

**PROJECT NAME**

Extension and upgrading of the Brits WTP

**CLIENT**

Magalies Water / Madibeng Local Municipality

**LOCATION**

Brits

**PROJECT VALUE**

R 250 million

**SERVICES**

Process, civil, mechanical and electrical design

Project management

**TIME FRAME**

January 2011 (On-going)



The Brits Water Treatment Plant has been designed for 60 MI/d but only produces about 50 MI/d due to bottlenecks in the current design. An emergency tender was drawn up for urgent work while CSV was also tasked to extend the plant with another 20 MI/d and upgrade the current process to cater for the demanding raw water quality. An evaluation of options indicated the preferred process train to consist of DAF as primary phase separation process, sand filtration as secondary phase separation process, ozone for inactivation of pathogens, Granular Activated Carbon (GAC) for removal of harmful organics and toxins, stabilisation with lime and final disinfection with chlorine.

A life cycle cost analysis was done on 6 options that were identified and these options included the use of membranes for pathogen inactivation and phase separation, the use of powdered activated carbon (PAC) for organic removal, the use of UV and chlorine dioxide respectively for safeguarding against pathogens such as *Cryptosporidium* and *Giardia*. Over a 20 year period, it was shown that the use of membranes to be included in the process train can be a cost effective option, however, several unknowns on the application of membranes on algal laden water pointed to a pilot plant study to be conducted in order to confirm design parameters. Such a pilot plant study will be for at least a 6 month period.



Several aspects had to be taken into account with the process design such as the possibility of the quality in the Hartbeespoortdam to improve and the option of laying a raw water pipe or utilizing the existing canal to convey the raw water to the new plant.

A new inlet works will be constructed for 120 MI/d to cater for future extensions to the plant. 60 MI/d will be used for the old plant and the remaining 60 MI/d will be designed in 20 MI/d portions.

It remains a challenge for the plant to stay in operation while the extensions to the work will need to be added. Peripheral aspects such as changes to the on-site clear water reservoir and the conversion of the existing sand filters into new GAC units will receive particular attention.