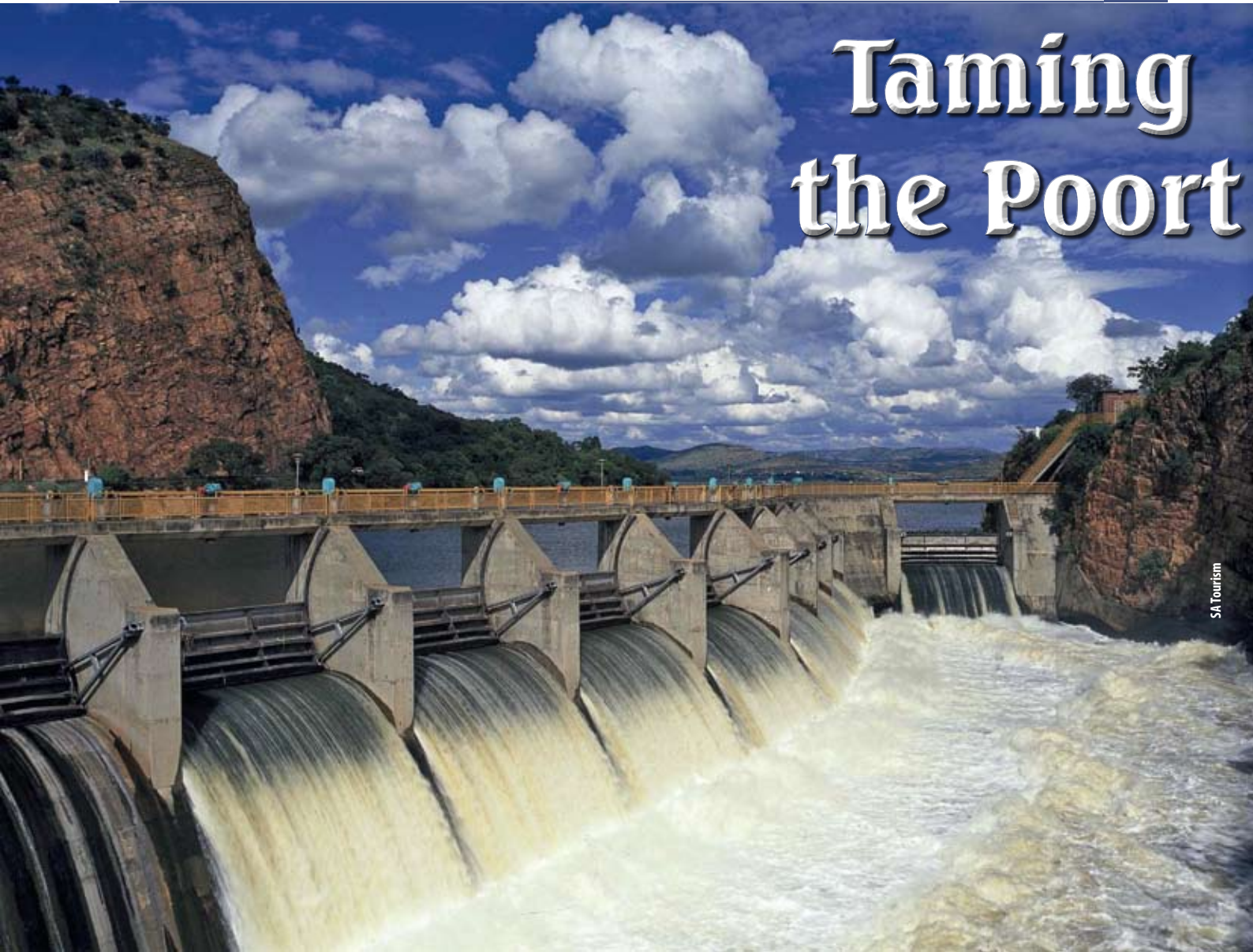


Taming the Poort



SA Tourism

Hartbeespoort Dam, situated on the border between North West and Gauteng, is one of the oldest and most interesting dams constructed in South Africa. Lani van Vuuren reports.

It was Boer General Hendrik J Schoeman who first saw the potential for a dam on the Crocodile River, 30 km west of Pretoria, in the 1890s. In 1898, he completed the construction of a dam on his farm Hartbeespoort, and named it Sophia Dam, after his wife.

The dam was of concrete, and was about nine metres high. This dam did not impound any water, but was used for the leading out of water and the irrigation of adjacent land. Unfortunately, the dam was washed away in a flood on 9 January 1909.

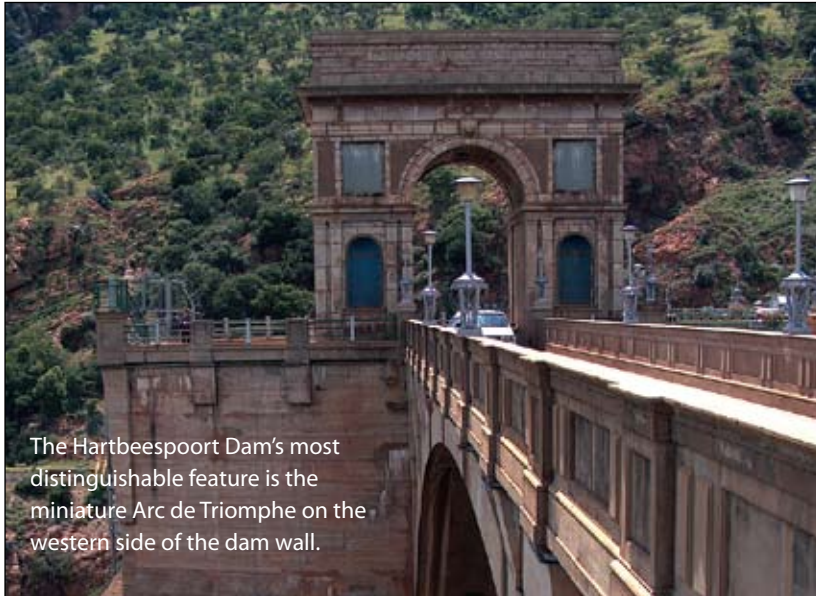
ONE MAN'S DREAM

At the opening ceremony of the dam on 28 May 1898, Genl Schoeman made a pledge to President Paul Kruger to build a dam using government funds. The purpose of such a project would be to irrigate a few plots of land on which poor whites could be settled.

On 1 April 1899, Genl Schoeman wrote a letter in which he stated that he was willing to sell a portion of his farm for the above-mentioned project. President Kruger reportedly welcomed this idea.

The outbreak of the Anglo-Boer War in October 1899 put a hold on the implementation of the project, however.

When the war ended in 1902, the total reconstruction of South Africa got underway. It was in this same year that the viability of the site for the construction of the dam was investigated. Interestingly, original investigations into the potential of constructing the Hartbeespoort Dam were conducted with the view to providing urban water to Pretoria and Johannesburg, and not for irrigation for settlement purposes.



Lani van Vuuren

The Hartbeespoort Dam's most distinguishable feature is the miniature Arc de Triomphe on the western side of the dam wall.

POLITICS INTERVENE

The then Transvaal Irrigation Department investigated the site, and proposed a 43 m-high gravity dam. The establishment of the Union of South Africa in 1910 postponed any further work on the scheme, until 1914. The Hartbeespoort Bill Act was rather suddenly passed in 1914, allowing work on the project to continue. The estimated cost at the time was £605 000.

A possible reason for the sudden flare-up of interest in the Hartbeespoort Dam is the political occurrences of 1913 and 1914, including the miners' strike and uprisings on the Witwatersrand. It is said that the government could have passed the project to appease the white electorate.

On 16 June 1914, the House of Assembly voted for the scheme. Start of construction of the dam and irrigation canals was planned for the end of 1915. However, South Africa's involvement in World War One meant that the project was sidelined once again.

The implementation of the scheme did not go as planned. A number of obstacles were in the way of implementation. Firstly, the Department of Irrigation was not prepared for the rising

costs of the project due to the difficult terrain through which the canals were constructed. Some of the rock formations on which the dam wall itself was constructed had to be excavated deeper than was thought previously.

There were also some gaps in the legislation, which led to litigation regarding the expropriation of land. Lastly, the war led to a decrease in State funds for the construction of the scheme as funding for a number of government departments was slashed to pay for the war effort.

As a result, work on the dam only started in 1916. Two years later progress was hampered when floods destroyed much of the work. In 1918, government passed the Hartbeespoort Irrigation Scheme (Acquisition of Land Act) which authorised the expropriation of land required for the construction of the dam. Pressure to complete the project mounted and, as a result, special provision was made in the 1921/22 budget for the scheme. At that stage, the dam was one of the largest schemes implemented in the Transvaal.

The dam design was adapted from a gravity structure to a varying radius arch structure 59 m high. This allowed for much less cement to be used. In addition, the foundation could be completed in one dry season.

Work on the river diversion was started in March 1921 and completed in May of that year. The first foundation concrete was placed on 29 July, and by September 1922 the wall was two metres above the riverbed. By April 1923 the wall was completed, and only the finishing of the parapets and crest road remained. During the construction phase the dam impounded the floods of 1922/23. The whole scheme, including the canals, was completed in 1925.

The dam was filled on 11 March 1925, and a maximum flood of 2 700 cusecs passed down the spillway on 26 March of that year. After completion, 97 farmers and 65 lessees made use of the water from the Hartbeespoort Dam.

The west end of the dam wall sports an unusual feature, an arch built as a replica of the Arc de Triomphe. There are two inscriptions on the arch. The inscription on the eastern side reads *Dedi in deserto aquas, flumina in invio* which means 'I give waters in the wilderness and rivers in the desert (Isaiah 43:20). The inscription on the western side reads *Sine aqua arida ac misera agri cultura* which means 'Without water it is arid and miserable in agriculture'.

WHITE AND BLACK LABOUR

One of the main aims of the Hartbeespoort Irrigation Scheme was to provide employment to soldiers demobilised after World War One as well as poor whites. However, it is reported that the attitude of these groups towards hard labour resulted in a request for permission to use blacks, which was granted in 1919.

At the peak of construction, some 1 835 men were employed at the dam, and 3 500 on the scheme as a whole. The more experienced workers were used at the dam itself, while others were used on the canals. The workers were accommodated on-site in houses, semi-detached houses and housing blocks with four living quarters. The site also


had an office block, store, blacksmith, and a small hydropower station.

In 1928, the Brits magisterial district was proclaimed. This was as a direct consequence of the increased activity in the Hartbeespoort area, and rapid development that took place under the scheme.

RAISING THE DAM WALL

In 1964, the Department of Water Affairs proposed that the dam be raised to increase its capacity and to make a larger volume of water available for irrigation purposes. The raising of the dam was done by means of ten 2,74 m radial crest sluices on the spillway raising the full supply level by 2,4 m. The dam has a crest length of 140 m and a capacity of more than 200 million m³. Today, the dam still irrigates almost 14 000 ha of land.

The dam has unfortunately become famous not for its aesthetics or water storage ability. Rather it is cited as one of the worst examples of eutrophication, resulting from high levels of phosphates and nitrates washing into the dam.

This had had a negative affect on the water quality, the fish life, use of the dam and the environment. Last year, the Department of Water Affairs & Forestry initiated a remediation programme called Harties Metsi a Me (meaning 'Harties, my water', which is working towards improving the situation at the dam. Rand Water is the implementing agent for the programme. 



Hartbeespoort Dam during construction of the wall.



Cable way at Hartbeespoort Dam during the construction of the foundations, 1922.



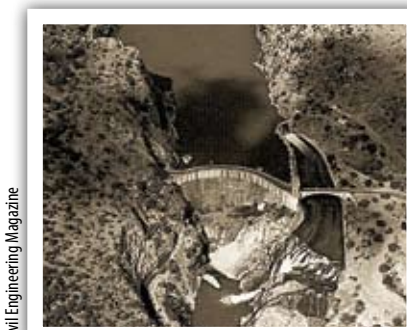
Completed Hartbeespoort Dam.

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'The Construction of Hartbeespoort Dam', *Civil Engineering*, June 2004, Vol 12 No 6
www.dwaf.gov.za



Completed Hartbeespoort Dam as seen from the air.

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