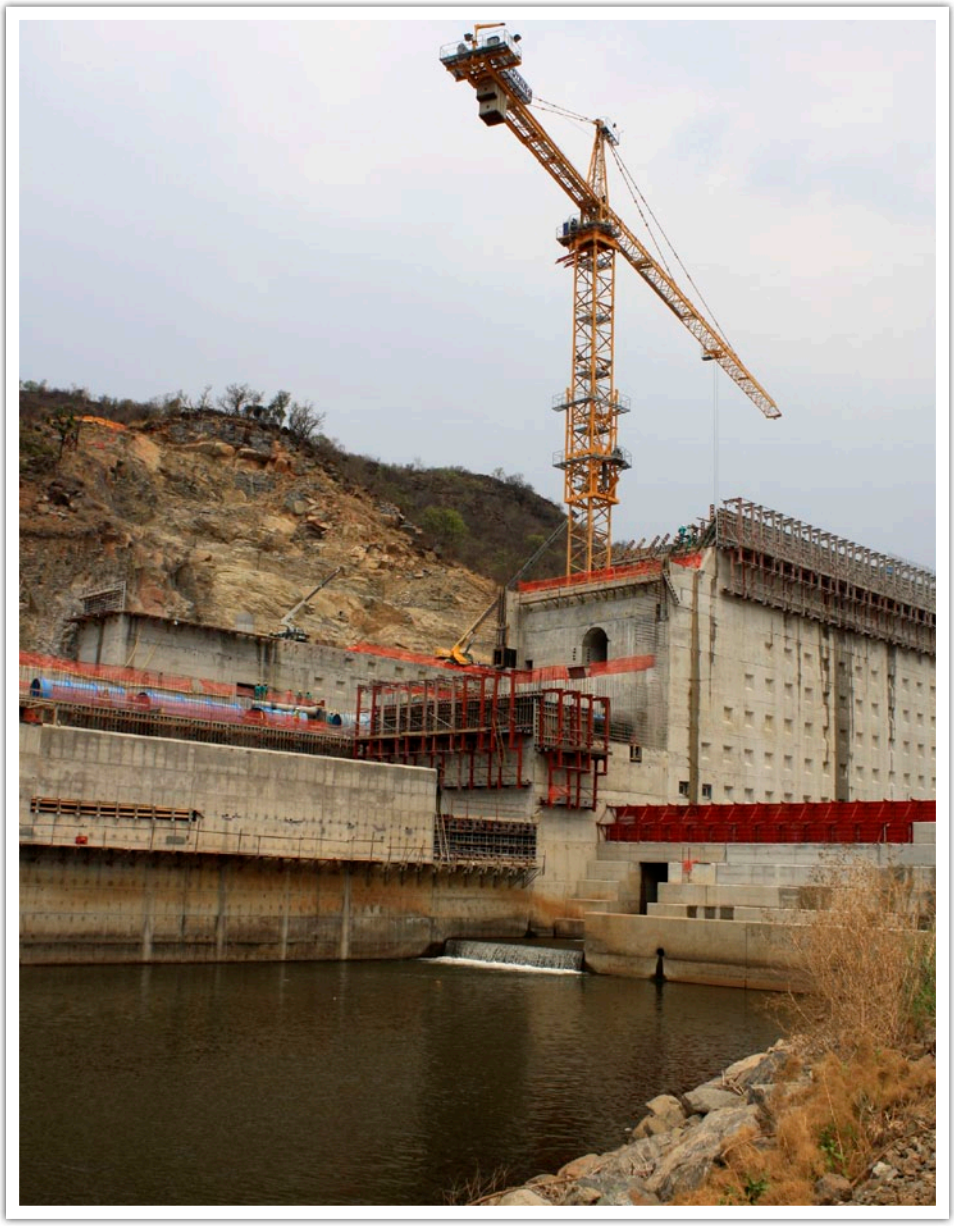
Giant rising in Olifants tributary

Construction is at full swing at the site of the multibillion Rand De Hoop Dam on the Steelpoort River, in Limpopo. The dam, believed to be one of the biggest to be constructed in South Africa in the last 20 years, is set for completion in 2012. The Water Wheel joined a delegation of the South African National Committee on Large Dams who visited the site in October last year.



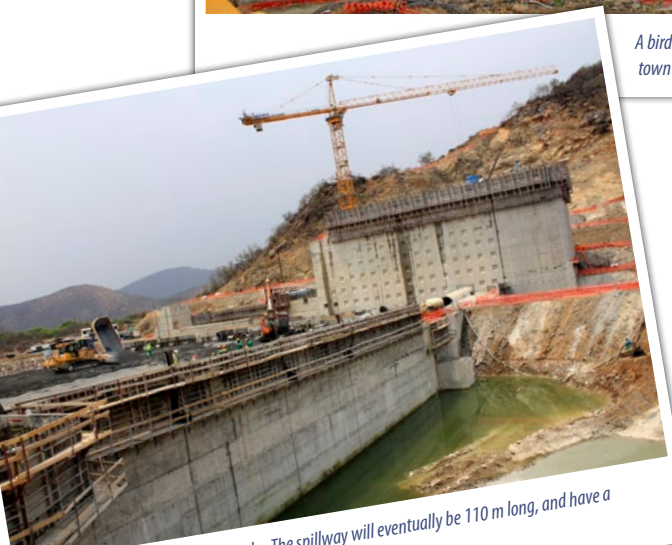
A view of the outlet structure with the river diversion in the foreground. This diversion was completed in July 2009.

De Hoop Dam forms part of the Olifants River Water Resources Development Project, and was first announced in the State of the Nation Address by former President Thabo Mbeki in 2003. Approved by Cabinet in 2004, construction started in 2007 following a revised Record of Decision by the then Minister of Environmental Affairs & Tourism. According to the Department of Water Affairs, the dam was seen as the only viable option to meet the medium- to long-term need for water of populations in the Sekhukhune area as well as expected increased mining activity. Originally the dam was also to supply Eskom proposed Tubatse pump storage scheme, however, this scheme has since been shelved. Construction is currently being financed by government and is being undertaken by the Department of Water Affairs' construction arm.

Construction has not been without its challenges. Among others, geological conditions were found to be more varied than anticipated and the foundations encountered were generally poorer than expected. As a result, excavations were undertaken up to 12 m below design foundations, with close to 500 000 m^3 of material excavated for foundations. Once completed the dam wall will be 88 m high above the lowest foundation. De Hoop is being constructed as a roller compacted concrete (or rollcrete) gravity dam with a vertical upstream face. It is the highest rollcrete dam yet to be constructed in South Africa. The dam wall will be 1 020 m long. An innovative rollcrete mix is being used, negating the need for skin concrete.

At full supply level (FSL) the gross capacity of De Hoop Dam will be 347 million m^3 and the dam will have an annual yield of 80 million m^3. The reservoir will have a surface area of 1 690 ha (at FSL).

A bird's eye view of the De Hoop Dam construction site. The site is situated about 40 km south of the town of Steelpoort.



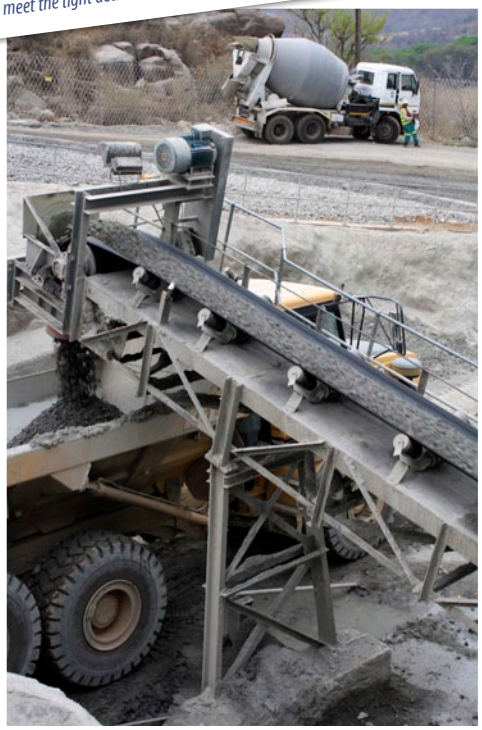
The stepped spillway and outlet works. The spillway will eventually be 110 m long, and have a maximum capacity of 3 616 m3/s.

The enormous 2 m-diameter stainless steel outlet pipes. All the pipes are being manufactured at the DWA Central Construction workshops in Jan Kempdorp.

The multi-level outlet structure. The outlet works will have a maximum capacity of 20 m^3/s – 15 m^3/s of which is to meet Environmental Reserve requirements.

Two of the myriad of articulated dump trucks on site. Concrete is delivered to site in trucks or via conveyer and then spread by bulldozer and compacted by vibratory roller. Production targets of up to 100 000 m^3/month have been set to meet the tight deadlines.

A view of the stepped spillway, apron and end sill. Here the specially designed scaffolding which is being used on site can clearly be seen.



A truck is filled with concrete at the on-site batch plant.

The Steelpoort River downstream from the dam with a section of the new provincial road which had to be relocated to higher ground on the western side of the dam basin.

Five batching plants were established on site to deliver concrete at the required rate. Together the plants have a capacity to deliver up to 500 m^3/hour of concrete. Close to a million cubic metres of concrete will eventually be placed in the dam.

Close to 80% of the workforce has been recruited from the area. It is a 24/7 operation and workers are working three shifts.