

MINING

REVIEW AFRICA

Editor's choice projects

De Beers – Venetia Underground Project

Sibanye-Stillwater/DRDGold – WRTRP

Pan African Resources – Elikhulu

Endeavour Mining – Houndé

Aura Energy – Tiris

B2Gold – Fekola



Mining and environmental consulting pioneers



IN THE SPOTLIGHT P8



“ We will argue our position on policy with great passion,” **Mark Cutifani, Anglo American chief executive**

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Investing in African
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KNIGHT PIÉSOLD

Mining and environmental consulting pioneers

Environment consulting specialist **Knight Piésold** is today recognised as the ‘consultant of choice’ in the mining sector – thanks largely to the skills sets and experience it has built up over almost a century (96 years to be exact). This has positioned the firm as a leader in its fields of expertise and enabled it to stay fully in tune with the changing needs of the countries and landscapes it operates in. This is highly pertinent to the mining industry and explains the company’s on-going success, despite the lingering economically challenging environment, writes **LAURA CORNISH**.



Knight Piésold MD Vishal Haripersad and mining technical director Andrew Copeland on site in Palaborwa

“**T**o work with Knight Piésold is making the choice to work with a truly South African firm that is globally connected. We offer our clients the best people, the best value and the best service quality,” says MD Vishal Haripersad.

The company prides itself on being the oldest consulting firm in South Africa and also one of the oldest locally owned (100% South African owned and managed) firms on the continent. As a Level 2 black economic empowered firm and service provider (continuously since 2010), the company considers itself completely transformed. This has undeniably enabled it to cement its standing relationships in the mining sector in particular, which in many instances extends well beyond 40 years, says mining technical director Andrew Copeland.

“This speaks volumes about the nature and quality of work and the emphasis and priority we place on building relationships – which enables us to assist clients, understand what they need and provide the best value for money. This is incredibly important in an environment driven by the constant pressure to lower costs while

improving services,” Haripersad highlights.

It is also over Knight Piésold’s lengthy establishment that it has been able to assert itself as a leader and pioneer in systems and technologies that enhance its service offering and deliver greater value-add to the industry. “We are leaders in specialised areas including mine residue, heap leach facilities, environmental impact assessments and geotechnical engineering. This means we are able to cover a broad range of areas that most engineering companies do not have in-house. This places us in a unique position and as such we want to continue specialising in these areas to ensure we maintain our front-leading place in the sector.”

Pioneers at heart

Knight Piésold pioneered cycloned tailings facilities, an initiative which although first introduced and implemented in the 1970s remains a widely used methodology today across the globe. “We are subsequently a leader in this field.”

No other engineering consultant designs and delivers siphon decant systems for tailings storage facilities either. The system



Siphon systems in operation





Ash landfill site and water management system

detailed water balances and dam breach assessments for these facilities is becoming far more common as a result," Copeland explains.

The science and analysis of dam breach assessments is not well advanced or developed to the point where there is a globally accepted analysis method. Current software deals well with Newtonian fluids (water) but not as yet the heavily solids laden water (non-Newtonian fluids) that flows during a TSF breach.

Knight Piésold has developed an in-house procedure based on

allows water to decant off the facility using gravity and as such has minimal energy requirements and does not require the traditional outlet pipe exiting through or under the perimeter wall "which is frowned upon by certain clients/countries". Having recently installed a system for a mining project in South Africa, Knight Piésold has been awarded a contract to deliver a similar installation to a project in Botswana. "The system has proven itself and some 20 years after its first installation in Phalaborwa is considered innovative. It is also gaining popularity as power costs (and interruptions) continue to challenge the mining sector," Copeland highlights.

He continues, adding that the company is also a leader in developing cost effective solutions to protect ground water – another area gaining momentum and importance in the industry. This entails looking at plastic-alternative lining systems such as single to triple linings on hazardous facilities or even looking at managing ground water to prevent it from polluting the environment using abstraction systems to manage the ground water.

"The Department of Water Affairs in South Africa has indicated their desire to work with companies to find such cost effective solutions and alternatives."

Upping the game on monitoring and analysis

"Major tailings storage facility failures in recent years have triggered a response to better understanding what happens in the event of a failure and how to prevent it. In most cases, the primary driver of these failures is linked to mismanagement of water or not adequately providing for extreme rainfall events. Carrying out

the state-of-the-art knowledge and understanding of this phenomenon and so considers itself a leader in this field.

"Understanding the water balance of the tailings storage facility and the greater mine is critical to making operational and business decisions affecting water management. Knight Piésold has developed countless water balance models for projects all over the world, ranging from simple spreadsheet based models to advanced probabilistic models using GoldSim or similar software," Copeland points out. "I hope that this will lead to improved standards in managing tailings dams, which is what the international mining sector and industry bodies are showing a preference for."

“ To work with Knight Piésold is making the choice to work with a truly South African firm that is globally connected. We offer our clients the best people, the best value and the best service quality,” Vishal Haripersad



Environmental impact assessment specialists

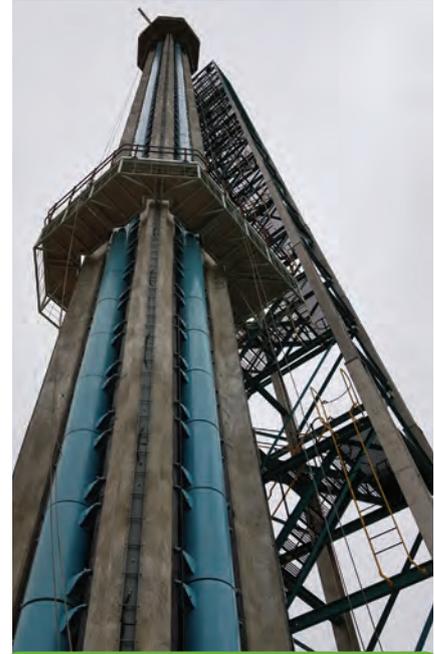
Knight Piésold continues to shine in an environmental context and provides "high quality work" on environmental impact assessments. This almost always



No other engineering consultant designs and delivers siphon decant systems for tailings storage facilities



Tailings storage facility deposition and beaching



Newly constructed penstock tower

BATTERY RELATED MINERALS EXPECTED TO LEAD TO NEW PROJECT STUDIES IN 2018

With over 29 years of experience in the international mining industry space, Copeland is keenly following commodities that are expected to perform in 2018. “The battery market for electric vehicles is gaining rapid momentum and will take precedence over fuel-driven cars in the next decade or two. In support of this, those commodities required to operate these batteries will most likely take centre stage in 2018. These include cobalt, lithium, graphite and copper/nickel which feature prominently in the Democratic Republic of Congo (cobalt) and Mozambique, Madagascar and Tanzania (graphite).



Andrew Copeland

Finally, although a fully South African company, Knight Piésold in South Africa is part of a larger global group which brings significant international expertise to the local business. “We believe in maintaining collaborative relationships with our partner firms across the globe as it brings us together in Africa where we are geographically well positioned to service projects, and our partners are geographically well positioned to service the clients. In conjunction with our Canadian offices we are involved in delivering two large dam and hydro-power projects for mining clients in the DRC. We are working with other clients on either hydro-power or renewable power on remote mining sites. This is the energy route of the future,” Haripersad concludes. **MRA**

includes local community interaction and communication. “Village relocation is becoming a common requirement for new or expansion projects. The management and education around expectations and compensation is an area we excel in, particularly in Africa where language barriers exist,” Copeland outlines.

The volume of aquatic bio-monitoring work has also increased more recently and involves understanding the health of rivers through monitoring, sampling and testing processes after which Knight Piésold can advise on water use licence compliancy. “We effectively provide a policing and protective role.”

Multi-disciplinary and collaboration offer value-added services

“We are a multi-disciplinary organisation and offer the full breadth of consulting/civil engineering services, all with unparalleled quality,” highlights Haripersad. The company’s geotechnical division is a prime example of this. It offers a broad range of infrastructure requirements necessary for various industries, including mining. Its transport division is equally able to support

mines in access and haul road designs. “They have particularly strong skills sets in dolomitic ground conditions and the associated risk of sinkholes as well as grouting of dam foundations. There are not many companies that specialise in this and as such they are a strong support mechanism for our mining team,” Copeland points out.



Knight Piésold provides “high quality work” on environmental impact assessments