

New pipeline unearths treasures

SNAKING its way through valleys and slopes, across rivers, through backyards and farm land, the city's biggest water pipeline project has begun, unearthing some environmental treasures along its route.

On a site visit of the pipeline route, extending from Cato Ridge to Inanda and Pinetown, a team of experts described the many challenges this project, which will cost about R1.1-billion.

The pipeline is being installed to meet the demand for water in the western suburbs of Durban and will supply 400 megalitres of gravity-fed potable water a day to the greater Durban region.

The pipeline will tie into Umgeni Water's existing bulk water infrastructure with water from the Midmar Dam.

While the figures seem easy enough to understand – the installation of 1.4m and 1.6m diameter, 18m long pipes, placed in a trench at least 3m wide and between 3m and 4m deep – the picture on the ground is completely different.

The path of the pipeline involves crossing the Umgeni Valley, and lead scientists and planners are creating ways of hauling the large and heavy pipe-laying machinery, such as cranes and excavators.

Difficult

Head of the project, Pedro Rodrigues, of Knight Piesold Consulting, said this was one of the most difficult areas because of the topography.

At the onset, the team investigated the geotechnical, social and aquatic environments, noise and dust impacts, along with many other considerations before settling on a final route.

The biodiversity aspect presented the most challenges in terms of finding a route, said lead environmental scientist Claire Blanché.

Ten months into the construction of the first phase of the project, historical and natural finds have prompted scientists to reroute the pipeline.

Red Data frog species, remnants of the 1800s Voortrekker route and pottery from the Iron Age have all been unearthed between Wyebank and Ntuzuma during the research phase.

Such is the importance of conserving this rare frog species and preserving the historical artefacts of the

province, that staff of the Western Aqueduct water supply project team decided to reroute their construction activities for the benefit of the little critters and the old sites.

The two Red Data frog species discovered are the *Hemistus gutattis* (spotted shovel-nosed frog) and the *Afrixalus spinifrons* (Natal leaf-folding frog).

The frogs were discovered in the vicinity of seasonal wetlands on phase 1 of the project between Cato Ridge and Inchanga, said biodiversity specialist Dr Ed Granger.

A frog specialist had spent two weeks in the area trying to find the frogs' home.

"When we found it, we went back to the drawing board and managed to divert the route," said Granger.

The discovery of these tadpoles was made during construction, after rainfall resulted in the temporary accumulation of water near a jacking pit site.

The pipeline was rerouted to accommodate a new jacking pit site that would allow for the temporary water body and the surrounding habitat to be preserved.

The remnants of the Voortrekker route used by the ox-wagon commuters between Pietermaritzburg and Durban from the 1800s was evident on properties checked between Inchanga and Hillcrest.

Stone walls were found close to the route near Hillcrest and Pinetown, and would be protected during construction.

The team found railway heritage items such as stations and platforms, which were being protected along the Inchanga Choo Choo route.

Relevant

Late Iron Age and recent historically-relevant sites and items have also been discovered by environmental specialists between Wyebank and Ntuzuma.

Before the start of the project, people living in the vicinity of the 78km-long pipeline route assisted in identifying environmental issues associated with the project.

Thereafter, Blanché co-ordinated the investigations of specialist teams of scientists from various consultancies to determine the possible impacts of the project.

The environmental team determined the most environmentally suitable route for the

pipeline, in which the construction needed to avoid sensitive habitats such as grasslands and wetlands and areas of cultural heritage significance.

"One of the most significant outcomes of the environmental work is the Plant Rescue and Rehabilitation Plan which draws on specialist biodiversity knowledge of the study area," said Blanché.

Harrison Flats in the Cato Ridge area was known to have important grasslands and as such, the working area has been significantly reduced to minimise impact in the area.

Plant rescue and rehabilitation activities in phase 1 are under way, she said, and this was evident along the route, where grass had taken root and was growing well.

Granger also goes around explaining to affected residents what the project is about and the likely impact on their activities as the pipes are laid in their surrounding areas.

Largely, he said, people were understanding of the necessity of the construction and resulting noise and dust.

Apart from the pipelines, the team intends to construct a hydropower station on two of the break pressure reservoirs – one at Ashley Drive/Jackson Falls in Hillcrest, and the other at the Wyebank Road reservoir.

This would use energy being dissipated from the break pressure system and generate power.

The maximum output of the proposed Pelton Wheel turbine alternators would be 3.6MV at 600RPM for Ashley Drive and 3.0MV at 500RPM for Wyebank.

The anticipated energy to be generated per annum would be about 18 794MWh and 16 443MWh respectively, in 2021.

The power will be fed into the municipality's existing electrical infrastructure.

Granger also had to explain to residents why pipes had to be stored in their community and said this was opposed at first.

"This activity does affect people and the team is very sensitive to this," said project head Rodrigues.

Phase 1 of the project extends from Cato Ridge up to Inchanga and 50 percent of construction is already complete.

It is expected to be completed at the end of 2010.

Phase 2 has already gone out to tender, and is expected to be completed in 2012.





MAJOR PROJECT: Pipes being laid in the Cato Ridge area on private property. Here, important grasslands were identified and the team tried to reduce the environmental impact.

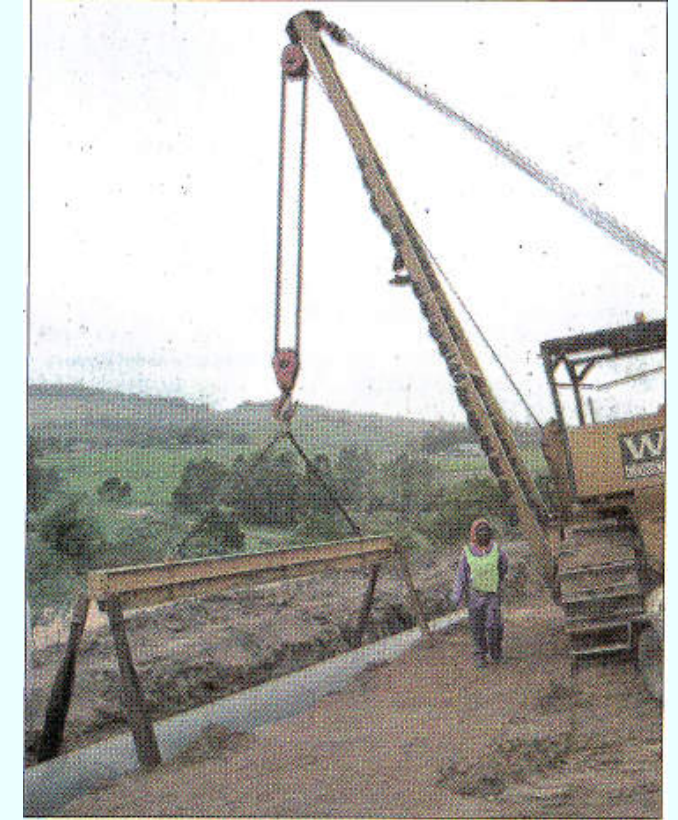
PICTURES: ARTHI SANPATH



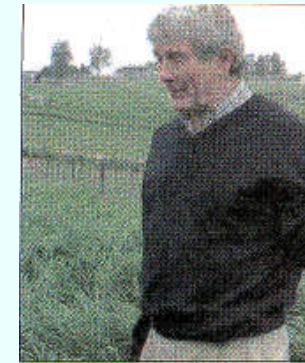
Historical and natural finds have prompted scientists to change the route of the water project, writes
Arthi Sanpath



ROUTE: Down in the valley is the point at which the project team for the Western Aqueduct project has encountered the most challenges. The pipes will run down the slope on the right, through the river, and up the cliff on the left.



PLACED: A pipe, above, is lowered into the 3m trench



EXPERT: Biodiversity specialist Ed Granger stands on a pipeline corridor that has been rehabilitated.

