



water affairs

Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

Directorate: National Water Resource Planning

STRATEGY STEERING COMMITTEE OF THE VAAL RIVER SYSTEM PROGRESS REPORT 18 APRIL 2012

1. RECONCILIATION SCENARIOS REVIEW

The system water balance and reconciliation scenarios are continuously being revised as information changes regarding 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 water balance and target reconciliation scenario are similar to what was presented at the October 2011 meeting as shown in **Figure 1**, where the following can be observed:

- Due to the high levels of the dams (May 2011) 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.)

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

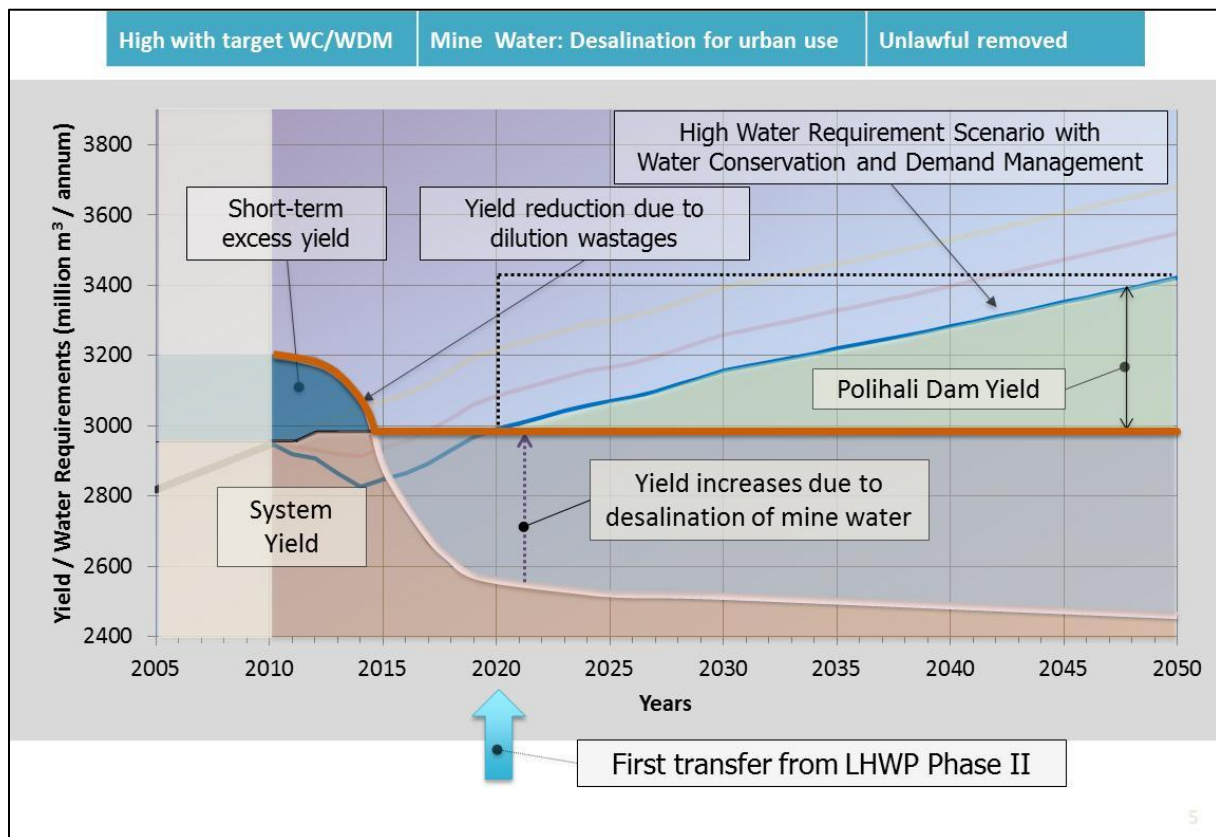


Figure 1: System water balance and target reconciliation scenario

Potential transfers to the Crocodile West River System

The Vaal River System is the source of purified water for a large portion of the urban water users located in the adjacent Crocodile West River System. The treated effluent from these urban areas represents more than 70% of the available water in the Crocodile West System and is also the intended source to augment the long term water needs of the planned energy related projects in the Lephalale Area (Waterberg Coal Fields).

The long term development plans for coal mining and electricity power generation on the Waterberg Coal Field are dynamic and **Figure 2** presents a summary of the water requirement scenarios that are being considered.

The Mokolo River and Crocodile West River systems water balances are currently being revised based on the “Unconfirmed March 2012 Scenario” for the Lephalale Area. Initial calculations show that that additional raw water transfers in the form of treated wastewater will be required from the Vaal River System to maintain a positive water balance in the Crocodile West River System over the long term.

The timing and volume of the transfers will be incorporated in the water balance and presented at the next SSC meeting.

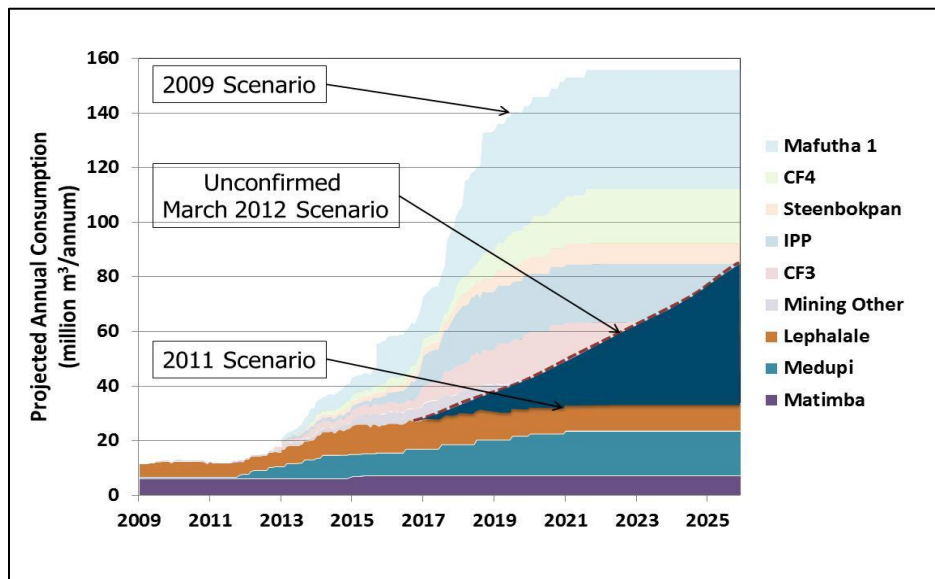


Figure 2: Water Requirement Scenarios Lephale Area

Reconciliation Perspectives:

- Sufficient water can be made available to all users in the Vaal River System only if all the interventions reflected in **Figure 2** are successfully implemented.
- Although there is currently sufficient water for supply in the short term (due to full dams), extended delays in achieving the target water saving will increase the risk of water restrictions over the long term and jeopardise sustainable supply until Phase II of the LHWP can deliver water.

Information under review and recommendations

- The DWA has commissioned the Orange River Reconciliation Strategy Study to determine the best long term water management solutions that will ensure both the Vaal and Orange systems have sufficient water for the next thirty years.
- Revised water use figures for the 2011/2012 planning year are being collected and summarised for monitoring purposes.
- It is recommended that the long term water requirement and return flow scenarios be revised once the Census 2011 data become available.
- The system water balance diagrams will be revised based on the water transfer needs to the Crocodile West River System and the final results from the Verification Study when it becomes available.

