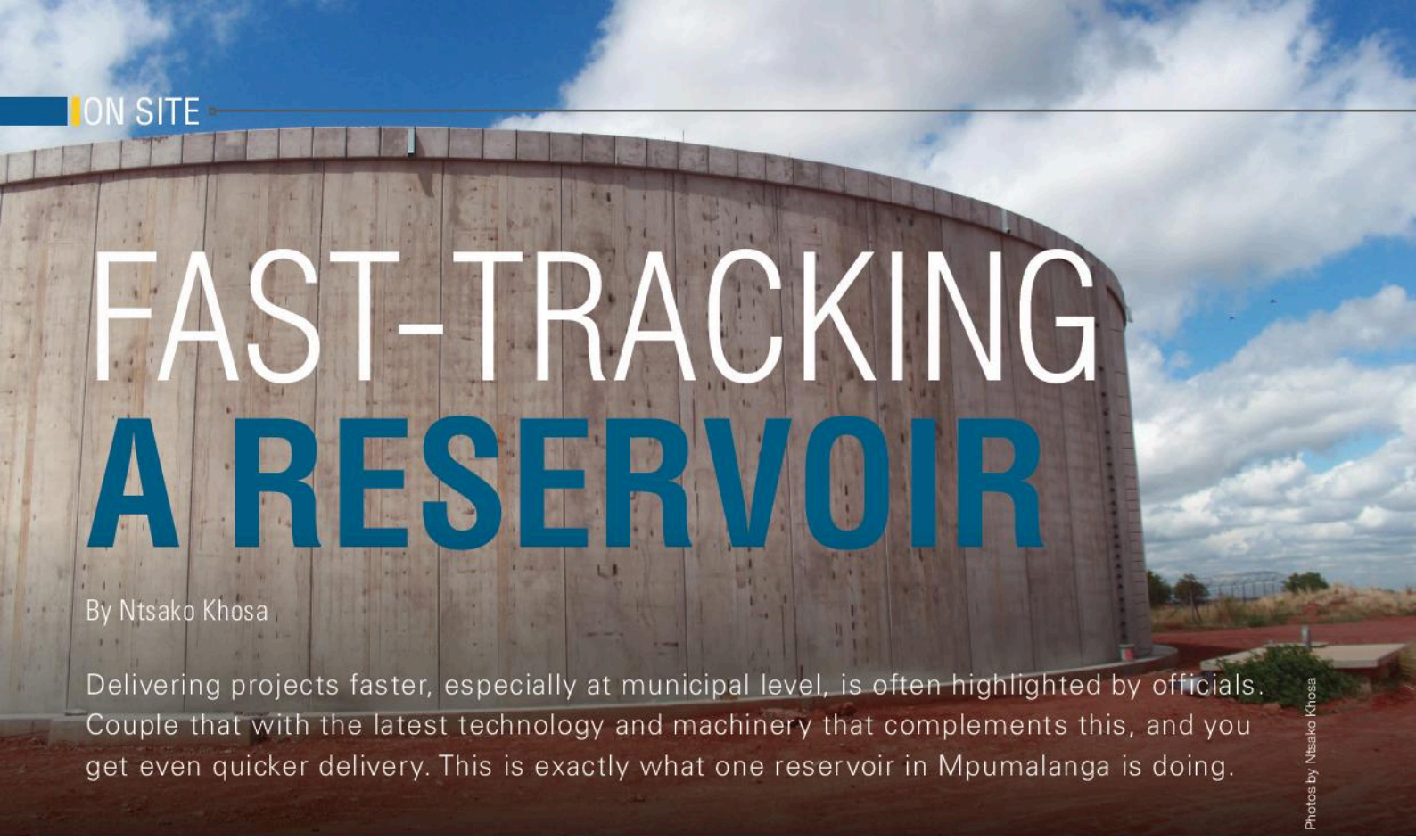


FAST-TRACKING A RESERVOIR

By Ntsako Khosa

Delivering projects faster, especially at municipal level, is often highlighted by officials. Couple that with the latest technology and machinery that complements this, and you get even quicker delivery. This is exactly what one reservoir in Mpumalanga is doing.

Photos by Ntsako Khosa

One of the completed reservoirs, located in the Nkangala District Municipality in Mpumalanga.

Located in Bundu, under the Thembisile Hani Local Municipality, the 10-megalitre reservoir is set to strengthen water supply to Mpumalanga's economic hub, an area that comprises about 160 towns and villages.

Monde Consulting Engineers and Project Managers, as well as engineering consultancy firm Ceenex, are supervising the construction teams and worked closely with Corestruc, a South African precast-concrete specialist, in refining the design of the two reservoir structures. Corestruc is working alongside Mbako Projects & Trading, the principal contractor on this project. The Bundu Reservoir is one of the first in the country to be built using a new South African precast-concrete water-retaining wall system from Corestruc.

Willie de Jager, managing director of Corestruc, said that the wall took about eight workings to be installed using one of Corehire's cranes, a Corestruc subsidiary. "We use our own equipment on up to 80% of our projects," he says. At the Bundu Reservoir construction site, a total of 60 wall panels, each weighing about eight tons, about 10 metres long, two metres wide, and 170mm thick, were lifted and placed to complete the wall structure. This is in addition to the four buttress panels, each weighing 11.7 tons. The rigger and crane operator were supported by a skilled and efficient team, also comprising a project manager and surveyor. For the precast wall structure, three cherry pickers were used for installation. "We used one inside and two outside for sealing the joints for grouting," says site manager, Meyer van Rooyen.

Equipment on site

Other equipment used on site include a static pump to pump concrete underneath the wall for the floor slabs and a Liebherr 160-ton mobile crane for the erection of the wall panels. "The static pump was used to get underneath the wall, because the wall goes up so quickly that the main contractor isn't done with his floor slab, so the pump was placed underneath the wall to pump concrete in a more controlled environment devoid of wind and the like," explains Van Rooyen. De Jager adds that the pump suited the site as it has the ability to pump either extremely slow or at a high rate. "That's why it suits us for different uses, like in-between the panels, as we can apply the exact amount of concrete required."

The scissor lift was used outside the reservoir to install post-tensioning ducts and cables. "It allows a bigger platform and can carry more staff. About 6.6km of ducts and cables are installed by hand between the joints of the wall panels, before the grout is pumped around the circumference of the reservoir. It takes just more than a full shift to fill the joints with a specially designed grout, which reaches a compressive strength of 100MPa in as little as four days. Epoxerite blends the grout and packages it on behalf of Corestruc," De Jager says.

Van Rooyen shares that because with precast, everything is planned prior to going on site and so, very few challenges are experienced on site. "Van Rooyen's supervisor, Petrus Mehlape, knows exactly what to do and he handles heavy elements with precision. It's impressive that 12 panels can be installed in a day without a

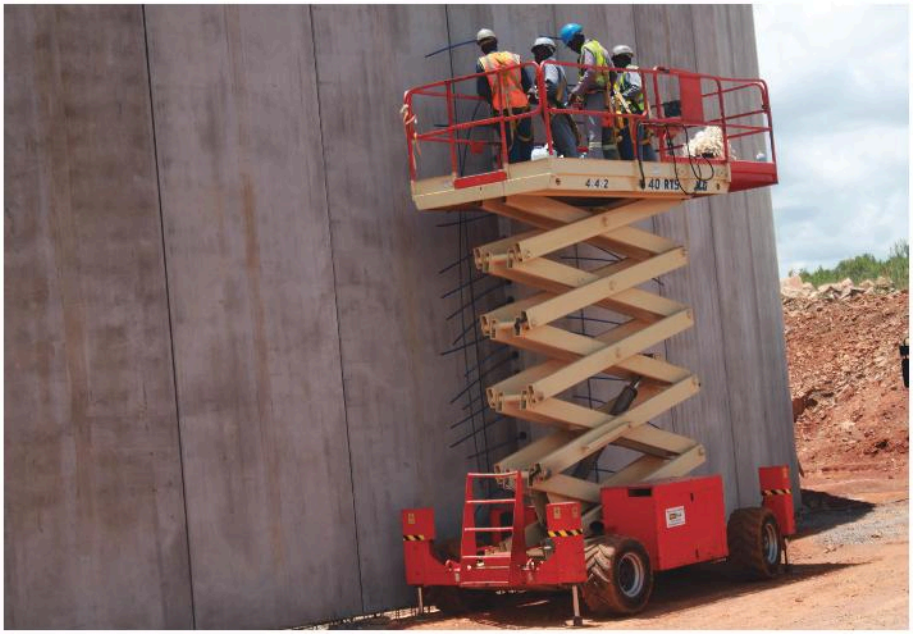
hitch," De Jager says. "We've got the supervisor on top inside the cherry picker, me in the middle to verify the positioning of the panel, and we use two-way radios or hand signals. The process just flows," Van Rooyen adds.

Grout plants are expected to arrive at the beginning of the year, with a 13m trailer with pumps that will allow the team to pump the grout in-between the joints.

Bundu area

Surrounded by fresh vegetation, recently refurbished roads and malls to better serve the community, Sefiso Mdingi from Monde Consulting Engineers and Project Managers says, "This is an area of the province that has been developing at a rapid pace and, as a result, is experiencing major water shortages. Water is a basic human right, and the local authority was willing, therefore, to take the lead by being the first to use a new state-of-the-art technology that will help it significantly accelerate water to this predominantly poor area of the province," he says. Mbako Projects & Trading was tasked with building the eight-kilometre pipeline and floor of the reservoir. ■

The Corestruc articulating boom lift used to prepare insertion of grouting between the panels.



Site managers and contractors believe that the project will unlock new opportunities in municipal infrastructure delivery programmes.

Site workers installing the PVC post-tensioning ducts and cables.