SA’s water and sewer systems raise concern

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Although it is not apparent to the large urban populations, South Africa’s water and sewer systems are the lifelines of the cities and these lifelines are in a desperate state.” Trenchless Technologies’ GM Sangee Moodley tells Engineering News.

South Africa’s rapidly-growing population and urbanisation has resulted in an increase in population densities and greater demands placed on the country’s “already-struggling buried water and sewer piping infrastructures”. Not only are the demands on the pipes much higher, but the piping systems are ageing and in critical need of maintenance and repair, he reports.

“If we consider that the average life span of a pipeline is 50 years, then this would entail replacing or renovating 2% of the total piping infrastructure per year in order to adequately maintain the piping network,” Moodley says.

However, he adds that the requirements placed on municipalities to provide low-cost services and housing have been little funding being available for the maintenance of the buried infrastructure, which has largely been neglected.

“If we estimate that funding to the value of about only 0.5% of the existing infrastructure value has been spent per year on infrastructure replacement then it means that there has been a 1.05% shortfall for the past 15 years and longer,” he says, adding that it is therefore quite possible that up to 20% of the existing buried infrastructure in many of the country’s cities and towns needs urgent renovation or replacement.

Moodley says that he does not want to be dramatic, but that South Africa is

Sangee Moodley

Sitting on a time bomb and large sums of money should be spent to prevent a disintegration of the country’s buried assets.

“We cannot allow the situation to become one where our drinking water becomes mixed with our sewer waste water, which could result in the potential for the spread of severe waterborne diseases as well as contamination of our environment.” Moodley points out.

He says that he is pleased with the President’s recent state-of-the-nation speech as well as Finance Minister Trevor Manuel’s budget as indication of the government’s awareness of the need for infrastructure investment and that large amounts of funding are now being made available.

Moodley says that the maintenance and repair of systems, as well as providing new services where required, must be a priority.

He says that when compared to open excavation methods, no-dig techniques are more cost-effective and also result in less inconvenience for residents and traffic users.

Safety during construction is also improved with many of the trenchless techniques, with less potentially-risky excavations in roadways, as well as shortened construction times, Moodley points out, adding that it can save up to 20% on costs on conventional methods.

He says that Trenchless Technologies uses a range of innovative techniques to assess and solve piping problems.

The company undertakes closed-circuit television (CCTV)-pipeline inspections and pipe bursting, slip lining and soft lining for existing pipeline renovation, and horizontal-directional drilling (HDD), pipe ramming, melting and microtunneling for new pipeline installations.

Current projects include Botelong sewer-rehabilitation rehabilitation for the Rustenburg local municipality.

“A total of 20 304 m of new HDPE piping was installed, upsizing existing 110 mm sewers to 160 mm, as well as upsizing the main outlet sewer to 250 mm and 315 mm,” Moodley says.

Although the project is still in progress, he says that the company has already received positive feedback from the community’s ward councillors and the residents.

“You can see the benefits, as there are no manholes overflowing, water running down the street or a sewage smell left,” Moodley says.

Trenchless Technologies was also involved in the upgrading of sewers for the City of Tshwane Metropolitan Municipality, which included the Mamelodi and Greater Pretoria areas.

CCTV inspections were conducted by Sightlines to determine the condition of the pipeline and to identify any blockages, he says, adding that the information was then fed into the City of Tshwane’s pipeline-management system and the pipelines were then graded to determine which pipelines were in need of rehabilitation.

“Mamelodi’s population increase has placed stress on the infrastructure and the increase in the number of dwellings and the coverage of each stand with temporary structures makes the pipelines inaccessible,” he says.

In Pretoria and Mamelodi much of the work was on mid-block sewers within residents’ properties, requiring a minimum amount of disruption, and the company used pipe bursting to replace a total of 33 019 m on the project.

Emergency work on the Caranikwa outfall sewer also had to be done and involved the replacement of 1 093 m of existing clay outfall sewer with 300 mm, 375 mm and 525 mm diameter concrete pipes using conventional construction methods.

Moodley adds that Trenchless Technologies also upsized a 350 mm concrete sewer to 450 mm HDPE pipe by bursting in Atteridgeville using a Terra Hammer TR 210.

He sees the City of Tshwane as the leading municipality in the country in terms of proactively managing pipeline conditions and the rehabilitation of its infrastructure.

Trenchless Technologies is also involved in a project for Buffalo City municipality of East London in a joint venture with Turbomex regarding the augmentation of gravity water mains.

HDD is another service and product Trenchless Technologies offers to reduce the impact of maintenance work on the general public.

“HDD is the Rolls-Royce of drilling.” he says, adding that this method allows you to have control over the direction and grade of drilling and that longer lengths can be done, for example the crossing of highways.

Moodley, who is a large shareholder in and the general manager of Trenchless Technologies, says that the company was established in 1991 and has branches in Johannesburg and Cape Town, and is the distributor of Swiss-based Terra AG’s systems for Trenchless Technology in South Africa.

“Our aim is to grow and service the trenchless market,” he concluded.