



## Progress at Bokkamp Dam to improve water management

AngloGold Ashanti's environmental policy includes a commitment to prevent pollution.

Construction of a new stormwater containment dam, which is being built to accommodate rainwater overflows from the Bokkamp process water dam at the Vaal River operations, is progressing, and will serve to contain uncontrolled discharges to the Vaal River. *(See case study: Report to Society 2006)*

AngloGold Ashanti's technical assistant specialist project manager, Henry Smith, overseeing construction of the R40 million project to improve overall water management at the operations says, "The new dam will redress the imbalance of process water flows between the Kopanang plant and the West Complex tailings storage facility (TSF), which has resulted in the Bokkamp dam overflowing during periods of heavy rainfall."

The new stormwater dam is being built on the footprint of an old emergency dam, adjacent to the West Complex TSF, making use of abandoned infrastructure and side walls that are still

intact. The dam is expected to have a containment volume of 600,000m<sup>3</sup>. AngloGold Ashanti expects to be able to save around R900,000 a year on water costs.

The dam is being constructed in three compartments to facilitate maintenance, normally conducted every five years. "This modular approach allows each compartment to be sectioned off separately, without affecting the rest of the dam," says Smith. Additional penstocks (sluices) and pipes are also being installed on each of the compartments to allow for improved water management at the operations, ensuring that process water is channelled to the Bokkamp dam and rainwater to the new stormwater facility.

Construction of the dam was 30% complete by year-end and work on phase 2 of the project – the building of walls through the placing of slimes deposits – started late in 2007. The deposition process, which will increase the height of the walls to 5m, is expected to take around eight months to complete. Slimes deposition will start as soon as the pipe installation is complete. Phase 3, expected to start in June 2008, is vital to the success of the dam and involves the installation of riprap, a rock lining to reduce water erosion from wind-induced wave action.

"The new dam will be crucial in our water management efforts, which focus on central spillage, the point where all water is returned and from where it is redistributed," says Smith, saying that around 18Ml of water is circulated at the operations daily. Once process water has been pumped away from the Bokkamp dam for re-use, water will be gradually released into it from the new dam for process make-up water. "The aim is to manage overflows and ensure that an even water balance is maintained," he adds.

Since AngloGold Ashanti last reported, one overflow from the Bokkamp dam was recorded on 27 September 2007. "This was on account of a significant rainfall event – 76mm over a period of 48 hours" says Marié Schlechter, senior environmental co-ordinator. As required by legislation, the Department of Water Affairs and Forestry (DWAF) was notified within 24 hours, followed by a written report.

Overflows from the Bokkamp dam have been reduced significantly in 2007. "We've doubled the dam's pumping capacity to central spillage along with an adjustment to the pipeline. Pumping has now been doubled from about 500m<sup>3</sup>/h to 1,000m<sup>3</sup>/h," Smith explains. A 5.6km 400mm-diameter pipeline is also planned and will boost pumping capacity from 270m<sup>3</sup>/h to 800 m<sup>3</sup>/h from central spillage to Kopanang plant.

Although not related to the water management initiatives at Vaal River, another reason for the reduction in Bokkamp overflows, says Smith, is that much of Bokkamp's water is being

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temporarily redirected to the new Kopanang dam, which is part of a different water system. "It's a short-term tailings dam initiative to store uranium-bearing material, which will be reclaimed at a later stage, because at the moment we do not have the capacity to treat the amount of tailings we're producing."

While focus has been on the new stormwater containment dam, Smith says that the other water management initiatives are just as important. "We needed to take a holistic view to ensure that we rectify all water management issues," he said. Smith anticipates that the stormwater dam will be commissioned in November 2008, about a year ahead of schedule.