

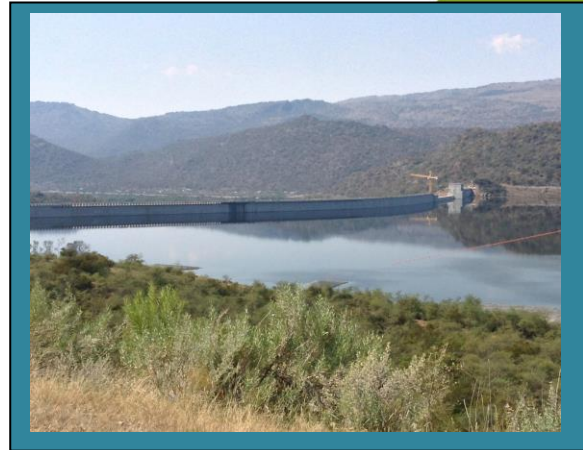
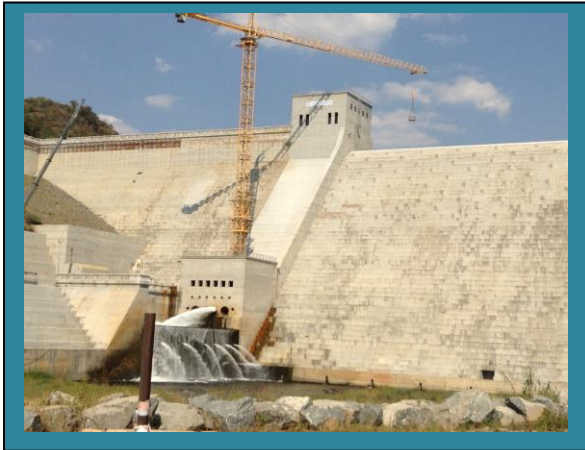


**water & sanitation**

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Water and Sanitation  
REPUBLIC OF SOUTH AFRICA



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## **Water Resources of South Africa (WR2012)**

**INFORMATION LEAFLET**



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## Water Resources of Southern Africa, 2012 (WR2012)

The Water Research Commission of South Africa commissioned this study to provide a new and enhanced water resources system analysis covering South Africa, Lesotho and Swaziland. The rainfall-runoff WRSM/Pitman model is a key part of this project and has undergone further enhancements during this study. This project is building on the WR2005 project which was completed in 2010. Final deliverables are planned for 2016. It is envisaged that these products will greatly facilitate the analysis of integrated water resources across the country for a wide range of users.

### WR2012 Deliverables

The main deliverables of this study are:

- a WR2012 Executive Summary report and WR2012 User's Guide;
- a hard copy Map Book of 77 GIS maps, with base, rainfall and runoff maps for each water management area (WMA) and other maps for the whole country;
- present day analysis for South Africa, Lesotho and Swaziland;
- a web based system consisting of a menu system (the "dashboard") allowing access to the models, electronic maps, data, reports and WRSM/Pitman systems;
- this web based menu system will include data and information up to September 2010 and will include new options such as land use/water use, monitoring information, present day streamflow, etc;
- enhancement to the WRSM/Pitman model including a daily time step and
- training to a number of universities, consultancies and other organisations.

Web-based Menu system (Dashboard) [www.waterresourceswr2012.co.za](http://www.waterresourceswr2012.co.za)



Figure 1: WR2012 website showing Katse Dam in Lesotho



Some of the key deliverables have been summarised below.

- **GIS Maps**

Access to view and manipulate GIS maps. Categories available are base maps, rainfall, evaporation, runoff, land cover, WRSM/Pitman model parameters, geology, soils, sediment, vegetation, Environmental Water Requirements, water quality (TDS) population and groundwater maps.

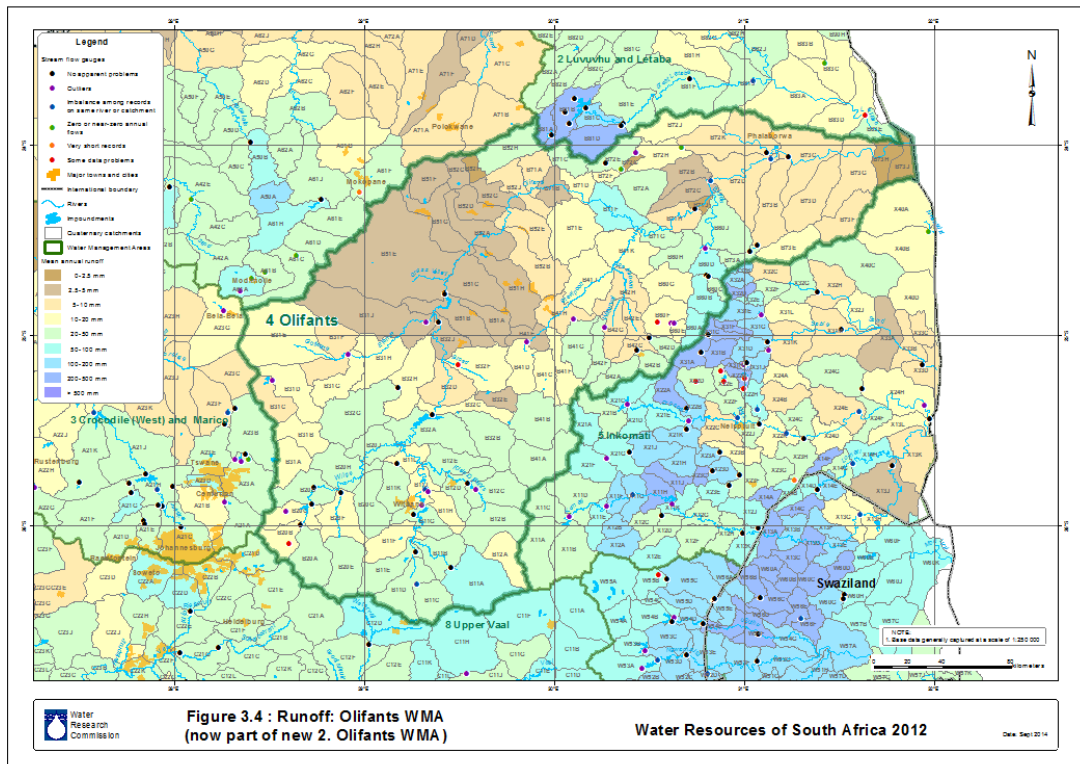


Figure 2: Runoff GIS map of the Olifants River WMA

- **WRSM/Pitman model**

Access to the enhanced WRSM/Pitman model.

The WRSM/Pitman datasets for the entire study area are available up to September 2010 including WRSM/Pitman schematics. There are numerous new features to enhance the User friendliness of the model. Also included is a daily time step option. Recent WRSM/Pitman study information has been incorporated which has often included more detailed catchment characteristics on dams, farm dams, land use etc.



## ▪ Reports

Reports give the user access to the following reports:

- WR2012 Executive Summary
- WR2012 User's Guide
- WR2012 Book of Maps;
- WR2012 SALMOD Water Quality Analysis Sami Groundwater
- WR2012 SAMI Groundwater module: Verification Studies, Default Parameters and Calibration Guide;
- WR2012 Calibration Accuracy;
- WRSM/Pitman User Manual;
- WRSM/Pitman Theory Manual;
- WRSM/Pitman Programmer's Code Manual

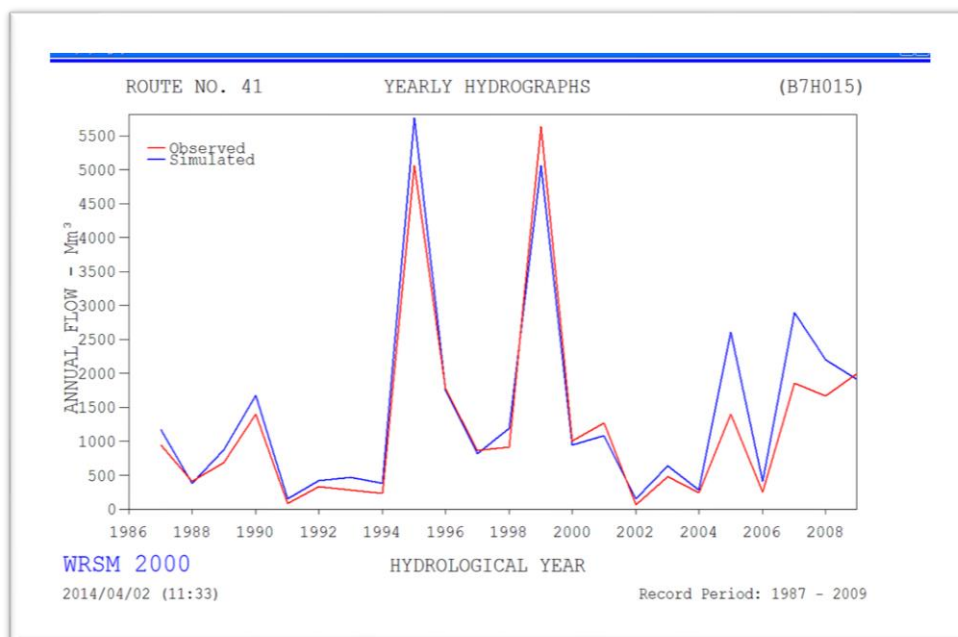


Figure 3: WRSMPitman model yearly hydrograph

## ▪ Quaternary data spreadsheets

Tabular information per quaternary catchment, such as catchment area, area of irrigation, Mean Annual Precipitation, naturalised flows, WRSMPitman parameters, Sami groundwater parameters, etc.

## ▪ Land Use/Water Use spreadsheet

Major Land Use/Water Use details per Water Management Area

- **Monitoring data**

Monitoring data for rainfall, observed streamflow and water quality

- **Patched Observed Streamflows**

Streamflow has been updated to September 2010 with missing and unreliable values patched. Spreadsheets provide useful information on each streamflow gauging station per Water Management Area.

- **Catchment Rainfall Groups**

Rainfall station groups with individual rainfall stations details have been given for all catchment rainfall files for ease of updating.

- **Catchment Based Rainfall Files**

Area based rainfall for every rainfall group.

- **Rainfall Stations**

Monthly rainfall data for every rainfall station.

- **Naturalised Flow Datafiles**

Monthly flows for every quaternary catchment.

- **Present Day Streamflow**

Present day streamflow is the streamflow that would have been generated if the land use over the past record period would have been as at present (September 2010 as base) for selected locations.

- **Sami Groundwater Study**

Theory, verifications in a number of catchment and revised groundwater data are covered.

- **Water Quality**

The water quality of the entire Vaal River catchment (previously Upper Vaal, Middle Vaal and Lower Vaal Water Management Areas) is soon to be completed using the SALMOD model.

Access to the SALMOD model, which analyses flow, TDS and load and the OTHER model which deals with a number of water quality parameters with water quality data up to 2010.

## **PROJECT LEADER**

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