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Title: Port Alfred project shows the way for large-bore horizontal drilling
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Port Alfred project shows the way for large-bore horizontal drilling

HORIZONTAL directional drilling (HDD) has been used quite extensively in the South African construction and civil engineering sectors, but only in small bore applications. Now there is scope for large bore pipelines, bringing extensive benefits and cost savings.

According to LR Civil operations manager, Daniele Carnicelli, local engineers and contractors have been slow to pick up on the overseas success of HDD in large bore applications, where holes of over 500 mm can be horizontally drilled for unobtrusive pipeline installation.

LR Civil, a member of the Raubex Group, has teamed up with geotechnical engineers Geopractica and HDD experts TRG International to apply this well-established technology to South African conditions.

"We have already notched up one notable success, recently completing a one-kilometre HDPE pipeline under a Port Alfred beach and into the ocean," said Carnicelli. "This was for an outfall pipe for the new reverse osmosis desalination plant near the town."

He said the hole was drilled horizontally at depths of between 20 and 30 metres with a 150-ton Maxi-Rig, without any threat to the pristine beach environment or disruption to the public.

"HDD obviates the need to dig from surface to lay large diameter pipes; this means that many of the normal challenges of pipeline installation are sidestepped altogether," Carnicelli said.

"Where a pipeline crosses a watercourse, for example, a water use licence may be required; this is a process that could take 18 to 24 months and possibly delay a project significantly."

Wherever a trench will intersect a gas, power, telecommunications or water line, other permissions usually need to be secured. In the case of HDD, the drill path simply goes under this infrastructure and safely avoids it.

The technology also reduces a project's safety risks; as the absence of trenches means less danger to workers and the public. Where bad weather can often threaten the timeline of a conventional operation by flooding trenches and stopping construction work, this is no longer a factor with HDD, as most of the activity is carried out underground.

Compared to trenching, the fuel consumed in an HDD project is much less. That's because the Maxi-Rig uses as little as 5% of the diesel normally consumed by earth moving equipment, including excavators and trucks, over the life of comparable projects.

"With the capacity to install pipelines of up to 900 mm in diameter, the Maxi-Rig has a maximum torque of some 70 tons, and 150 tonnes of pull-back force. This makes it capable of working through rock with a hardness exceeding 250 MPa, and to achieve daily horizontal distances well in excess of conventional trenching," said Carnicelli. *Enquiry No: 11*