

## The SASTT Award of Excellence for 2010

### The Plumstead sewer rehabilitation, Phase 1

by Michael King



### Introduction

The City of Cape Town introduced “cured-in-place-pipe” (CIPP) short repair liners as an innovative trenchless technology to rehabilitate some of its deteriorating trunk clay sewers. The project proved successful and sets the scene for application in similar gravity pipelines.

### The Plumstead sewer

The 3,0 km trunk sewer runs from Ottery Road to the Victoria Road pump station in Plumstead, a suburb of Cape Town. The sewer comprises 375 mm, 450 mm and 525 mm diameter vitrified clay pipes. It runs through the relatively narrow residential streets at depths varying between 2 m and 6 m.

### The assessment of the sewer

In 2004, Vela VKE prepared a report based on CCTV inspections, assessing the condition of the pipes. Some serious defects were found that were generally cracks, fractures and displaced joints. Where these defects resulted in groundwater infiltration there was the threat of loss of pipe bedding and support leading to the failure of the pipe and dangerous surface collapses. It was found that these serious defects in the clay pipes were not continuous between manholes but were of an isolated nature.

The rehabilitation of these sewers was a challenge. Point repairs in open excavations would be costly and disruptive to the neighbourhood and environment. On the other hand, full-length trenchless lining between manholes would have been prohibitively expensive.

### Project planning

In 2008 the water and sanitation directorate of the City of Cape Town embarked on the implementation of Phase 1 of this rehabilitation project. Vela VKE were able to confirm that short CIPP liners were becoming more widely used internationally and that several South African trenchless contractors had demonstrated interest in applying the technology.

Tender documents and specifications were drawn up accordingly.

### Construction

Jetvac South Africa proposed to use a glass fibre material with silicate resin manufactured in Europe by Trelleborg Epros. They were awarded the contract.

The liner is wetted out on site, placed inside the pipe through the use of a bladder, the bladder is inflated and the resin is cured under ambient conditions within hours.



*The liner has been wrapped onto the bladder, which will shortly be inserted down the manhole and into the sewer pipe.*

The scope of work comprised the repair of twelve defects, most of which were short (approximately 2 m) with two being 10 and 13 m long. Each defect was inspected by CCTV before and after lining.

Another opportunity presented by the short-CIPP technology was where defects could only be completed successfully by open excavation. Where defects included nearby connections or where surface settlement was evident, the section of the pipe would first be lined, then

excavations could be made onto the pipes and the connections re-made or the backfill re-compacted safely without risk of the collapse of the pipe.

### **Conclusion**

The rehabilitation of the Plumstead sewer was achieved by the use of short CIPP liners to repair the individual defects in the vitrified clay pipes effectively. The project proved the technique to be suitable for the rehabilitation of defective clay sewer pipes and adds to the armoury of trenchless methods of pipe rehabilitation available.

### **The nomination of the project for the SASTT Award**

By introducing the technology as an innovative trenchless solution and by proving the technology on a difficult project, the nomination actively contributed directly to the promotion, development and implementation of trenchless technology in Southern Africa.

### **The annual general meeting for 2011**

#### **A lively meeting in Sandton**

The AGM for 2011 was held at the Zandfontein depot of Johannesburg Water on Tuesday 22 February 2011.

Over the last few years, the main attraction at SASTT AGMs has become the presentation regarding the trenchless project on which the SASTT award of excellence has been bestowed. This year was no exception. Mike King of Vela VKE Consulting Engineers and Peter Salomons of Jetvac Africa gave an interesting overview of the Plumstead sewer project. The presentation was followed by a lively question-and-answer session which lasted almost as long as the preceding talk.

The president's report, presented by Andries Lötz as well as the minutes of the AGM are available on the website of SASTT, viz <http://www.sastt.org.za/>.



*The president, Andries Lötz of Johannesburg Water, handing over the SASTT Award certificate to Peter Salomons, Jetvac South Africa; Yusuf Ebrahim, City of Cape Town; and Mike King, Vela VKE*

For the first time in (the editor's) memory, the AGM of SASTT was attended by a representative of the media, in the person of Candice Landie of 3S Media.

At the meeting, Candice requested that members must leave their cards with her - and many members complied.

If any other members would like to contact Candice regarding trenchless projects or articles, here are her contact details:

Share call: 086 003 3300

Direct telephone: 011 233 2608

Cell: 072 607 7871

Email: [candice@3smedia.co.za](mailto:candice@3smedia.co.za)

Oh and by the way, please do not forget *SASTT News* if you want publicity for your good work!

### **Prospectus for the *International Conference on Pipelines and Trenchless Technology***

SASTT has just received the sponsorship and exhibition prospectus for the above conference, which will be held at the China National Convention Centre in Beijing from 26 to 29 October 2011.

If you would like relevant information, please contact Kate Pemberton of Great Southern Press in Australia at:

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