

- Return flows from Polokwane and Mokopane should be reused by the urban or mining sector.
- Water entitlements can be bought out if the water requirement reductions and/or yield increases as a result of the above interventions are not realised.

Implementation arrangements

DWA, as trustee of the country's water resources, is facilitating the process of water reconciliation planning, while implementation is the responsibility of a range of institutions.

Entities that will play a crucial role in all aspects of implementation of this strategy are *inter alia*: the CMA (once established), ESKOM, Mines, Industries, Municipalities, Water Boards, Irrigation Boards, Water User Associations, Organised Agriculture and Nature Conservation Institutions.

With regard to the water supply to towns, the municipalities have a crucial role to play. Meeting WC/WDM targets is critical in achieving a water balance in the Olifants catchment, and municipalities must ensure that everything possible is done to minimise losses and ensure that water is used efficiently. On the supply side, municipalities need to recognise the value of groundwater, which is often overlooked, as a cost-effective local source. Groundwater is highly suited for small town domestic supply and in this basin should be one of the first options considered before turning to surface water sources.

The Local Municipalities of eMalahleni and Steve Tshwete are already making good use of treated mine water decant. More water decanting from coal mines can be reclaimed to drinking water standards.

A CMA for the Olifants catchment needs to be established as a matter of urgency.

Table 1 outlines interventions considered necessary if a water balance is to be achieved, together with the responsible institutions and target dates.

Intervention	Responsible institutions	Target Date
Addressing the unlawful irrigation use.	DWA (Head and Regional Offices); CMA; Irrigation Boards (IBs); WUAs	End 2018 and then on-going
WC/WDM Urban	Water Services Providers (District and Local Municipalities (DMs & LMs)) Water Boards; WUAs; Industries; DWA (Head and Regional Offices); Broad Public	End 2017

Intervention	Responsible institutions	Target Date
WC/WDM Irrigation	IBs; WUAs; Irrigators	End 2016
WC/WDM Mining	Mine Owners & Operators; Industries	End 2021
Water Trading – mechanism to support WUE measures	DWA (Head & Regional Offices); Irrigators	End 2015
Removal of IAPs	Dept. Environment Affairs and WfW Teams	On-going. Removal must be faster than the growth. Reduce IAPs by at least 50% over 23 years.
Groundwater Development	DMs; LMs; Water Boards; Companies; Industries; Private Individuals	On-going from 2012
Operationalising the Reserve	DWA (Head & Regional Offices); CMA; IBs; WUAs; WBs	2016
Treating AMD	Mine Companies	Upstream of Witbank Dam 2015 Upstream of Middelburg Dam 2020
Reuse of sewage water from Polokwane and Mokopane	Polokwane LM Mokopane LM Mines	On-going as return flows are growing

Recommendations for further work

- A possible regional groundwater scheme, with the Malmani dolomites as resource, should be investigated.
 - Impact of groundwater abstraction on surface water base flow.
 - Possibility of artificial recharge with surface water.
- Operating rules for the management of Loskop Dam, Flag Boshielo Dam, De Hoop Dam, Middelburg Dam and Witbank Dam as a single system must be developed and implemented.
- Development of a policy and guideline document on water trading.
- The CMA must be established.
- Establishment of a Strategy Steering Committee, with responsibility for strategy implementation.

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OLIFANTS RECONCILIATION STRATEGY (ORS) NEWS

Development of a Reconciliation Strategy for the Olifants River Water Supply System

Third Newsletter

The Recommended Reconciliation Strategy



water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

Introduction

The Olifants Reconciliation Strategy Study has been completed, and a strategy (the ORS) formulated. The challenging task of implementing this strategy lies ahead. Two newsletters, see website below, have reported on progress with the ORS study, while this third newsletter summarises the recommended reconciliation strategy and its implementation arrangements.

A draft final strategy report was presented to the Study Steering Committee (SSC) on 16 November 2011. SSC members were given opportunity to comment and these comments have now been incorporated. This strategy report and other relevant information can be viewed on the Department of Water Affairs website - www.dwa.gov.za/projects/OlifantsRecon.

For purposes of the strategy the Olifants catchment was subdivided into three Water Management Zones (See Figure 1), i.e. Upper, Middle, and Lower Olifants. The towns of Polokwane and Mokopane are in the Limpopo Water Management Area but require significant additional water from the Olifants catchment. These towns and surrounding areas will be supplied from the Middle Olifants Water Management Zone.

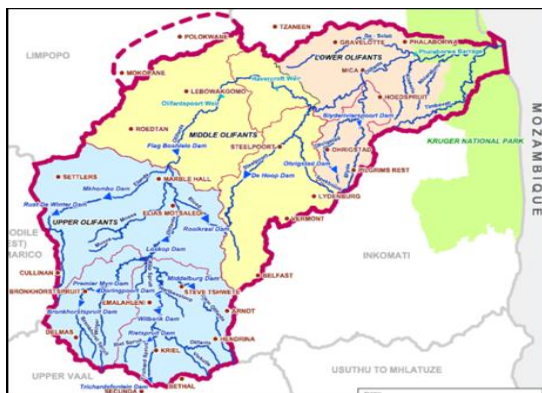


Figure 1: Sub-Catchments of the Olifants Water Management Area

The objectives of the Olifants Reconciliation Strategy are:

- To meet legitimate current and future water requirements
- To recommend the most suitable interventions to balance the water requirements and water resources
- To identify responsible institutions and provide target dates for implementation of the strategy.

The Projected Future Water Balance

Information for the prediction of future water requirements was obtained from the Olifants River Water Resources Development

Project (2005), the Integrated Water Resource Management Plan (2008), the Development of a Reconciliation Strategy for All Towns in the Northern Region (2011), other study reports, and inputs from stakeholders. High and a low growth scenarios were developed, based primarily on information from STATS SA. Growth predictions for the mining sector and the use of differing assumptions for immigration and the impact of HIV/AIDS led to these two growth scenarios. A conservative approach requires that water resources be planned on the assumption of high growth. The high and low water requirement curves are shown on the graphs of Figure 2. Reconciliation options aim to both lower the requirements curve and increase the available resource.

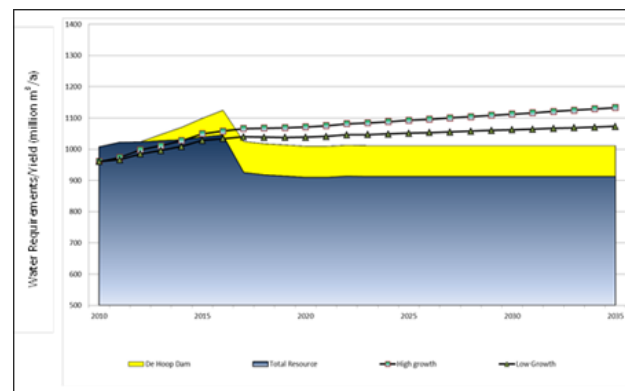


Figure 2: Water Balance of the Olifants catchment

Available water comes from the combined yields of the major dams in the catchment, yields from farm dams and run of river, transfers into the catchment, and current groundwater use. The water availability (expressed as yield with 98% assurance of supply) is represented by the blue area in Figure 2. The De Hoop Dam will be commissioned in 2012 and it is assumed that this will take five years to fill. The additional yield is shown in yellow on the graph in **Figure 2**.

The ecological Reserve for the catchment has not yet been operationalized and it has been assumed that this will be implemented when De Hoop Dam reaches its full capacity. The Reserve requirements were determined in a study that started in 1999 and included a high flow component requiring flood releases from existing dams. The Reserve requirements adopted for this study do not contain these flood releases as they are not considered necessary given the adequate flood contribution from downstream tributaries. The impact of the Reserve requirement adopted for this study can clearly be seen as a dip in available yield on the graph. The graph illustrates that it is not

possible to achieve a water balance without further interventions beyond the commissioning of the De Hoop Dam.

The graph shows the water deficits that can be expected from 2016/17 for both the high and low water requirement scenarios, indicating the urgency of water resource interventions.

The Strategy in a Nutshell

The following is envisaged for the Olifants catchment:

- The Reserve needs to be operationalized as soon as practical. It is expected that this will be achieved in 2016 as De Hoop Dam reaches its full yield potential.
- Water required to supply the current and future social and economic activities in the Olifants catchment will have to come from the catchment's own resources, except for the power stations within the catchment.
- Water to power stations will continue to be supplied from the Usuthu, Komati and Vaal systems.
- Water required by the Polokwane and Mokopane supply areas will be augmented from the Olifants catchment.
- Water requirements can be balanced by availability over the next 25 years through the implementation of the following measures:
 - Eliminating all unlawful water use. The target date for the majority of transgressions to be addressed is 2018, after which compliance monitoring and enforcement will remain an on-going activity.
 - Introducing water conservation and water demand management (WC/WDM) in all sectors. Full water savings need to be achieved within five years in the irrigation and urban water use sectors, and within 10 years in the mining sector.
 - The introduction of a mechanism whereby water saved through water use efficiency (WUE) measures, especially in agriculture, can be traded back into the market. This means that water users will be in a position to sell their water savings, and not necessarily use this water to expand horizontally.
 - The treatment of acid mine drainage water to an acceptable standard, either for immediate direct use or before it is allowed to decant into the river system.
 - Invasive alien plants must be removed. Working for Water programmes must be accelerated to ensure that at least 50% of infested areas, plus all new growth, is eradicated by 2035.
 - Groundwater resources must be developed as a priority. The Malmani dolomites must be investigated as a possible resource for a regional water supply scheme.