-up and skills development of workers within the industry would remain a top priority.

## Always improving

“We are also looking at other initiatives to join global readymix bodies in the USA and Europe, to begin fast-response teams to cleanup concrete spillages and to become the registering authority to register concrete technologists in South Africa.

“We will also continue working with bodies such as the Construction Industry Development Board, municipalities, engineers, institutes, and member organisations to ensure that the quality of concrete delivered is raised to a level where it can compete with the best in the world,” concludes Van Wyk. <

## NEW PROJECT SHOWCASE LAUNCHED

**Armstrong Ceiling’s annual showcase of global projects, its *A Book*, shows how South Africa’s leading manufacturer of interior ceiling system solutions delivers on its strapline for 2015 – inspiring great spaces.**

> The coffee table-styled brochure takes specifiers such as architects and interior designers on an epic journey through some of the most innovative, intelligent and stunning ceiling solutions available for their new-build and renovation design challenges in South Africa.

Case studies from around the world show how Armstrong Ceilings bring value to the design, installation and costings of projects in the education, healthcare, transport, commercial, leisure and retail sectors,

no matter the material involved. Projects such as United Airlines’ Global First Lounge and United Club at the UK’s largest international airport, Heathrow, which involved Armstrong UK and US working together to deliver a new design concept quickly and efficiently with bespoke metal ceiling systems.

Axiom canopies with metal tiles were also used at a British military museum but specially adapted to carry recessed spotlights, while the world’s first Cradle

certified mineral tile was used in larger than normal sizes at a school in The Netherlands.

For more examples of how Armstrong Ceilings help to inspire great spaces go to [www.armstrong-ceilings.co.za](http://www.armstrong-ceilings.co.za). <





# REMOVING OIL STAINS

## from concrete surfaces

Commercial property owners, facilities managers and home-owners often struggle to remove oil and grease stains from concrete areas such as parking areas and driveways. Bryan Perrie, managing director of The Concrete Institute, says most common, oil stains can indeed be extremely difficult to remove because of the stains' rapid ingress into the concrete. However, there is a solution and he here provides some guidelines on how to deal with this problem.



**A clean and neat concrete driveway creates a good impression at both commercial and domestic buildings.**

➤ First of all, before attempting to remove any stain from concrete, a small trial area in an inconspicuous place should be treated first to assess the effect the cleaning method will have on the concrete.

It is important to stop the stain from spreading so it should be encircled by a fine, dry material such as sand, cement, sawdust or even cat litter. Mop up as much of the stain as possible with paper towels or cloths by blotting rather than wiping, and sprinkle the entire stain generously with the fine material. This can then be broomed back and forth and then swept up and disposed of.

The Concrete Institute has found the following cleaning materials to be effective for removing oil stains:

- Automotive engine degreasers;
- High-foam washing powder; and
- Concentrated liquid detergent.

These products are more effective when mixed and applied with boiling water. A stiff bristle brush, although useful for removing thick surface oil deposits, is inadequate for reaching deposits that have already penetrated into the pores of the concrete.

A high-pressure water jet cleaner (100 Bar) can be extremely effective in removing ingrained stains and will also remove chewing gum

deposits. The high pressure water jet cleaner should be applied some time after the cleaning agent was applied but before it has evaporated. Consequently, application of the cleaning agent in strong, direct sunlight is not recommended.

As soon as the oil or grease deposit has been dislodged, the entire area should be flushed with copious amounts of clean water to prevent soiled water re-depositing the oil on adjacent concrete. When using high-pressure water jets, protective clothing and goggles should be worn to protect against the rebounding of grit when the jet displaces material from the concrete or between block paving.

Once most of the surface stain has been removed as described above, cover the residue with a poultice made up of one part agricultural lime to two parts mineral turpentine. Spread a layer of about 5 mm of the paste over the stained area, ensuring that there is a margin of approximately 50 to 100 mm around the edges. Cover the plastic sheeting and leave for 24 hours. Builders' lime should not be used as it could cause skin burns.

It may be necessary to repeat this process within a day or so to remove any deeply ingrained oil or grease that sometimes continues to rise to the surface. Finally, scrub the stained area with warm water and laundry detergent, then rinse well with clean water to end the treatment. ◀



# Increased use of PIGMENTED CONCRETE

Pigmented or coloured concrete is being used increasingly in a broad range of construction applications in South Africa, from pipelines to roads and even stadia, Hannes Engelbrecht, general manager: marketing, Chryso Southern Africa, says.



“The government’s commitment to a massive infrastructure development rollout over the coming years presents a singular opportunity for the South African construction industry. While the use of pigmented concrete in this regard is still in its infancy, we are finding that contractors, architects and consultants are showing an increasing interest as well as coming up with more and more novel applications,” Engelbrecht says.

Chryso Southern Africa is the sole distributor of Lanxess inorganic iron oxide Bayferrox® pigments for the construction industry in Southern Africa. This German company is a global manufacturer and distributor of inorganic pigments. These are all UV-stable and comply with EN 878 (the use of pigments for colouring building materials) and ASTM C 979 (pigments for integrally coloured concrete). Chryso Southern Africa supplies all the major readymix manufacturers such as AfriSam and Lafarge.

## Success stories

A recent success story for Chryso Southern Africa was the application of Bayferrox® pigments for concrete roads at the R220-million Sunward Lifestyle Centre shopping

**Hannes Engelbrecht, general manager: Marketing, Chryso Southern Africa, says urban planners, architects and contractors now have a much wider range of building materials to choose from.**



complex in Sunward Park, Boksburg as an alternative to traditional asphalt pavement. Engelbrecht says that Bayferrox® 330 black pigment was specified so that tyre marks and oil spills would not be too conspicuous on the concrete road surfaces.

The developers were on the lookout for the exceptional durability and extended life that concrete roads can provide for a shopping complex with a catchment area of 340 000 people, which meant higher than normal traffic. The 17 000 m<sup>2</sup> shopping complex has a road network leading to 1 000 parking bays constructed from interlocking concrete blocks without pigmentation.

Engelbrecht explains that the Sunward project specified a mix of 16,6 kg of Bayferrox® pigmentation per cubic metre of concrete. In total, the 3 000 m<sup>3</sup> of concrete required a staggering 47 t of pigment to achieve the requisite black shading of the road network, built by main contractor Mikon Construction of Boksburg. The mix was designed by AfriSam’s Technical Department, with Matthews Sethlodi, AfriSam team production manager, revealing that 80 m<sup>3</sup> to 100 m<sup>3</sup> of readymix was delivered to the project site over eight months. This translated into 500 concrete mixer loads.

Engelbrecht says that a recent similar application was the bunded concrete areas surrounding the fuel storage tanks on Transnet’s new Multi Product Pipeline (NMPP) project between Durban and Heidelberg in Gauteng. Here large quantities of Bayferrox® 330 black pigmentation were used to conceal spillage staining the bunded concrete areas.

Another striking example was the use of red coloured concrete for the demarcation of bus lanes for Cape Town’s Bus Rapid Transit (BRT) project, which specified Lafarge’s Artevia™ decorative concrete, based on pigments supplied by Chryso Southern Africa. The Steyn City urban precinct development in Fourways, Johannesburg also features exposed coloured concrete and surface retarders using products from Chryso Southern Africa.

Another landmark application was Soccer City, not only one of the most recognisable features on the Johannesburg skyline, but the largest soccer stadium built in South Africa for the 2010 FIFA Soccer World Cup. Architectural firms Populous and Boogertman Urban Edge + Partners created a new hi-tech façade made of glass fibre reinforced concrete coloured with Bayferrox® pigments. This striking design set a new benchmark for innovative architecture in South Africa.

## Challenges

The challenge for the concrete industry is that urban planners,

architects and contractors now have a wider range of building materials to choose from. “The use of pigmented or coloured concrete has the definite advantage of positioning concrete as an aesthetically pleasing and modern building material. In addition, our wide reference base showcases the versatility of pigmented or coloured concrete in an increasingly diverse range of applications,” Engelbrecht comments.

## Sustainability

From a sustainability point of view, Engelbrecht points out that Bayferrox® pigments are produced in Germany using modern processes that reduce the environmental impact. “These pigments are neither toxic nor an irritant to the skin or mucous membranes,” he adds. Another critical factor is consistency of the pigments produced, which Lanxess prides itself on. “This means that there are no colour variances, pointing to the high quality of the end product. This is often a major problem with cheaper alternative products such as those sourced from China.”

## The future

Looking to the future, he says that concrete admixtures, which are becoming increasingly popular as concrete technology itself advances, “provide a natural intervention for pigments. Depending on the specific customer requirements, we can blend any colours accordingly.” For example, Chryso Southern African mixes colours used exclu-



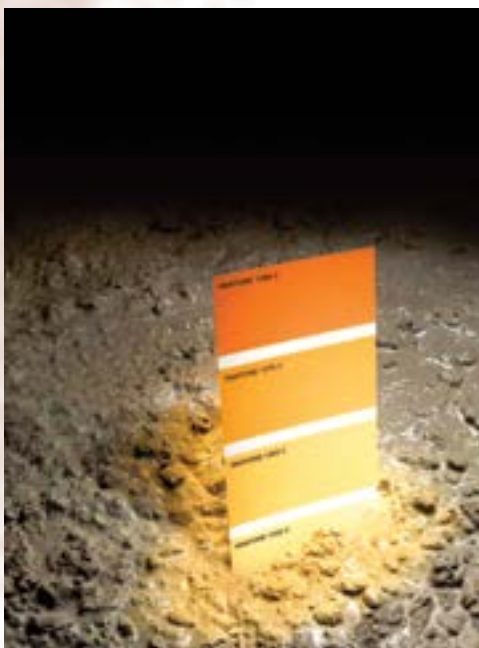
**Chryso Southern Africa is the sole distributor of Lanxess inorganic iron oxide Bayferrox® pigments, which comply with EN 878 (the use of pigments for colouring building materials).**



The use of pigmented or coloured concrete showcases it as an aesthetically pleasing and modern building material.

sively by Lafarge for products such as its Artevia™ decorative concrete.

Engelbrecht says that Chryso Southern Africa has been conducting intensive research and development on pigmented or coloured concrete for nearly a decade. "There is a big push by readymix companies as it is seen as adding value to their own product, while architects and specifiers are increasingly becoming aware of the possibilities as they advance its future development and application." <



Bayferrox® pigments from Lanxess of Germany are produced utilising modern processes that reduce the environmental impact.

## NEW RESEARCH AND DEVELOPMENT CENTRE

Sika is further expanding its research and development activities. In the presence of His Royal Highness, the Duke of Kent, Sika has opened a state-of-the-art research facility in Preston in northwest England. Sika employs around 800 staff in 20 technology centres around the world. By making further investments in research and development, the company is securing its innovative strength.



"We are establishing a leading-edge technology centre in the area of liquid roofing in our new research and development centre in Preston", comments Sika CEO Jan Jenisch. "Sika possesses outstanding expertise in this area. We aim to further develop this to the benefit of our global Sika subsidiaries and their customers."

Following the acquisition of Liquid Plastics and Incorez in the UK in 2009, Sika has continued to invest in this area of its business with the aim of guaranteeing the development of technologically advanced and environmentally friendly liquid roofing membranes, while also pressing ahead with new developments in its product technologies. Sika is leading the global field with these products.

### Duke of Kent royally impressed by Sika

Construction work on the new research and development centre began one year ago on the site of an existing 100-year old warehouse. The new centre is twice as large as the previous structure, covering more than a thousand square meters. The research

centre's activities will focus on 30 Sika products, including the roof waterproofing and interior floor coatings. At the official opening ceremony, His Royal Highness, Prince Edward Duke of Kent and other guests were visibly impressed by the expansion investments made by the leading specialty chemical company. During a guided tour of the laboratory, the Duke of Kent was able to see Sika chemists at work and learned more about the groundwork and applied research that takes place in Preston.

### Research and development at Sika

Around 800 employees at 20 technology centres around the world work in research and development at Sika. The new facility in Preston represents one of twelve Sika research centres in Europe.

There are five further R&D centres in Asia and three in the Americas. In 2013, Sika invested CHF166,1-million – 3.2% of sales – in research and development. With 73 patent applications in the past year, Sika is one of the most innovative companies in Switzerland. >



The duke of Kent recently opened a state-of-the-art research facility. On the far left is Paul Schuler, regional manager (EMEA) and Ivo Schaedler, Sika's GM UK.

## EXCELLENCE IN STEEL AND ENGINEERING INDUSTRY AWARDS

To encourage growth and celebrate excellence in the metals and engineering sector, the Steel and Engineering Industries Federation of Southern Africa (SEIFSA) has taken the initiative of introducing the annual SEIFSA Awards for Excellence.

> To foster a culture of excellence in these industry sectors, the awards offer 10 different categories and SEIFSA invites manufacturers in metals and engineering operating in Southern Africa to submit their entries.

The categories are:

- The 'Most Innovative Company of the Year' will be awarded to a company showing the highest level of innovation in research and development or production.
- The 'Health and Safety Award of the Year' will be offered to a company with the best legal compliance record in Health and Safety or the lowest Lost Time Injury Frequency Rate.
- Entries are also called from companies whose 'Corporate Social Initiative' programme bears a major impact on the lives of its beneficiaries.
- Companies rated the highest in customer performance by the industry will receive the 'Customer Service Award of the Year'.
- 'Most Transformed Company of the Year' award will be received by a company that shows the highest transformation in the composition of its Board of Directors, Executive Management and Managerial Team. This award allows for companies employing fewer than 100 people, and companies employing more than 100 companies.
- This is the Decade of the Artisan, and an award will be made to the company that has trained the highest number of artisans.
- The 'Environment Stewardship Award' will be awarded to a company that has made the biggest and best strides towards conserving the environment, and in mitigating the impact of its operations on the environment.

SEIFSA's member companies and affiliated Associations will also be honoured at the Awards function taking place in March 2015.

Commenting on the need to introduce the industry awards, SEIFSA marketing and communications executive Adelia Pimentel said: "It is of paramount importance that companies play a crucial role in socio economic upliftment and are recognised for their contributions and encouraged to continuously do more."

Companies operating in these vital economic sectors are encouraged to not only enter proposals for any one of the categories offered, but to also consider taking up the various marketing opportunities available at [www.seifsaawards.co.za](http://www.seifsaawards.co.za)

For further information please contact Alison Spratley, SEIFSA Awards Programme Director on [alison@brandivison.co.za](mailto:alison@brandivison.co.za) or mobile +27 (0) 82 467 1213



## APPOINTMENTS

### Lafarge Aggregates



Praveen Bechoo, general manager for aggregates.

### Aurecon South Africa



Dr Aman Maharaj, office manager, eThekweni.



Teboho Lemao, office manager, Bloemfontein.

### MAC Consulting



Nivan Moodley, director in business development team.

### Ash Resources



Mayibongwe Geqeza, financial manager.

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