



water & sanitation
Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

DETERMINATION OF ECOLOGICAL WATER REQUIREMENTS FOR SURFACE WATER (RIVER, ESTUARIES AND WETLANDS) AND GROUNDWATER IN THE LOWER ORANGE WMA

23 June 2016

OVERVIEW OF STUDY AREA, CURRENT WATER RESOURCES, IMPLEMENTATION AND OPERATION

Manie Maré: WRP

WATER IS LIFE, SANITATION IS DIGNITY

WATER RESOURCES INPUT

1. Initiate the BHN and EWR assessment
How will the study be executed?

2. Delineate RU, select study sites
Where will detailed work be undertaken?

4. Determine BHN and EWR
How much water do you need for basic human needs and to maintain a certain ecological status?

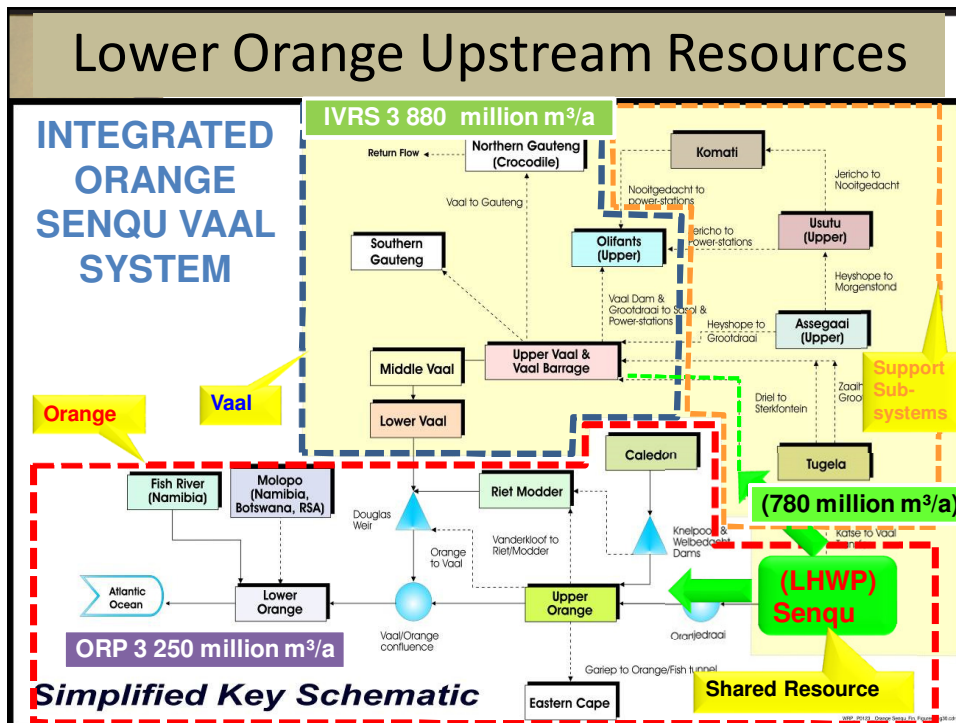
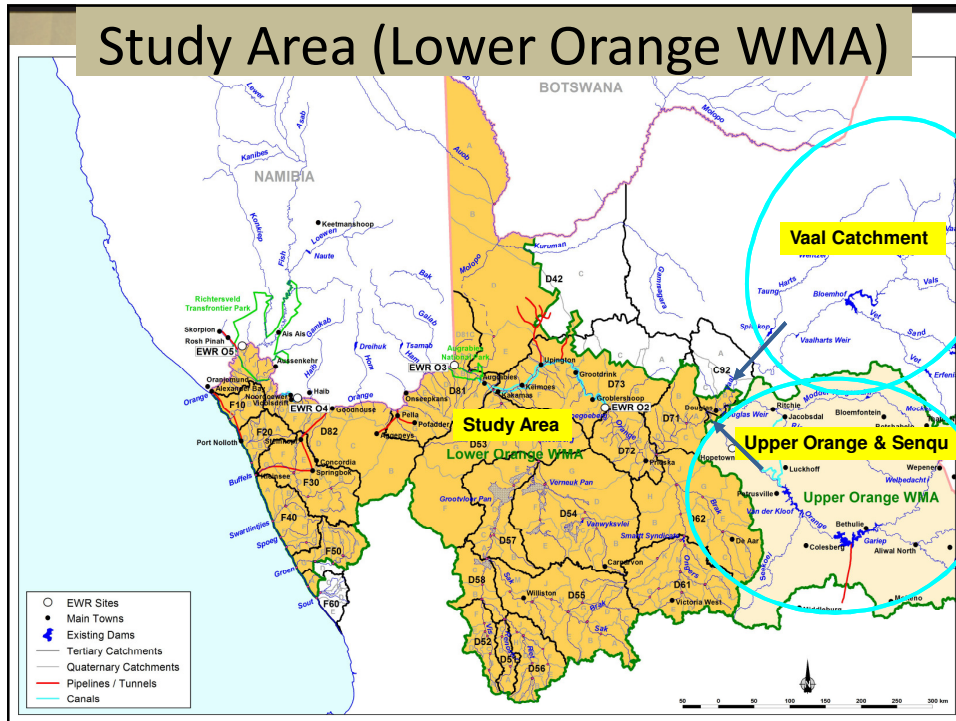
3. Determine reference condition, PES and EIS
What are the ecological status, importance and future ecological objectives?

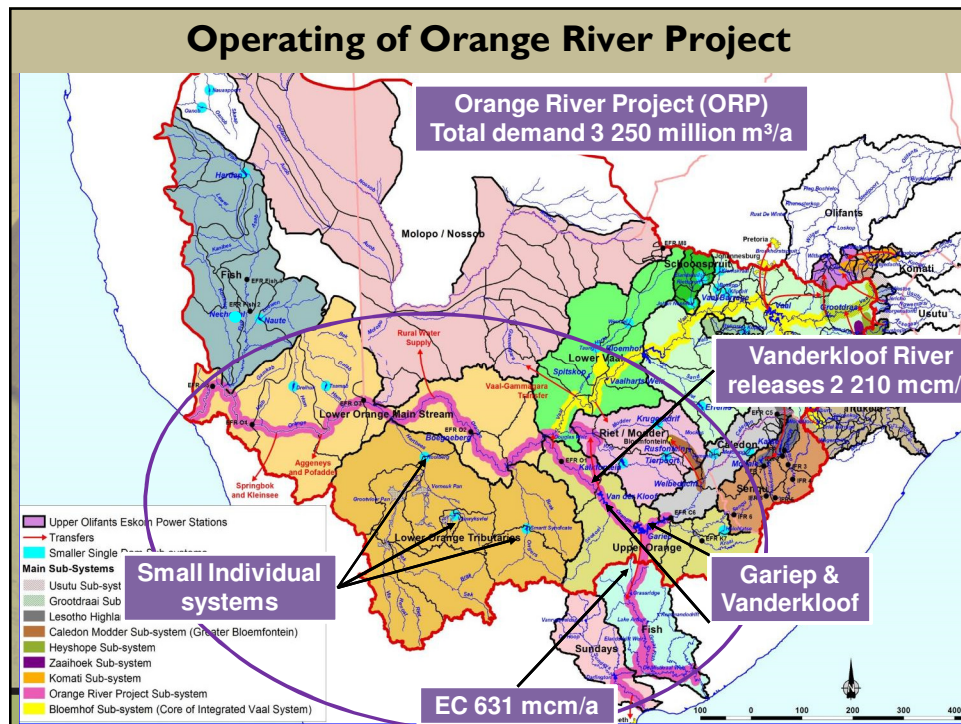
5. Determine operational scenarios and evaluate consequences
How will the current state and ecological objectives be influenced by future changes in operation?

6. Ecological specification, monitoring and implementation information
How do we know that we will achieve our objectives

WATER IS LIFE - SANITATION IS DIGNITY

Toll Free: 0800 200 200 www.dwa.gov.za





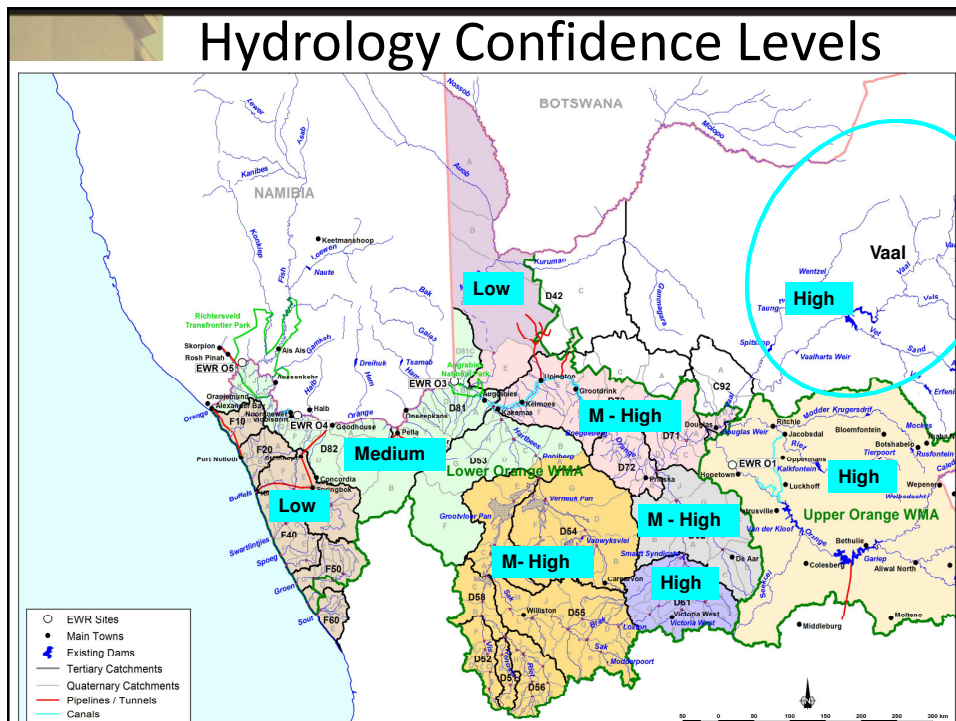
Decision Support Systems, hydrological data

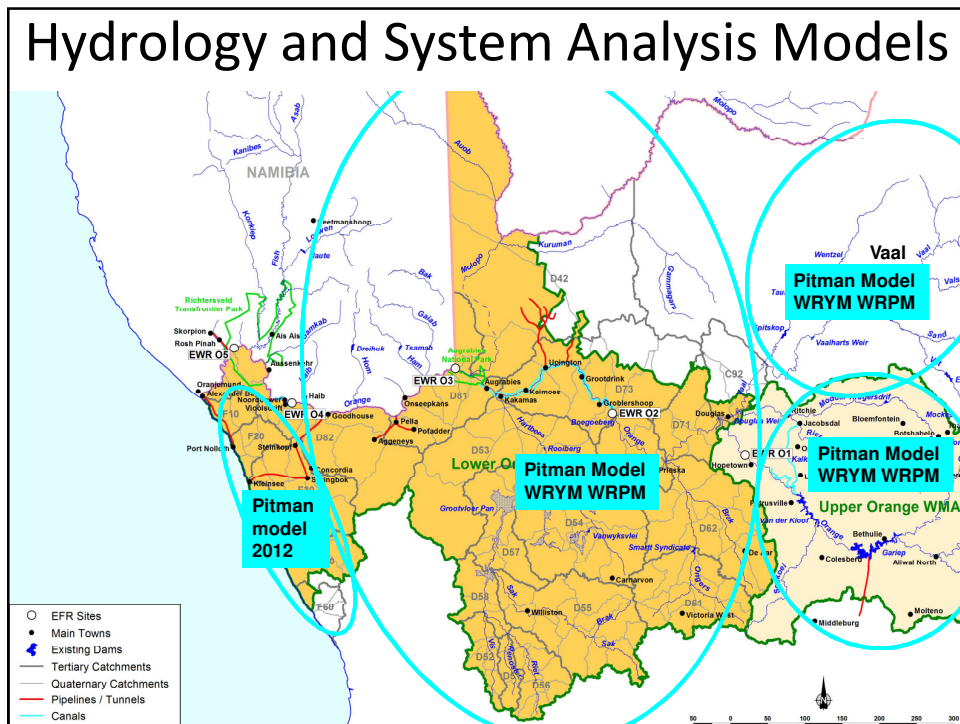
- Review of Water Resource information:
Large no. Studies (Upper Orange, Senqu IVRS & Lower Orange)
- Gap analysis carried out on
 - available data
 - results
 - and recommendations
- Groundwater surface water interaction
not included in hydrology modelling

GAP Analysis

- Hydrology data upstream Orange Vaal Confluence – High confidence 85 year records (1920 to 2004)
- Hydrology Small Rivers West Coast – Low confidence 90 year records 1920 to 2009 (WR 2012 data – Pitman Model)
- Pitman Model, WRYM and WRPM available for entire catchment except West Coast small rivers
- West Coast small rivers only Pitman Model (WR2012)

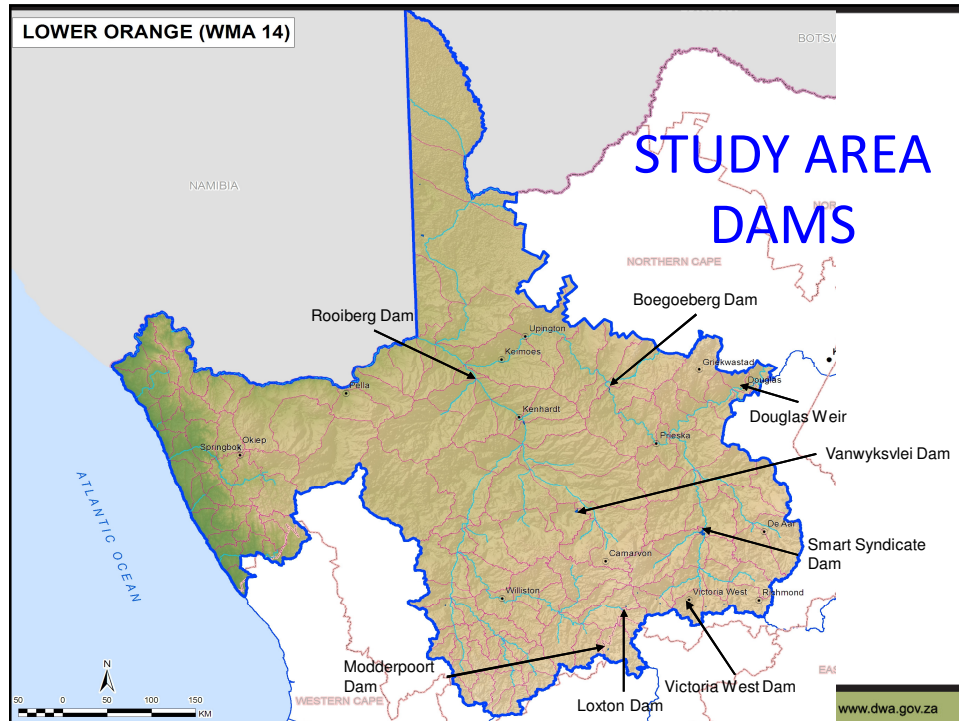
WATER IS LIFE - SANITATION IS DIGNITY Toll Free: 0800 200 200 www.dwa.gov.za





Recommendations

- Use ORASECOM Pitman Model setup for natural and current day flows per quat for Lower Orange excluding Molopo.
- WRYM setup as prepared for ORASECOM Study for Orange – Focus on the Molopo
- Pitman Model Setup - WR 2012 data – Focus on Small West Coast Rivers
- WRYM and WRPM setups for main Orange Scenario analysis
- Include surface/groundwater interaction selected areas

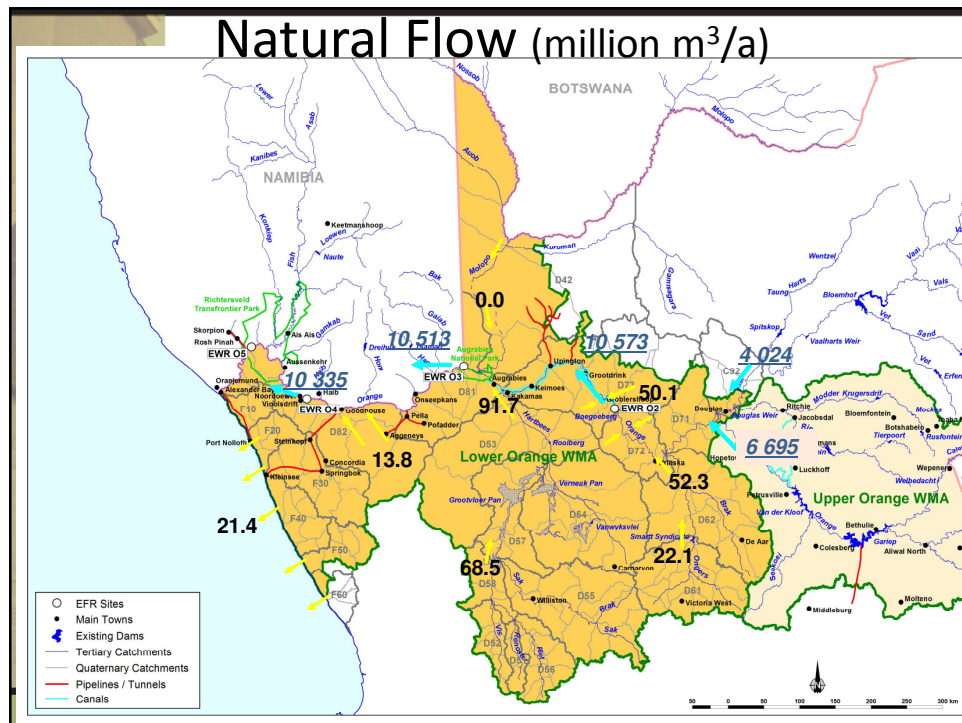
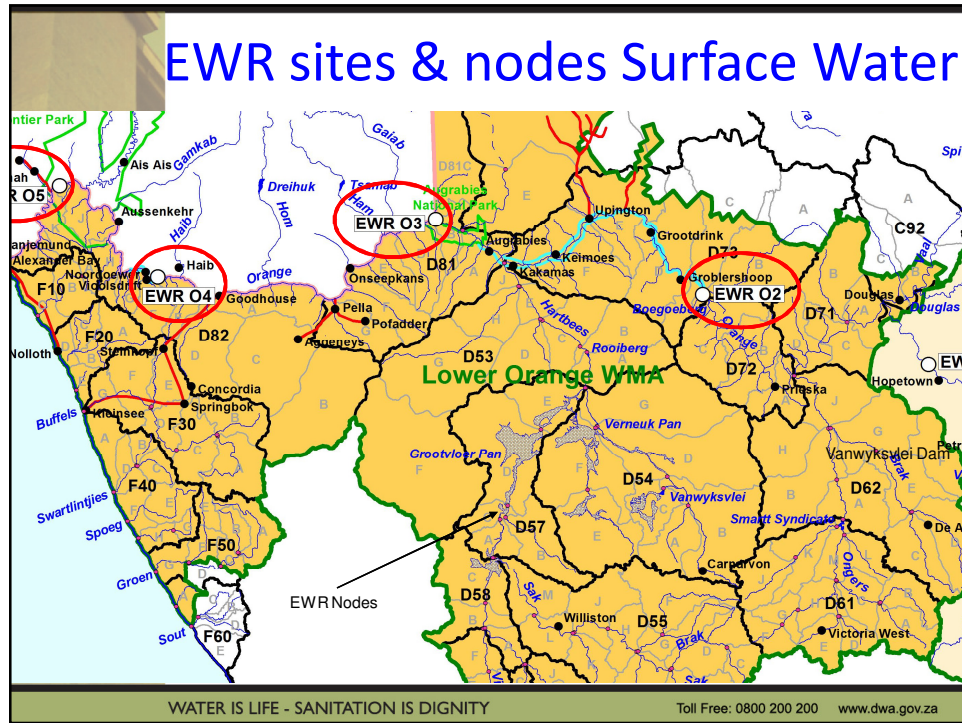


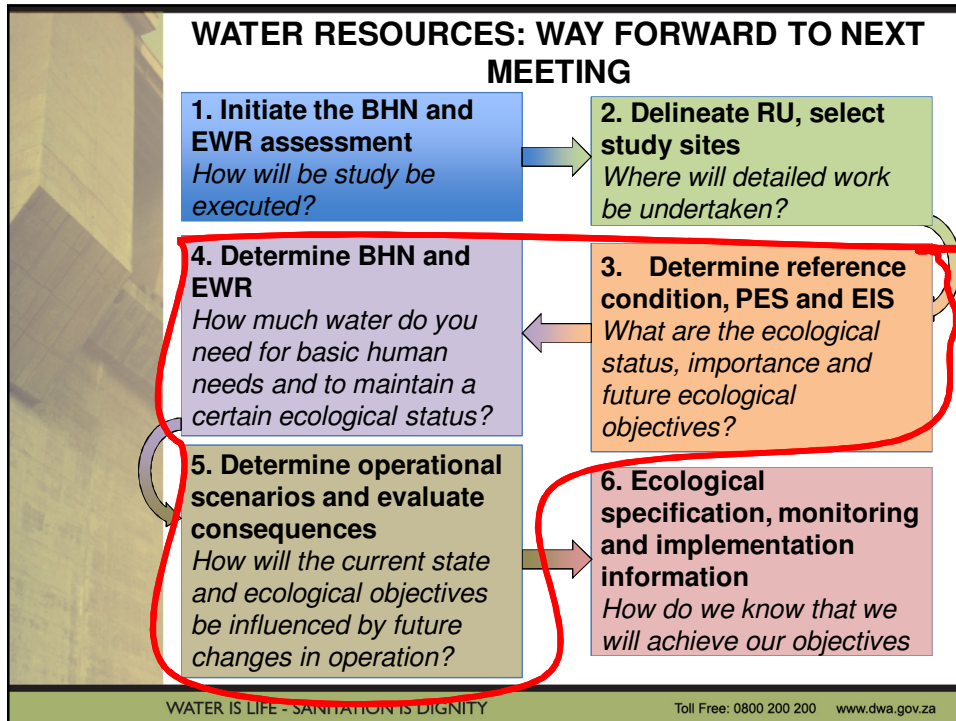
Water Resource Modelling (Approach Overview)

- Ecological Water Requirement Desktop biophysical Nodes (99)
 - Configure Water Resource Models
 - Generate natural and present day hydrology
 - Evaluate scenarios.
- Main Orange River (4 EWR sites & Estuary)
 - Modelling of different scenarios based on future development options (Orange Recon & Vioolsdrift study)

WATER IS LIFE - SANITATION IS DIGNITY

Toll Free: 0800 200 200 www.dwa.gov.za





QUESTIONS FOR CLARIFICATION

WATER IS LIFE - SANITATION IS DIGNITY Toll Free: 0800 200 200 www.dwa.gov.za