



water affairs

Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

Directorate: National Water Resource Planning

STRATEGY STEERING COMMITTEE OF THE VAAL RIVER SYSTEM PROGRESS REPORT

April 2011

1. INTRODUCTION

The fourth meeting of the strategy steering committee (SSC) was held on 13 April 2011 to discuss the progress with the implementation of the Reconciliation Strategy for the Vaal River System (VRS).

The meeting was attended by 47 stakeholders representing key national and provincial government departments, municipalities, water service providers, industry and Non-Governmental Organisations as well as agriculture.

Comprehensive progress feedback on each strategy action was given by representatives of the responsible organisations. The conclusions from these presentations still indicate that sufficient water can be made available until the year 2050, but **only** if all the actions are implemented and the set targets are achieved.

The strategic actions needed are:

- Eradicate unlawful irrigation water use (estimated to be around 244 million m³/annum) by the year 2013;
- Continue with the implementation of Water Conservation and Water Demand Management (WC/WDM) to achieve further target savings of 180 million m³/annum by the year 2015;
- Implement Phase 2 of Lesotho Highlands Water Project (LHWP) to deliver water by the year 2020; and
- Reasonable progress must be made with some studies that have been initiated to address facets of the VRS Integrated Water Quality Management and a service provider was appointed in April to start with short term solutions to the Acid Mine Drainage problem.

A summary of the progress with each strategy action is given below.

2. IMPLEMENTATION OF STRATEGY

2.1. Eradication of unlawful irrigation water use in the Vaal River System

Unlawful water use is putting the Vaal River System (VRS) at risk. Validation of water use has been completed in the Upper and Middle Vaal Water Management Areas (WMAs) and has commenced in the Lower Vaal WMA. Verification of Existing Lawful Water Use is underway in the Upper and Middle Vaal WMAs.

The present focus of Compliance Monitoring and Enforcement (CME) is on the bigger unlawful water users which represents 39% of the total possible unlawful use. So far 244 million m³/a (180 million m³/a in the Upper Vaal WMA, 34 million m³/a in the Middle Vaal WMA and 30 million m³/a in the Lower Vaal WMA) of water has been found that is being allegedly used unlawfully in the VRS.

The current priority is to address 92% of possible unlawful use in VRS by March 2012, three months after the initial deadline.

Preparation for the publishing of regulations for measuring irrigation water is being finalised together with the revision of delegations, which will greatly assist in enforcing water use compliance.

2.2. Reduction in municipal water use by 15% through Water Conservation and Water Demand Management

Curbing water losses and inefficient water use from municipal water supply systems is crucial but is being hampered by a lack of funding. The Water Conservation / Water Demand Management (WC/WDM) Technical Task Team is investigating funding options for municipalities and how municipalities could source funding from National Treasury.

The processes of municipal budgeting and the procedure to apply for funding from National Treasury are being formulated through inter-departmental engagements to overcome funding constraints.

The largest four municipalities, City of Tshwane Metro, Johannesburg Metro, Ekurhuleni Metro and the Emfuleni Local Municipality reported on the implementation of loss management projects and presented their progress in reducing the Unaccounted for Water (UAW) in their respective areas. It was highlighted that the UAW in Emfuleni Local Municipality is increasing at an alarming rate, with the lack of funds, shortage of skills, inadequate policies and by-laws, as well as the ring-fencing of the water unit being cited as constraints why their set saving targets have not been achieved.

Sasol's representative reported that they are in discussions with the Emfuleni Municipality to see how they, along with other financing institutions, can assist the municipality in implementing WC/WDM in their area of supply. It was further reported that Sasol is working with AgriSA and the South African Irrigation Institute to present information sessions during May on what WC/WDM measures can be implemented in the irrigation sector.

Rand Water was requested at the previous meeting of the VRS SSC to investigate and explain the variations in growth of other smaller municipalities as well as bulk consumers that are not part of the large metros. The provision of emergency water supply by Rand Water to the Victor Khanye (Delmas), Thembisile and Kungwini Local Municipalities was identified as one of the reasons for the large growth in water use. cursory analysis of the Rand Water supply system water balance showed that there is an increasing trend in their UAW in the past few years.

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Rand Water has, therefore, started a process to investigate its internal UAW to determine the potential of reducing water demand.

Due to the general under-investment in WC/WDM in its area of supply, Rand Water started a process to partially co-fund approved water demand reduction projects with municipalities. The Department and several municipalities have appointed Rand Water to implement WC/WDM projects in its area of supply as well as in adjacent areas such as Western Highveld.

Rand Water applied for a water use license to make provision for the anticipated growth in demand in its area of service. The Department has indicated that it might not be able to approve such an application unless WC/WDM has been implemented to its satisfaction. These and other conditions still have to be negotiated in the near future with stakeholders including the Rand Water customers.

2.3. Implementation of Phase 2 of the Lesotho Highlands Water Project

Negotiations on the implementation of Phase 2 of the Lesotho Highlands Water Project (LHWP) are on track. As reported in the previous meeting, Lesotho has a serious electrical energy shortage and wishes to become more energy independent.

Lesotho wanted to revise the agreed plans to maximise hydropower generation from Phase 2 which would have delayed the delivery schedule to transfer the full yield of Phase 2 to South Africa. This was pointed out to Lesotho in high level negotiations who agreed to revert back to the original Phase 2 rollout plan. A pumped storage scheme is currently being investigated to provide Lesotho with electricity. The Katse Dam could be the lower dam while another dam could be built higher up for this scheme.

Current planning is that a final agreement will be signed between South Africa and Lesotho before the end of 2011.

2.4. Progress of the Water Quality Management Strategy and the management of Acid Mine Drainage

Reasonable progress has been made with some studies that have been initiated to address facets of the Vaal River System (VRS) Integrated Water Quality Management (IWQM) Strategy; however, limited capacity hampers swift progress. Maintenance and improvement of resource quality remains the ultimate goal. The establishment of the Vaal Water Quality Implementation Committee should assist, and provide more impetus and momentum to WQM efforts in the VRS.

The following studies are being planned:

- Feasibility Study to investigate the long term options for dealing with Acid Mine Drainage;
- Study on the catchment upstream of Grootdraai Dam where there is an increasing risk of pollution;
- Orange River Salinity Study; and
- Integration of the water quality management strategies of the Vaal and Orange Systems.

An Inter-Ministerial Committee has been appointed to assess what has been done thus far regarding Acid Mine Drainage (AMD), reappraise the risk; assess available solutions and technology; interrogate and assess the viability and costs of critical short-term interventions; propose integrated lasting and sustainable medium- and long-term solutions/measures and explore possible partnerships with the private sector.

Cabinet approved the Team of Experts Report on 9 February 2011. The TCTA was appointed on 6 April to:

- Do emergency work such as to assist with the installation of pumps;
- Construct an on-site treatment plant in each of the three basins with an option to refurbish existing plants;
- Install the infrastructure to convey treated water to nearby water courses; and
- Operate the pump stations and treatment works.

Discussions with mines to use their infrastructure are currently taking place. The institutional arrangements between the various role players are challenging. One of the aspects being investigated is a levy payable by the mines to fund this project.

2.5. Vaal River System Classification Study

The Inception Report for the classification of significant water resources in the three Vaal WMAs has just been accepted, the first meeting of the Project Steering Committee was held in February 2011 and Integrated Units of Analysis (IUAs) for each of the three WMAs have been identified.

The next steps in this study are:

- A detailed evaluation and interpretation of information;
- The extrapolation and socio-economic status of the IUAs;
- Formulate a multi-criteria decision aid system;
- Social, economic, ecological criteria; and
- Integration with the Reconciliation Strategy Maintenance Study.

The classification of the water resources in the VRS will be completed by October 2012.

2.6. Reconciliation Scenarios Review

The system water balance and reconciliation scenarios are constantly being revised as information changes regarding water use and return flows; revised water requirement and return flow scenarios; possible transfers to the Crocodile West River System, mine effluent management scenarios as well as the eradication of unlawful irrigation water use.

The outcome of the target reconciliation scenarios is presented in **Figure 1** which shows that a positive water balance can be maintained until the year 2050 if all the strategy actions listed in **Section 1** are implemented.

Scheduling of Yield Replacement in the Orange River System

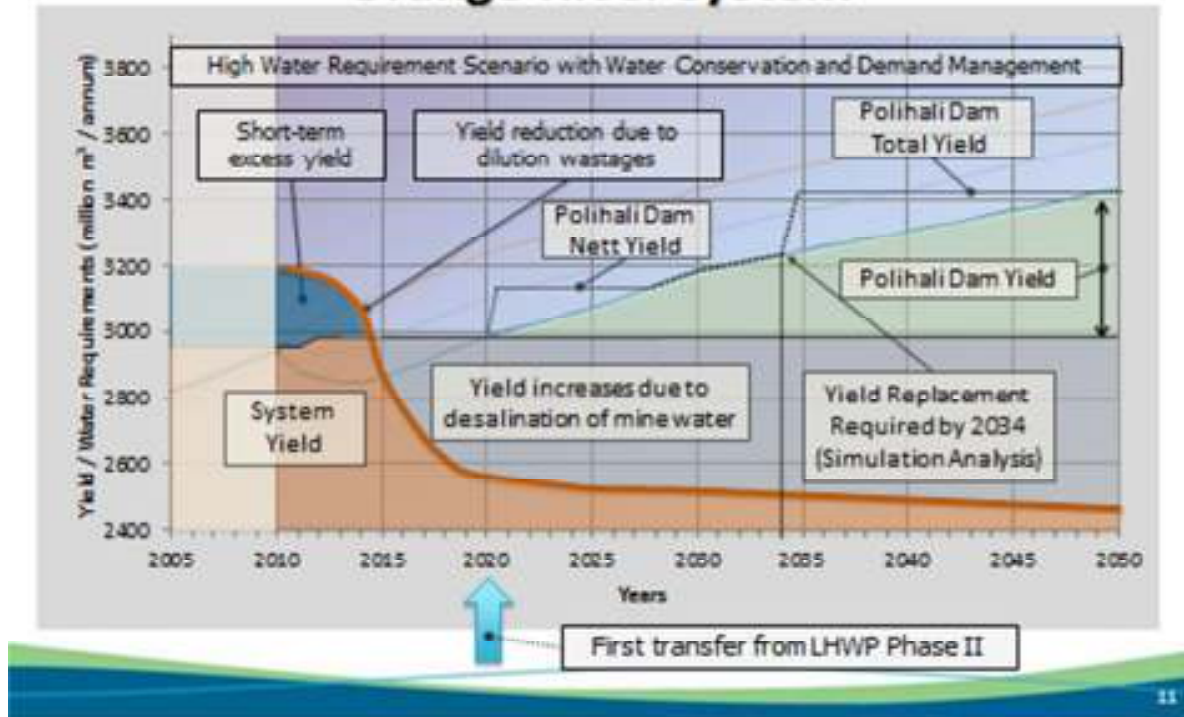


Figure 1: System water balance and target reconciliation scenario

Notes on Figure 1

- Due to the high levels of the dams (May 2010) the system balance shows a short term excess for the first few years.
- The discharge of high salinity mine water will increase once the underground compartments filled and this will require large volumes of releases from Vaal Dam for dilution, which reduces the system yield due to excessive spills and wastage from Bloemhof Dam.
- Desalination and use of the mine effluent prevent these wastages and the system yield increases to about 3 000 million m³/annum by the year 2014.
- The eradication of unlawful irrigation water use by 2013 and the savings through WC/WDM will maintain a positive water balance until the year 2020.
- The implementation of Phase II of the LHWP (Polihali Dam and conveyance infrastructure) by 2020 will ensure sufficient water is available until the year 2049.
- The full yield of LHWP Phase 2 can only be transferred to the VRS if a yield replacement scheme is developed in the Orange River catchment and commissioned by the year 2034.

Uncertainties and risks were identified that may influence the water balance and will result in a water shortage before Phase 2 of the LHWP can be implemented. This includes the schedule of proposed projects in the Lephalale area, failure to achieve the targeted WC/WDM savings or to eradicate unlawful water use.

In recent months information has become available which will be incorporated into scenarios before the next meeting in October 2011. A scenario of water needs in the Lephalale district originally provided for up to four new Eskom power stations plus Sasol's Mafutha 1 development (a proposed Coal to Liquid plant) which would have needed a water transfer scheme from the VRS to the Crocodile West River System. This has changed, because the Department of Energy's Draft Integrated Electricity Resource Plan (October 2010) now focuses on renewable energy sources as well as nuclear power and the next coal power station will only be developed in 2028. Sasol has also delayed its plan to develop Mafutha 1.

With this decrease in the future water requirements of the Lephalale district, all indications are that a water transfer scheme will no longer be necessary from the VRS.

In the months to come, both the Crocodile West River and Olifants River Systems' Reconciliation Strategies will be refined and those results will be incorporated in the review of the VRS reconciliation scenarios. In addition, updated scenarios of future water requirements of bulk users (such as Eskom and Sasol) will be available by the end of April 2011 to be applied in the water balance calculations. The expected information changes, the updates of water balance and revised reconciliation scenarios will be discussed in detail at the next Strategy Steering Committee meeting.

3. GENERAL INFORMATION

Detailed progress reports on the water resource management strategies can be found at the following link: www.dwa.gov.za/Projects/VaalWRMS/documents.aspx

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The next meeting of the Strategy Steering Committee is on 19 October 2011.