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Water planning challenges due to changing long term development scenarios in the Crocodile West River System

Long term plans for water supply in the Crocodile West River System is continuously adapted to accommodate shifts in developmental objectives such as the Integrated Resource Development Plan of the Department of Energy, municipal service provision programs and market dependant economic trends.

The Department of Water Affairs (DWA) is therefore exploring various new planning scenarios and engages with stakeholders through bi-annual meetings of the Crocodile West River System Strategy Steering Committee (SSC). The SSC was established to assist DWA in implementing, reviewing and updating the system's bulk water supply Reconciliation Strategy.

At their September 2011 meeting the SSC evaluated the implications these scenarios of future water requirements and urban return flows, recently approved water use licenses, further proposed bulk water abstraction projects and developments around the coal reserves close to Lephalale will have on the water balance of the system up to the year 2030.

The following observations and recommendations were made:

The emphasis shifted from securing sufficient water for transfer to several proposed future developments in Lephalale, such as Sasol's Mafuta Coal to Liquid Plant and four new power stations, to the current situation where the surplus in the catchment is greater than projected transfer requirements for Lephalale. This is largely due to the release of the Integrated Resource Development Plan of the Department of Energy which indicates a reduced number of planned power stations and associated water needs to only the existing Matimba and Medupi (under construction) power stations.

As such the focus is now on how best to utilise and manage the expected and very valuable surplus of water in the Crocodile catchment. The required transfer volume of water to the Lephalale area has significantly reduced over the short term, and the implementation of this transfer infrastructure, namely Phase 2 of the Mokolo Crocodile Water Augmentation Project, has been put on hold due to a lack of commitment by potential water users. However the coal reserves will be developed although slightly slower than originally anticipated, and planning scenarios must consider this.

Furthermore, it is necessary to augment supply to strategic industries, and water supply to the power stations in Lephalale from the Crocodile as a second source, which is essential to reduce the risk of water shortages from the Mokolo Dam as the single current source.

Alternative water supply scenarios by bulk water providers were identified and assessed as possible options of utilization of the surplus water in the catchment. As much of the surplus is generated by return flows from urban water users, a re-use of water project was planned by the City of Tshwane known as the Tshwane Potable Water Augmentation Program. The assessment found that the surplus water will be depleted by the year 2020 with the implementation of the Tshwane Potable Water Augmentation Program. Further increases in return flow, after the year 2020, will result in a small surplus by the year 2030. However, it has to be clearly understood that no water allocations can be made to other users, such as possible new irrigation projects proposed in the area. Water supply for such projects can only be considered from groundwater resources, or through trading of existing lawful water use entitlements, should this be in the public interest.

Magalies Water also indicated some backlogs in water supply, and potentially greater growth in water requirements for a few areas of the catchment. The alternative water requirement scenario of Magalies Water for the Pienaars sub-system is unsustainable over the long term due to the large deficit in supply in the Pienaars sub-catchment related to significant growth projections around Roodeplaat Dam. These growth projections differ from other information sources.

Bulk water providers in the Crocodile West River system, such as Tshwane Metro, Rand Water, Magalies Water and others, are to meet soon to discuss their projected water requirements for the future, to understand differences in projected growth and achieve a more integrated approach to water supply planning and optimal use of water resources.

Water Conservation and Demand Management activities, such as addressing water losses through replacement of leak prone pipelines, leak detection, pressure reduction, rezoning and the improvement of reservoir integrity, are being implemented by municipalities in the Crocodile West River System. Of note is the activities implemented by the City of Tshwane – their actions have resulted in the reduction of non-revenue water to 24.4% at the end of June 2011.

Good progress is being made with the development of a Decision Support System for the Crocodile West River System to evaluate and establish operating rules to regulate all the dams and abstractions as well as derive restriction rules to protect the resource during droughts. Monthly water release schedules for the different reservoirs will be determined and progress will be provided to the System Operating Forum, probably towards the end of 2011.

An evaluation of the available data was conducted by DWA to assess the resource water quality of the Crocodile West catchment. The in-house assessment has found that water quality downstream of the Hartbeespoort Dam is a concern and the sources of pollution will have to be identified. As a way forward it was recommended that a DWA Crocodile West River Water Quality Technical Task Team be established. The team will investigate the option of developing a phased approached Water Quality Management Plan for the catchment.

The Crocodile West River catchment is not an isolated system and therefore its linkages to neighbouring catchments have to be considered in all planning aspects.

The next SSC is scheduled for February 2012 where the results of technical assessments will be presented and a revision of the Reconciliation Strategy will be discussed and debated. DWA will then use the guidance of the SSC members to formulate the Second Water Resource Reconciliation Strategy for the Crocodile West River system.

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Contact person: Peter van Niekerk (Chairperson: Strategy Steering Committee)
Email: Niekerk@dwa.gov.za