Sunday Times

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SEPTEMBER 2020

UNLOCKING GROWTH IN AFRICA

RAIL Key to revitalising the economy

NERASTRUCTURE

CONSULTING **ENGINEERS Protect lives and livelihoods**

DWS **Developing National Eutrophication Strategy**

A Benchmark of Excellence

Nyeleti Consulting remains at the forefront of engineering excellence. Since its inception over 21 years ago it has established a firm footprint across South Africa and neighboring Mozambique. Nyeleti as a majority black owned, Level 1 B-BBEE status contributor, continues to live up to the high aspirations of the firm's slogan *"Engineered to Excel"*, by exceeding the expectations in the professional services delivered to our Clients.

Specializing in civil engineering infrastructure, Nyeleti is able to provide multi-disciplinary professional built environment services and boasts a proud track record of being involved with various flagship projects across various sectors. We firmly believe that the challenges of the 21st century can be addressed through a holistic approach to engineering facilitated by the vital role that civil engineers play in contributing towards sustainable and stable communities.

Through its legacy of continued transformation and mentoring Nyeleti has established a pipeline of young professionals that will ensure the sustainability of Nyeleti's commitment to excellence.

Fields of expertise:

- Road and bridge infrastructure design
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- (water, stormwater & sewage)
- Building structures and wet services (new construction and rehabilitation)
- Project and construction management
- Traffic and transportation engineering
- Structural engineering forensic investigations
- Silo, cooling tower and chimney design
- and rehabilitation
- Occupational health and safety

Nyeleti has access to further expertise and specialist services in various other built environment disciplines, through associations with local and international companies on a project related basis, enabling us to undertake any major multi-disciplinary projects.





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to play in stimulating the economy and

advocates a road-to-rail shift.

(pg 10).

Such a move would reduce the

cost of doing business, promote

economic growth, and mitigate

the impact of climate change

escalate, we ask the question:

What is government doing in

Mariette Liefferink, the Department of

Water and Sanitation is busy developing a National

eutrophication of South Africa's water resources

to stimulate the economy, Consulting Engineers

about the importance of consulting engineers,

stating that the failure to access their technical

According to CESA's Chris Campbell, industry

continues to record more frequent incidents of

structures collapsing and people being killed or

South Africa (CESA) is quick to remind the country

knowledge and skills sets for especially big projects

will be detrimental to infrastructure developments.

And with so many potential options on the table

Eutrophication Strategy aimed at providing

guidance on how to manage the effects of

this regard? According to the FSE's

Meanwhile, as our water woes

international trade, reignite

INFRASTRUCTURE

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WAITING FOR INFRASTRUCTURE OPPORTUNITIES TO KNOCK ON THE DOOR

(pg 8).

injured (pg 2). 🔳

Nelendhre Moodley

he construction sector fared the worst of all the sectors for the second quarter of 2020, declining by more than 30% compared to the same quarter in 2019. According to the Afrimat Construction Index compiled by economist Dr Roelof Botha, although the construction sector has taken a massive hit as a result of COVID-19,

the fourth quarter is expected to be a bumper one. This is largely because contractors and builders will be playing catch-up on lost construction time and government is expected to fast-track project roll-out.

Although the sector contributes a small portion to GDP, currently only 3%, it is a crucial enabler of downstream economic activity, especially as it pertains to capital formation, which is why government has identified infrastructure as a key priority for the country's economic recovery plans, says Botha.

Some R340-billion has already been earmarked for projects touted to start before the end of October 2020.

Interestingly, manufacturer of business jets and rail Bombardier believes that rail has a key role



CONSULTING ENGINEERS: **PROTECTING LIVES AND** LIVELIHOODS



NEW BOARD MEMBERS FOR NYELETI CONSULTING



UNPACKING THE LATEST **DEVELOPMENTS IN WATER**



INFRASTRUCTURE

CONSULTING ENGINEERS PROTECTING LIVES AND LIVELIHOODS



he absence of technical expertise in the procurement of infrastructure is starting to have an increasingly adverse effect on the quality and sustainability of our country's infrastructure. In addition, if you are not using the correct design principles and not making use of consulting engineers to achieve an optimal and innovative design at a costeffective price for your project, you are essentially trading with the lives and livelihoods of our population. We need to be building quality and sustainable infrastructure that stands the test of time and not risking the health and safety of our population.

It is becoming apparent that some decision makers in government appear to be only focusing on the creation of jobs through their infrastructure development goals as a means for economic recovery, which admittedly is what is needed in the short term. However, there is a need to place greater emphasis on the long-term economic growth and the subsequent sustainable jobs that would arise from the benefits of having functional infrastructure in place.

The creation of jobs during the infrastructure build programme is temporary during the construction phase, however the key issue is promoting better accessibility, increased competition in ICT systems, providing safe and reliable transport systems, together with security of supply of both electricity and water.

These elements will be the catalyst for longterm sustainable jobs, not only in the maintenance of the infrastructure but in the other commercial and industrial sectors that are dependent on all of the above. While many of these are considered as economic infrastructure development, we should not lose sight of the need for sustainable and affordable housing, schools and hospitals as the current supply falls far short of the demand.

Further, it would appear that in the cautious approach to addressing corruption in the public sector, procurement of the services of consulting engineers and contractors for executing the various infrastructure projects, major state-owned entities such as SANRAL and ESKOM have found themselves "painted into a corner". This is through the exclusion of



their own technical personnel in the processes, given that their procurement personnel in most instances lack the specific technical knowledge to reliably provide the best information and make the best decisions in the infrastructure investment processes.

This is further exacerbated when there is the flawed generic reference to consultants being expensive. In essence using an engineering consultant to assist in making decisions where you lack the knowledge and expertise in-house is a necessity, and realistically makes up less than 2% of the cost of ownership of the infrastructure being developed which will last for the next 30 years.

"ENGINEERING SKILLS IN THE DISCIPLINES OF CIVIL, ELECTRICAL AND MECHANICAL ARE IN SHORT SUPPLY." – CAMPBELL

The role of the engineering consultant is indeed to assist in deriving savings in the other 98% of the total cost of ownership over the lifetime of the infrastructure.

Poor scope of services, onerous bid conditions, lack of clarification from lead procurement personnel and non-payment are but a few aspects of a long list of issues that point to a lack of skills and knowledge in both procurement and engineering in individual personnel appointed to be the custodians of procurement processes.

The reality, of course, is that firstly not only are engineering skills in the disciplines of civil, electrical and mechanical in short supply, but finding people with combined, specific knowledge of public procurement processes and infrastructure-specific competencies is even harder. While procurement departments should ideally be the custodians of the process, the process must be informed by engineers, legal and financial internal staff, to ensure that the most efficient

decisions are effected.

Docklands 70 Prestwich Street Apartments.

The ongoing veil of secrecy and delays in translating words into action do little to instill the confidence of the public and investors in the pronouncements made regarding the focus on infrastructure development as a catalyst for economic growth. What is glaringly absent is some sort of roadmap with timelines and targets for us to gauge how seriously our economic problems are being addressed. The time has come to "walk the talk" as we achieve nothing by only "talking the talk".

In encouraging foreign direct investment, we need to ensure that when foreign investment entities bring along their professional service providers and contractors, it must be done in partnership with local industry.

Although we anticipate that most of the funding is going to come from local sources where upwards of R4.7-trillion is available, we will need investment from offshore sources as well.

During the current pandemic the constant message we have received from the president's office is that of "protecting lives and livelihoods". We want to extend this adage to issues of health and safety in relation to adequately designed and constructed infrastructure in our new-build processes and in the timely maintenance of existing infrastructure. We have already noticed the result of this neglect, with more frequent incidents of structures collapsing and people being killed or injured. Likewise, ongoing and timely build and maintenance programmes also serve to preserve jobs and the livelihoods of the many families that depend on sustainable infrastructure for ensuring a growing and healthy economy.

SMEC SOUTH AFRICA **REDEFINING EXCEPTIONAL**

CMEC South Africa is a multi-disciplinary professional services firm and Dprovider of specialist transport, energy, water and urban infrastructure solutions. Leveraging its more than 70-year history of delivering nationbuilding infrastructure, the company provides technical expertise and advanced engineering services to resolve complex challenges within all areas of infrastructure, including roads, highways, rail, airports, urban, water and renewable energy markets. Through its network of global specialists and by collaborating with local partners, SMEC connects companies with the best teams and capabilities to deliver highly innovative and sustainable solutions.





At the core of its business is what the company calls The SMEC Spirit, which is evident in its people, values and culture. The SMEC Spirit captures a strong sense of identity, which drives transformation, performance, technical excellence, and an innovative and determined approach to exceptional service delivery.

As a Level 1 B-BBEE-rated company, SMEC supports and actively promotes government's objectives to enhance the economic participation of black South Africans in the economy.

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Consulting Engineers South Africa

CESA promoting Quality and Integrity for Sustainable cost-effective Infrastructure, advocating:

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NYELETICONSULTING

WELCOMES NEW BOARD MEMBERS

ith a 21-year history of technical excellence in the built environment, Nyeleti Consulting is welcoming three new members to its board of directors, who are set to continue the company's strategic vision. Founded in 1999 with the vision to transform the consulting engineering industry, the board showcases the accomplishments of the company founders and the technical expertise of its vibrant team.

The board comprises long-standing Nyeleti executives who have seen great professional development and mentoring through their years at the company.

THE BOARD CURRENTLY CONSISTS OF:

- Abe Thela chairperson, Consulting Engineers South Africa (CESA) past president and FIDIC Africa vice-president
- Sundran Naicker CEO, SAICE past president
- **Stephen Humphries** CFO
- Leshna Naicker HR director

THE THREE NEW BOARD MEMBERS ARE:

- Rajan Padavattan COO
- Francois le Roux financial director, CSSA vicepresident
- Gengan Govender operations director

MENTORING PAYS OFF: A LEGACY CONTINUED

Founders of the company Stanford Mkhacane and Pine Pienaar remain non-executive directors. Nyeleti Consulting was founded in recognition that transformation in the consulting engineering industry needed to be urgently worked on in the new democratic age. Mkhacane and Pienaar left their positions as senior managers at existing organisations to start the company 21 years ago. Beginning with just three people, Nyeleti Consulting quickly grew, with many of those who joined in the early years now appointed to the board.

Pienaar says: "The move towards an inclusive and expert board started years ago through continued mentoring and coaching of young talent within the company. From early on, Nyeleti held a strategic imperative to encourage a pipeline of diverse young professionals to be groomed for executive and decision-making roles. It is with great pride that I see many of those whom we as founders personally mentored now entrusted as board directors to continue this legacy. Right from the start, we provided broad shareholding opportunities for staff in the organisation with a deliberate vision and effort to prepare them to take over the company."

CEO Sundran Naicker says the new board plans to continue this strategy, which has been successful in empowering an inclusive and diverse group of young up-and-coming professionals. "We are passionate about ensuring there is a dedicated and skilled pipeline of professionals ready to embrace management opportunities and provide input and ideas in our decision making. Through mentoring our younger co-workers and promoting knowledge sharing, we are ensuring business continuity while also setting the example for transformation in the industry." Nyeleti's leadership team, including three new board directors.

"NYELETI ENCOURAGES A PIPELINE OF DIVERSE YOUNG PROFESSIONALS TO BE GROOMED FOR EXECUTIVE AND DECISION-MAKING ROLES." – PIENAAR

ENCOURAGING PROFESSIONAL DEVELOPMENT AND INDUSTRY INVOLVEMENT

The proudly South African company competes with international names and has worked on a number of notable infrastructure projects including the Gautrain project, the ReaVaya public transport network, the national and provincial roads network and Medupi and Kusile power stations. Comprising over 75% black staff including technical staff and women, Nyeleti Consulting prides itself on the wideranging and engaging exposure it provides to new graduates and engineering technologists. Further, the directors actively encourage their younger team members to pursue post-graduate studies, attend conferences and workshops for professional development, and gain their professional registrations. With both CESA and SAICE past presidents on the board, the company also encourages involvement in voluntary associations, acknowledging the role these bodies play in skills development, networking and mentorship.



a world class African city

CONSTRUCTION FOR JABULANI TRANSIT-ORIENTED DEVELOPMENT (TOD) FORGES AHEAD

Development projects in Johannesburg attract investment, and investment attracts development and infrastructure.

This is the sentiment of Cllr Lawrence Khoza, the Member of the Mayoral Committee for Development Planning, following his site visits of the Jabulani Transit-Oriented Development (TOD) and the Selby Rea Vaya Bus Rapid Transit (BRT) depot.

The development projects, implemented by the Johannesburg Development Agency (JDA) on behalf of the City of Johannesburg, form part of its focus on systematically changing the spatial landscape of the city, to give citizens more equitable access, increase economic activity, promote sustainable livelihoods and reduce dependence on finite resources, in the context of building a resilient, low-carbon economy.

The JDA is guided by the overarching frameworks of the National Development Plan, the Gauteng 2055 vision, the City of Johannesburg's Growth Development Strategy 2040 and Spatial Development Framework. A key enabler of the City's Joburg 2040 vision, the TODs seek to establish vibrant, liveable communities living in compact, walkable neighbourhoods, centred on high-quality transport systems.

The JDA is forging ahead with the development of the Jabulani Node – one of the City's signature projects for using transit-oriented development (TOD) as a catalyst to accelerate socio-economic development by revitalising a neighbourhood for residents, commuters, businesses and visitors.

The Jabulani TOD in Soweto is being undertaken in seven phases and is currently at Phase 6B and Phase 7 of development. Phase 6B, currently at 40% completion, entails the development of a community and recreational environment for people of all ages, consisting of a Jabulani Community Facility and a SAFA Safe Hub. This community facility includes a multipurpose hall, with a basketball court, changing rooms and tiered seating, a library, counselling facilities, offices and meeting rooms, aligning with the JDA's principle of creating public spaces that are creatively designed and move towards greater adaptability and multiplicity of use, to ensure their longer-term sustainability.

The SAFA Safe Hub element of the building will consist of changing rooms, internal and external entertaining spaces, a kitchen and coffee bar, workshops, computer/IT rooms, a training centre and other amenities.

The construction of Molapo Bridge (Phase 7), now at 42% completion, entails extending and upgrading an existing pedestrian bridge over a railway line, building a new pedestrian and vehicular bridge over a railway line, and new approach roads and public environment upgrade.

JDA CEO Anthony Ngcezula, who joined Khoza on the site visits of the Jabulani Node, said the entity plays a critical role in area-based development/s, as part of essential municipal services, via the implementation of strategic capital works projects for the City of Johannesburg Metropolitan Municipality and its entities.

"The main objective behind all these developments is to create a safe, attractive, liveable environment that encourages owners to upgrade their buildings, improve social cohesion and encourage further investment in the area," Ngcezula said.

Phase 6B and Phase 7 of the Jabulani TOD development will supplement the various developments that have taken place in the area. These include Jabulani Views, Jabulani Mall and the Soweto Theatre – all of which are conveniently located next to the main BRT route running through Soweto and connecting with Johannesburg's CBD.





a world class African city



The various developments are also playing a role in job creation and skills development, with 30% of the contract value being awarded to SMMEs.

Khoza expressed his delight at the resumption of the delivery of key projects that are critical for improving the quality of life for the residents of Johannesburg.

"The Jabulani TOD places emphasis on precinct-based development, working with stakeholders to enhance areas and address local challenges and needs in a sustainable way through the JDA'S capital investments," said Khoza.

Khoza said JDA projects were important for the city, and also for social integration and economic inclusion.

"Our people across the city get to see the dividends that our democracy promises. That should be the case with all areas in Johannesburg. We know

that there were delays as a result of the national lockdown. It was important for us to formulate a recovery plan to ensure that these projects are finished within a reasonable time in order for us to focus on other projects. We are very happy to see development and infrastructure being brought to our people," said Khoza.

Khoza said the building of a socially and economically inclusive, forwardlooking City of Johannesburg was the greatest mission of the Government of Local Unity. He added that the TOD was one of the City's signature projects for using TOD as a catalyst for attracting investment into an area, while improving the quality of life of local residents.

"The Jabulani TOD is one of the flagship projects that the City is implementing, in partnership with National Treasury's Neighbourhood Development Partnership Grant. It is aimed at unlocking the township







Lawrence Khoza - MMC Development Planning.

economy, as well as unlocking dormant land to private developers. The provision of base infrastructure and upgrading of storm water, roads and public environment provide the requisite environment for private sector investment. To date it has attracted investment in projects such as the Jabulani Mall, Jabulani Retail Centre, high-density residential apartments and Jabulani Theatre," said Khoza.

He said the JDA had put together a dynamic team of professionals, which included urban designers and engineers, to reimagine the area – the conclusion of which was the finalisation of the Jabulani Urban Development Framework (UDF). The Jabulani Multi-Purpose Centre – with a community hall, soccer pitch, and aquatic centre – all resulted from the UDF. He said the community now benefited not only from enhanced economic activity, but social and development facilities as well. The community, especially those in the Gap Market, now have access to decent housing opportunities.

Khoza highlighted other projects that his department was overseeing, such as the major environmental upgrade around the Gandhi Square area, the Inner City Core Phase 2 Environment Upgrade, as well as the City's Emergency Medical Services project that is being undertaken, with a view to build a completely new fire station in the inner city. Further to this, he said, were the major Rea Vaya Bus Rapid Transit projects that were being implemented by the JDA. "They are not only changing the spatial character of the city – but enhancing social and economic inclusion as well. The Watt Interchange in Marlboro is also one of the City's key projects. Communities in and around the interchange will have a safe commuting environment, less congestion, as well as a healthy lifestyle," said Khoza.



WATER CONSERVATION

UNPACKING THE LATEST DEVELOPMENTS IN WATER

By Nelendhre Moodley

s South Africa's water crisis deepens, the foremost question remains: are measures that have been put in place to address the situation moving apace? Infrastructure recently caught up with the CEO of the Federation for a Sustainable Environment (FSE) Mariette Liefferink to unpack some of the most recent developments related to the National Eutrophication Strategy and acid mine drainage.

NATIONAL EUTROPHICATION STRATEGY

One of the key developments under way includes the development of a National Eutrophication Strategy. According to Liefferink, the Department of Water and Sanitation (DWS) is in the process of developing the strategy, which will provide guidance to the DWS and the water sector at large on strategies to avoid, reduce, mitigate and manage the effects of eutrophication of South Africa's water resources.

"Sixty-two percent of South Africa's large dams are currently eutrophic or hypertropic. Climate change will exacerbate eutrophication."

Eutrophication is defined as a process of nutrient enrichment and the associated excessive plant growth such as algae and macrophytes in water bodies, which can be seen as either a natural ageing process in lakes or accelerated by human impacts.

Factors influencing eutrophication are high nutrient concentrations, prolonged periods of water stagnation, conducive temperature, oxygen concentration and proper light regime.

Eutrophication has been recognised as a priority water quality problem for over 30 years with wastewater effluents contributing substantially to the situation. "The policy and approach to eutrophication control has been said to be inadequate for over the last 20 years. The need for nutrient attenuation interventions or remedial interventions is long overdue and is likely to be extremely costly," says Liefferink.

The strategy gives effects to the draft Integrated Water Quality Management (IWQM) Policy (2016) and Integrated Water Quality Management Strategy (2017).



R6.6-BILLION CAPEX REQUIREMENT TO ADDRESS AMD

LATEST DEVELOPMENTS ON ACID MINE DRAINAGE (AMD)

Given South Africa's mining history, AMD-related issues continue to adversely impact the East, Central and West Rand.

In recognition of the challenges associated with AMD in the Witwatersrand, an inter-ministerial committee was formed in September 2010. In February 2011, Cabinet approved specific recommendations made by the team of experts in the short term for managing AMD in the Witwatersrand, including the need for a Feasibility Study for a Long-Term Solution (LTS) to address the AMD associated with the East, Central and West Rand underground mining basins.

The short-term intervention commenced around 2012 in the Western Basin, in 2014 in the Central Basin and in 2016 in the Eastern Basin of the Witwatersrand goldfields.

The short-term intervention reduces the concentration of metals and neutralises the acid mine drainage. It's being operated by Trans Caledon Tunnel Authority (TCTC) on behalf of the DWS.

The feasibility study for a long-term solution completed in July 2013 recommended the construction of desalination plant/s to treat acid mine drainage abstracted via the shortterm intervention infrastructure to a potable or industrial standard as a long-term solution for the salinity impact of AMD on the Vaal River System. Implementation of the long-term solution will reduce the need for dilution releases from the Vaal Dam and will augment water supplies to the Vaal River System, delaying the need for further augmentation. The long-term solution was scheduled for implementation in 2014/2015, however the process was hampered due to factors including the DWS proposal for further studies on the impact of the effluent from the short-term intervention on the Vaal River System





"SIXTY-TWO PERCENT OF SA'S LARGE DAMS ARE CURRENTLY EUTROPHIC OR HYPERTROPIC." – LIEFFERINK

that the total dissolved solids' (TDS) load into the Vaal Barrage System from the Central and Eastern Basin showed that virtually no dilution was required from the Vaal Dam to dilute the high levels of salinity, the Integrated Vaal River Reconciliation Strategy Steering Committee (IVRS SSC) recommended a comprehensive recalibration of the salinity model for the Vaal Barrage Catchment.

Given that AMD treatment plants contribute 362 tonnes per day of TDS, this was a surprising finding, she says.

TDS refers to total dissolved solids and represents the total concentration of dissolved substances in water. TDS is made up of inorganic salts, as well as a small amount of organic matter. The DWS and the Water Research Council



AMD

Acid mine drainage, acid and metalliferous drainage, or acid rock drainage, is the outflow of acidic water from metal mines or coal mines.



(WRC) subsequently appointed a team of experts to undertake a situation assessment on the AMD in the Witwatersrand as well as to update all information from the time that the AMD mitigation process started in 2010.

"The Vaal Barrage dilution model review concluded that updating and recalibration of the requisite planning models for the Integrated Vaal River System (IVRS) is necessary to support informed decision making regarding the magnitude and timeline for the AMD long-term solution implementation. The procurement process relating to further studies that were scheduled to commence in April 2020 have been delayed due to COVID-19. This process is receiving urgent attention and should be back on track as soon as possible. Although final decision making on the desalination of AMD is reliant on this study, in the absence thereof, a phased approach by means of package plants could be followed should it be necessary to protect the environment and/or to augment the Vaal River System with potable water."

ACCORDING TO THE DWS, THE NEXT STEPS IN THE IMPLEMENTATION OF THE LONG-TERM TREATMENT OF AMD ARE:

- The short-term interventions for all three underground mining basins must continue.
- Ingress control interventions must be implemented as a high priority.
- The raising of the environmental critical level should be investigated.
- New and innovative treatment solutions should be piloted and developed.

and National Treasury's unwillingness to fund the two-thirds capital and operating costs or have the costs included in the Vaal River System. The environmental impact assessment (EIA) activities relating to the long-term solution were also suspended.

According to Liefferink, the capital expenditure (CAPEX) and operational expenditure (OPEX) costs for the long-term solution to address AMD associated with the East, Central and West Rand underground mining basins are estimated at R6.6-billion for CAPEX and R990-million per annum for the operational costs for the short-term intervention and long-term solution.

Unpacking the latest developments relating to AMD, Liefferink notes that following the finding

STIMULATING THE ECONOMY **RAIL IS KEY** By Nelendhre Moodley



LKAB Kiruna mine locomotive.

ollowing the devastating impact of COVID-19, government has identified infrastructure development as a key enabler to economic recovery and earmarked R2.3 trillion to stimulate growth. Infrastructure recently caught up with Tomas Badholm, Africa Region head at Bombardier Transportation, to chat about developments in the rail sector and how it can help revitalise growth.

HOW IMPORTANT IS FREIGHT RAIL TO AFRICAN **COUNTRIES' ECONOMIES?**

It's critical to the ongoing development of economies, especially in the wake of the COVID-19 pandemic. We believe governments should be eyeing a significant road-to-rail shift. This would reduce the cost of doing business, promote international trade, reignite economic growth, and mitigate the impact of climate change given that rail transport is less carbon-intensive than road transport. All round, key economic and social drivers need to be considered.

Most stakeholders understand the need for rail but funding remains a burden. There is a renewed importance for public private partnerships (PPPs) to help advance freight rail in Africa, as this would help accelerate the development of the economy and create employment opportunities across the continent.

PPPs are essential to help continue building and implementing new infrastructure, to allow for freight rail to take place across countries, renovate older infrastructure, and also operate and maintain existing transport infrastructure and facilities. What is needed now is a focus on unlocking the wealth of capabilities, expertise and funding that exists in the private sector.

IS THERE OPPORTUNITY TO EXPAND THE RAIL **OFFERING TO ACCOMMODATE A VARIETY OF OTHER PRODUCTS NOT CURRENTLY EXPORTED VIA RAIL?**

Typical products that are currently transported via rail in Africa include ore from the mines, commodities, agricultural and industrial products and consumer goods. There is an opportunity to expand on this list but we would need the infrastructure to support it. As one ventures into increasingly complex products, time sensitivities and logistical conditions become a major factor. Furthermore, we have to think about safety. Are we providing the security for high-value products that manufacturers want to see?

Swift transportation of products between countries (which would be possible once the African Continental Free Trade Area (AfCFTA) agreement has been advanced) is a reality, but we need to partner with governments to ensure that we are creating an environment that makes rail an attractive mode.

For new rail projects on the continent, there is a focus on increasing the average speed for freight trains to make rail transport more attractive and times between the destinations more predictable. Another important factor is to reduce the time for custom clearance between landlocked countries, as this can make freight transit more difficult.

IN TERMS OF INNOVATION AND TECHNOLOGY, HOW FAST IS FREIGHT RAIL ADVANCING? WHAT **KEY DEVELOPMENTS HAVE RECENTLY BEEN ADVANCED?**

Automation, liquid natural gas, biodiesel and hydrogen fuel are evolving quickly; this is certainly the space to watch. These can all be complementary

"GOVERNMENTS SHOULD BE EYEING A SIGNIFICANT ROAD-TO-RAIL SHIFT." - BADHOLM



solutions to increase the reach for the railway where electrification is not a financially viable option due to high investments in infrastructure.

Liquid natural gas is another factor being explored in trains, as the sector is looking to reduce fuel prices and emissions and using this gas allows them to do so. However, additional safety regulations would need to be created for organisations that would introduce this into their product offering to protect staff, as it can be dangerous.

Hydrogen fuel cells are another breakthrough in the industry, as they provide continuous power supplemented by a battery for peak power. Hydrogen fuel cells are attractive as they produce zero emissions other than water and are more energy-efficient than combustion engines, as liquid hydrogen can be created using renewable energy resources, which makes it attractive to train manufacturers.

Biodiesel is another renewable energy source, with sources such as rape, soya, corn and palm oil available on the continent. This can be an alternative source of fuel for a modern fleet of locomotives, if investment in biodiesel plants is put in place.

DOES THE AGREEMENT ESTABLISHING THE AFRICAN CONTINENTAL FREE TRADE AREA (AFCFTA) HAVE ANY IMPACT ON FREIGHT RAIL?

Africa is on the cusp of launching a free-trade zone that could meaningfully boost economic growth and unlock the continent's vast potential.









Slashing intra-regional trade tariffs is an important first step, and one that should be applauded – but other interventions are needed for the AfCFTA to be a success. Perhaps the most pressing requirement is the need for better transportation links between African states, particularly in the form of rail networks. So yes, the AfCFTA will put pressure on good rail infrastructure (including freight rail).

A reliable rail network would allow for the efficient movement of goods across the continent, while also improving Africa's links to the rest of the world, particularly the continent's landlocked nations. Rail is also a sustainable solution given that it is far more environmentally friendly than road and air transport – Africa's natural environment is one of its greatest assets, and it must be protected.

Ultimately, rail's contribution towards an integrated transport network will help Africa to attract investment and to be competitive in the global trade arena.

HOW COMPETITIVE IS YOUR INDUSTRY AND WHAT IS BOMBARDIER'S COMPETITIVE EDGE?

The rail industry is very competitive, as it is filled with long-standing reputable railway players, as well as emerging players that are eager to collaborate with governments and the private sector.

Innovation and collaboration are key to surviving in the railway business.

Bombardier Transportation has a competitive edge as we continue to provide innovative and

integrated rail mobility solutions that create substantial benefits for operators, passengers and the environment.

For the mining industry, Bombardier provides cost-effective, streamlined and flexible solutions in its portfolio that optimise the movement of ore and freight, within a mine, from mine to port and across country borders, making the company a key contender in the freight railway industry.

The efficient movement of freight 24 hours a day, 365 days a year is essential to a modern and productive resource industry. Bombardier specifically designs industrial and mining rail control solutions to optimise and maximise the rapid transport of raw materials to enable fully automated, continuous, efficient and streamlined productivity. We ensure that our solutions provide greater cost-efficiency, speed and capacity as well as increased availability.

Bombardier's globally proven INTERFLO rail control solutions are the optimal choice for moving goods efficiently along heavy haulage mainlines, using the latest communicationsbased technology with a minimal wayside equipment footprint, while offering maximum rail capacity.

As well as offering the latest in mainline rail control solutions that support national and crossborder freight operation, leveraging the quality of our automated systems, we have a dedicated rail control solution helping mining operators to maximise their assets and capacity, intensifying ore extraction and freight transportation. The dedicated INTERFLO 150 solution for industrial and mining operations provides a step change in rail productivity by enabling flexible and automated operations, fully integrated integration with a mine's loading and unloading systems. These systems achieve significant productivity benefits and major safety improvements, enhancing capacity in operations within the mine and from mine to a next destination. They are also scalable, making it cost-effective in mines of varying size and grades of automation around the world.

WHAT ARE SOME OF THE CHALLENGES FACED BY FREIGHT RAIL OPERATORS?

Investment in the railway sector has always been a key challenge for the industry, and with COVID-19 it has made it even more of a challenge as the sector (including the freight rail) relies on huge initial capital investments.

With African governments' resources increasingly constrained due to the outcome of the COVID-19 crisis and the responsibilities they have towards their citizens, there's a reduced appetite to invest in freight rail. One solution that could be further explored is the public-private partnership approach.

Other challenges for the freight rail industry include infrastructure development and maintenance, service delivery issues, theft or pilferage problems, government policy as well as organisational policy issues and the preference that organisations have to transport goods via trucks.

OVER \$4.5-BILLION VALUE OF A CONTRACT TO BUILD AND OPERATE TWO MONORAIL LINES IN EGYPT

HIGHLIGHT SOME PROJECTS THAT BOMBARDIER HAS COMPLETED RECENTLY?

As a leader in rail technology, Bombardier offers a broad portfolio of rail solutions, providing integrated solutions to address the latest challenges faced by railway infrastructure owners and operators.

From a general rail project perspective, last year August (2019), a Bombardier-led consortium won a contract to build and operate two monorail lines in Egypt for more than \$4.5-billion. The project includes a 54km monorail system connecting the New Administrative Capital with East Cairo and a second 42km line linking the city with Giza.

Another important market for Bombardier is as a key supplier for rail solutions that will enable higher-speed and cross-border operations across



Europe's key transport corridors. This will increase mobility across the continent for the movement of both people and freight.

In addition, Bombardier has been delivering the TRAXX Africa locomotives to Transnet Freight Rail as part of South Africa's rail modernisation plan. The localised manufacturing for the project is contributing towards skills development in the country and broad-based black economic empowerment (B-BBEE) programmes.

The locomotives are being used to transport freight on South Africa's long routes between its mines and ports.



ANY OTHER INFORMATION YOU WISH TO IMPART?

The economic crisis Africa is facing as a result of COVID-19 requires new ways of thinking and better collaboration between all stakeholders. For Bombardier, infrastructure development should lead Africa's economic recovery and job-creation efforts. We would urge governments and the private sector to prioritise high-impact segments of the market such as rail, and Bombardier Transportation commits to playing its part in helping Africa get back on its feet. Despite several difficult years, made worse by the COVID-19 pandemic, the continent is brimming with potential and the private sector is ready to put forward funding and skills as soon as it is given the opportunity. The time for action has come. ■

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We provide technical expertise and advanced engineering services to resolve complex challenges within all areas of infrastructure, including roads, highways, rail, airports, urban, water and renewable energy markets.

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Redefining Exceptional



CONGRATULATIONS!

AWARDS

POWERMENT & RECOGNITION WOMEN IN CONSTRUCTION

The cidb would like to congratulate the winners of the Empowerment and Recognition of Women in Construction Awards



PROJECT DELIVERY EXCELLENCE OF THE YEAR – WOMAN-OWNED CONSTRUCTION ENTITY GRADE 1

- Phindile Cindi PCA Trading and Projects
- Nthabaleng Pitso Rejangmmoho Multi Trading (PTY) LTD
- Dineo Letsholo Dineo Ya Rona Trading

PROJECT DELIVERY EXCELLENCE OF THE YEAR – WOMAN-OWNED CONSTRUCTION ENTITY GRADE 2 - 4

- Mikateko Rosemary Mabunda Mikateko Trading Enterprise
- Thuli Ntanzi Khalisi Holdings &
- Nkgomeleng Julia Petla Amedzo Trading & Projects Patricia Satekge Masoko • Masoko Constructions CC

PROJECT DELIVERY EXCELLENCE OF THE YEAR -

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- Nokuthula Mahlangu Elezulu Construction
- Rachel Molamu Mercycon
- Ouma Sophie Sibanyoni Mamolato

PROJECT DELIVERY EXCELLENCE OF THE YEAR – WOMAN-OWNED CONSTRUCTION ENTITY GRADE 7+

 Thobekile Ndlovu - Thobethulani Trading & Impressing Designs

RURAL PROJECT OF THE YEAR

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- 2 Nokuthula Mahlangu Elezulu Constructions
- Mikateko Rosemary Mabunda Mikateko Trading Enterprise

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- 1 Ramatsobane Innocent Mpe Ramatsobane Developers
- **2** Lettie Mashau Motheo Construction Group
- Nosiphiwo Sixhaso Hlumantombazana Civil & Construction

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- Lebogang Bridget Zulu Tshitshirisang Construction & Projects
- Pana Skosana Conscience Building & Projects

YOUTH-OWNED WOMAN CONTRACTOR OF THE YEAR

- **1** Precious Seapose Liviya Projects
- 2 Ayanda Nkomo Empower Electrical
- Sihle Makhanya Makhanya Trading & Projects

WOMAN-OWNED CONTRACTOR OF THE YEAR

- Revona Botha Robus Engineering Training Services (PTY) LTD
- 2 Lebogang Bridget Zulu Tshitshirisang Construction & Projects
- € Celeste Margo LeRoux React24

WOMAN MENTOR OF THE YEAR

- Celeste Margo LeRoux React24
- **2** Thobekile Ndlovu Thobethulani Trading
- Thato Mokhothu
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