



Fact Sheet 3: Direct Water Reuse in eThekweni

In 2008, the Department of Water Affairs and Forestry (DWA) concluded their *KZN Coastal Metropolitan Areas – Water Reconciliation Study, 2008* (Reconciliation Study). The report contains the background, analysis and proposed further development for bulk water resources for the KZN Coastal Metropolitan area and concluded that the water supply needs in the eThekweni Municipality and surrounding areas currently exceed the reliable yield of the local water resources.

While a number of supply schemes are currently under investigation and/or development, these will not be sufficient to meet the water demand going forward. Treated effluent reclamation and re-use is considered to be a viable water resource to overcome the medium-term water constraints. It has been successfully implemented in other parts of the world, as well as locally in Namibia and Beaufort West. The treatment technology is well established and the quality of water produced exceeds current drinking water standards (See Figure 1).

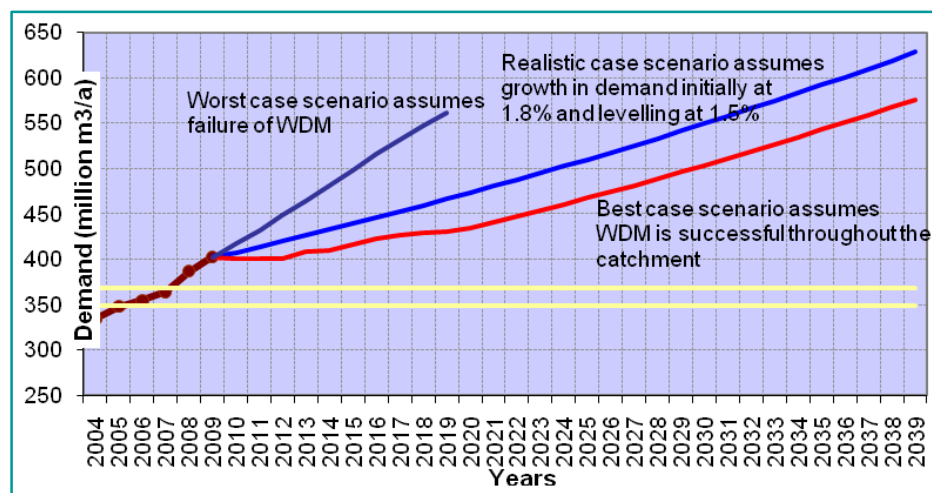


Figure 1: Water demand projections in the Umgeni Catchment

On this basis, the eThekweni Municipality initiated a study in early 2009 to assess the techno-economic feasibility of treated effluent reclamation and re-use as the basis for water supply augmentation. Golder Associates Africa (Pty) Ltd, in association with WRP and Kwezi V3 were appointed by eThekweni Municipality to complete the study.

Outcomes of the initial assessment indicated that the most feasible route is that treated sewage effluent from the KwaMashu and Northern WWTW's, be reclaimed and treated to potable standard. The potable water from KwaMashu potable water reclamation plant will then be discharged into the existing trunk main of the northern aqueduct in the vicinity of Duffs Road while the potable water from the Northern WWTW potable water reclamation plant will be discharged to the northern aqueduct at the nearest practical point from the works.

The implementation of the two re-use plants described on water security in the Mgeni system is reflected in Figure 2 which shows that through the implementation of re-use schemes, water supply will have better security for a period of seven years thereafter allowing for the phased implementation of desalination schemes (assuming that South Africa's energy crisis has been overcome by that point) or the Smithfield dam is completed.

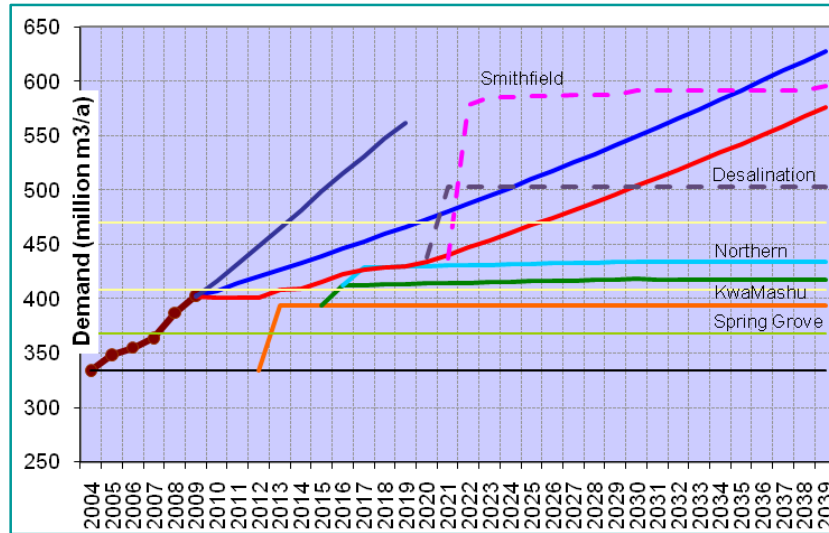


Figure 2: Implications of re-use on Mgeni system water scarcity

The treatment process will be as follows: Treated wastewater will be flocculated and clarified to remove any turbidity or colour so that the water is clear and colourless. Then it will be passed through an Ultra Filtration (UF) membrane to remove organic substances > 1000 Molecular Weight (MW), pyrogens, viruses, bacteria and colloids. The UF filtrate will then undergo Reverse Osmosis (RO) process where ions and organics > 100MW are retained. Following the RO process, filtrate will undergo stabilisation and Ultra Violet (UV) light disinfection to ensure it is safe for distribution and drinking. A schematic setup for the proposed treatment process is presented as Figure 3.

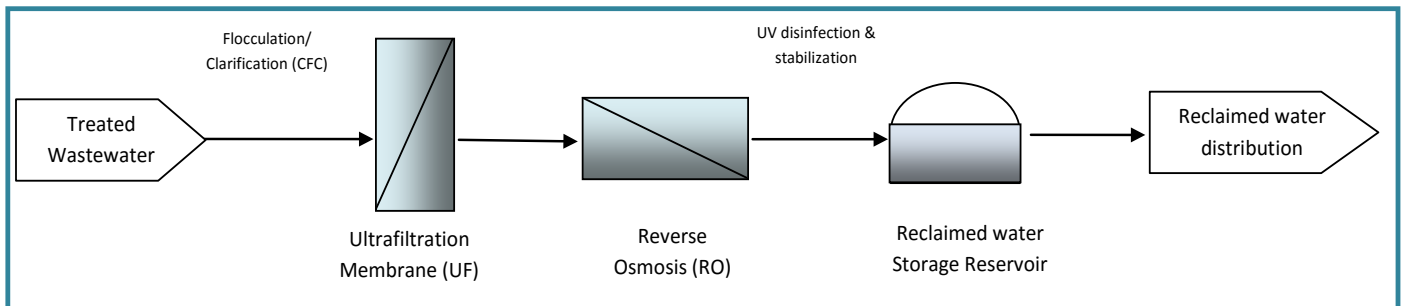


Figure 3: Schematic presentation of the proposed treatment route

An Environmental Impact Assessment (EIA) and public participation process was undertaken following this feasibility study. Due to a number of public objections, this project was not continued. However, due to the water shortages in this region, the study may be reinstated.