

Mokolo & Crocodile Water Augmentation Project (MCWAP)

Crocodile West Strategy Steering Committee No. 1

Mount Amanzi (Hartebeespoort)

Ockie van den Berg

29th of July 2010

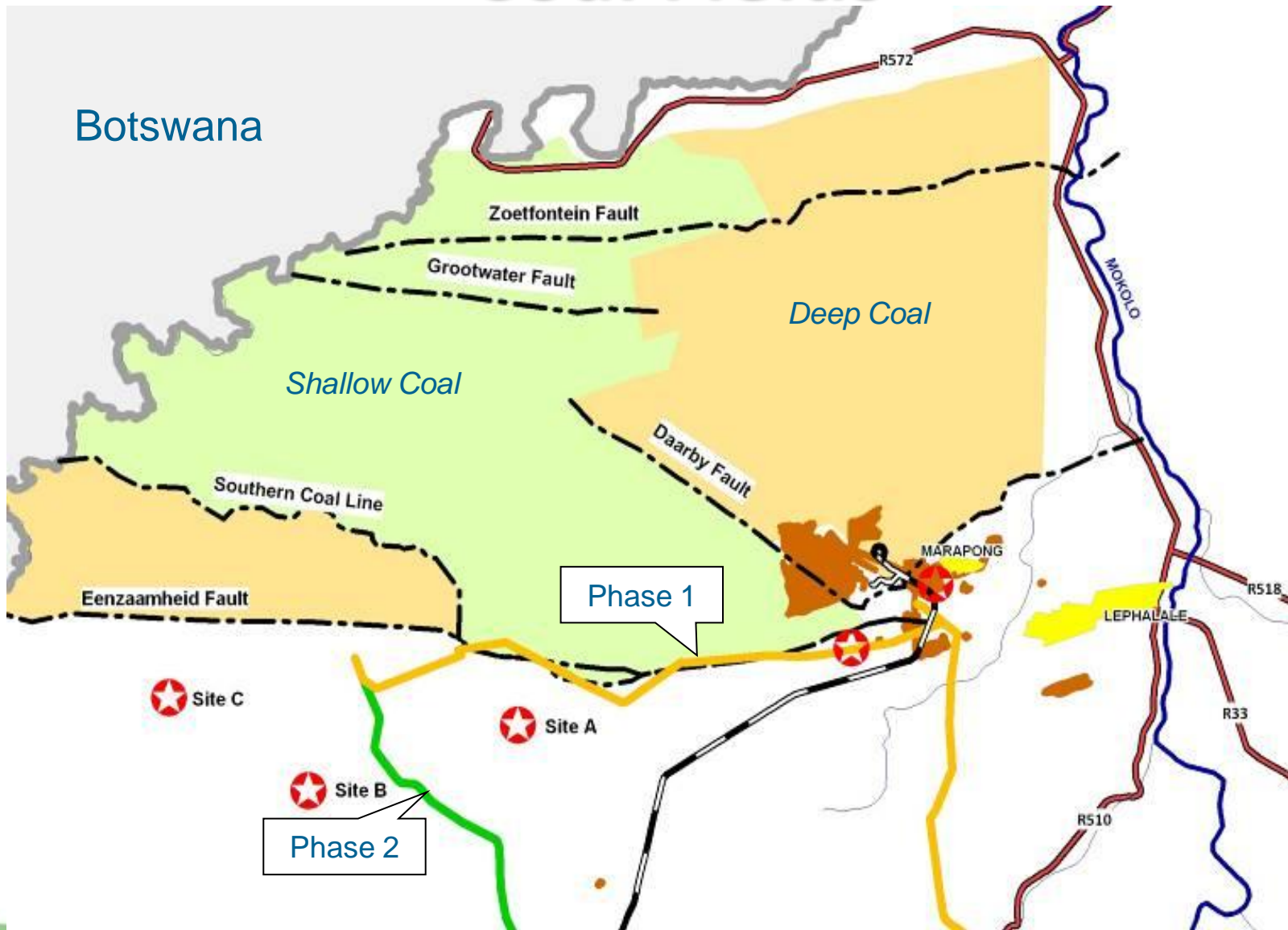


Background to the Project

Waterberg coal field creating opportunities which require water

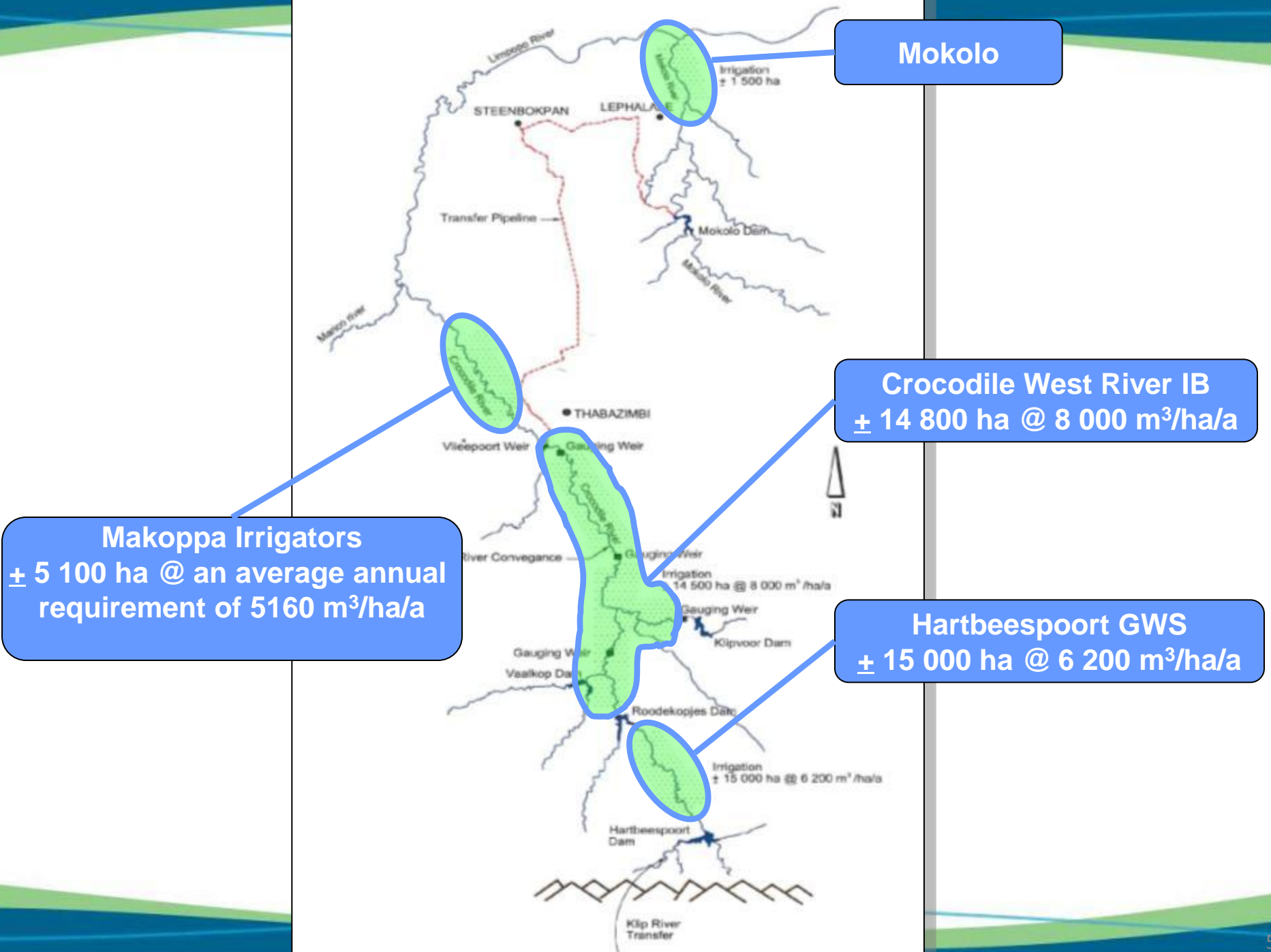
Energy security (electricity and fuel) is of strategic importance and is the driver for the proposed water augmentation

Coal Fields



Existing Development

- **Lephalale Local Municipality
(Ellisras Town, Marapong)**
- **Grootegeluk Mine**
- **Matimba Power Station**
- **Medupi Power Station (under
construction)**
- **Irrigation**



Mokolo

Irrigation
± 1 500 ha

Crocodile West River IB
± 14 800 ha @ 8 000 m³/ha/a

Makoppa Irrigators
± 5 100 ha @ an average annual
requirement of 5160 m³/ha/a

Hartbeespoort GWS
± 15 000 ha @ 6 200 m³/ha/a

Irrigation
± 15 000 ha @ 6 200 m³/ha/a

Anticipated Future Development

- **Development of further power stations;**
- **Extension of the Grootegeluk mining operations and possible further coal mines;**
- **Possible petrochemical industries (Coal to liquid fuel);**
- **Possible exploitation of underground gas resources;**
- **Associated secondary and tertiary development and;**
- **Accelerated population and municipal growth in Lephale and Steenbokpan areas.**

Extent and timing of further development dependant on Government decisions

Objective

The objective of the MCWAP is to plan and implement feasible options to transfer water from the Mokolo River and Crocodile West River to Lephhalale and Steenbokpan without impacting on the water entitlements of existing users.

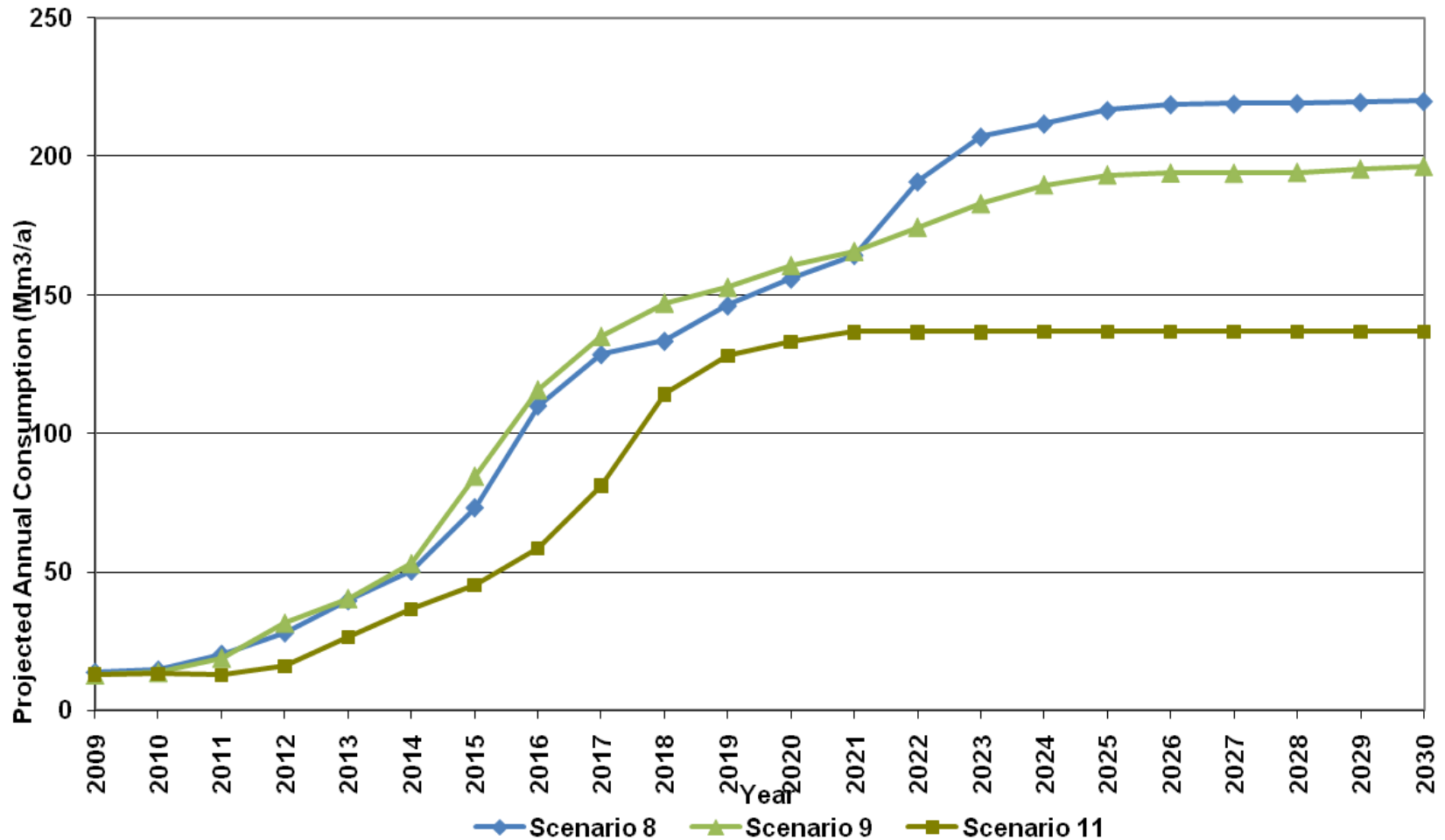
Water Requirements

Different demand scenarios have been investigated for the period up to 2030 based on input provided by present and future users

The scenarios provide for different levels of development implemented at different times

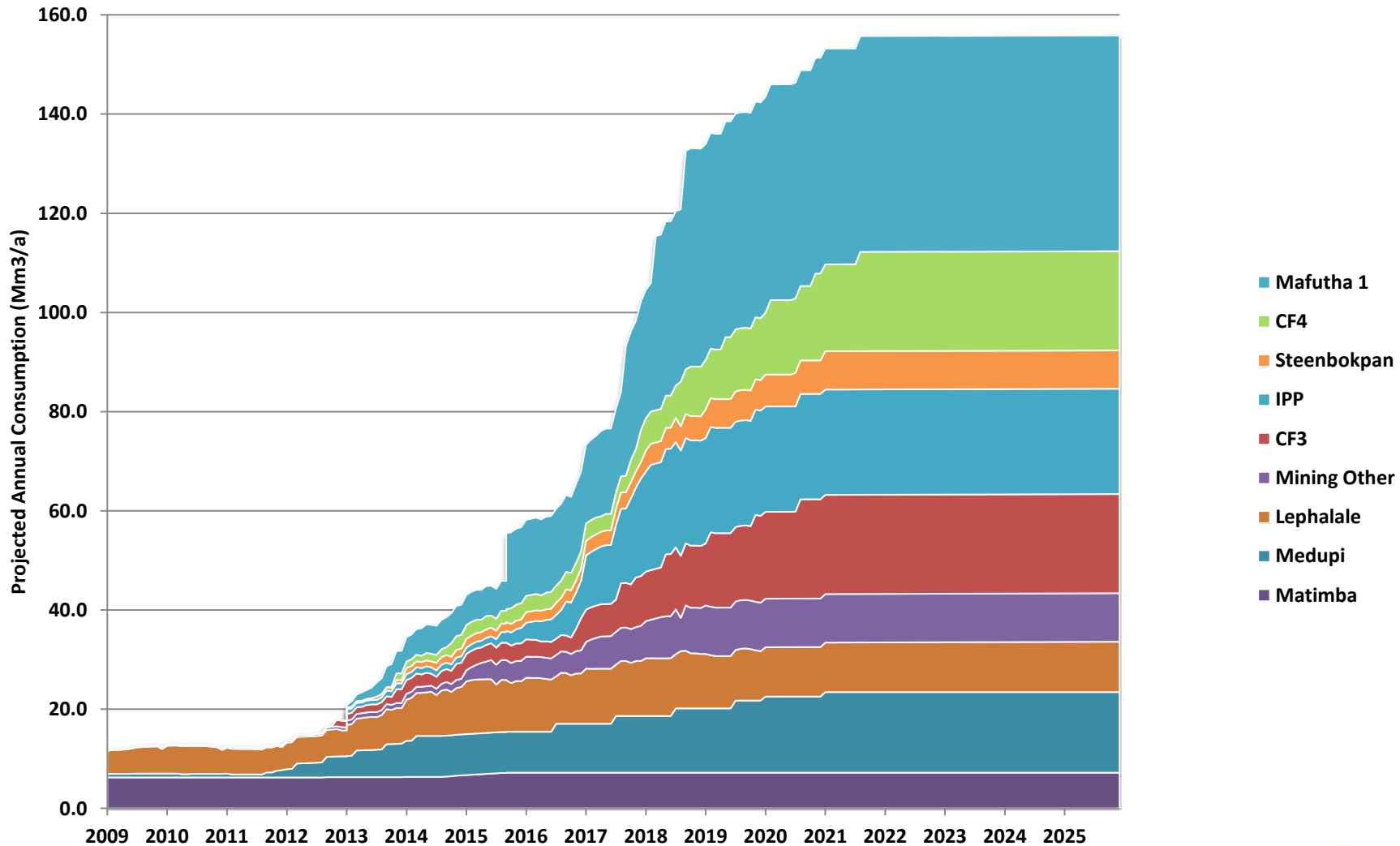
Water Requirement Scenarios

Comparison of Water Requirement Scenarios



Water Requirement Breakdown

10 Scenario 11 Projected Water Requirements

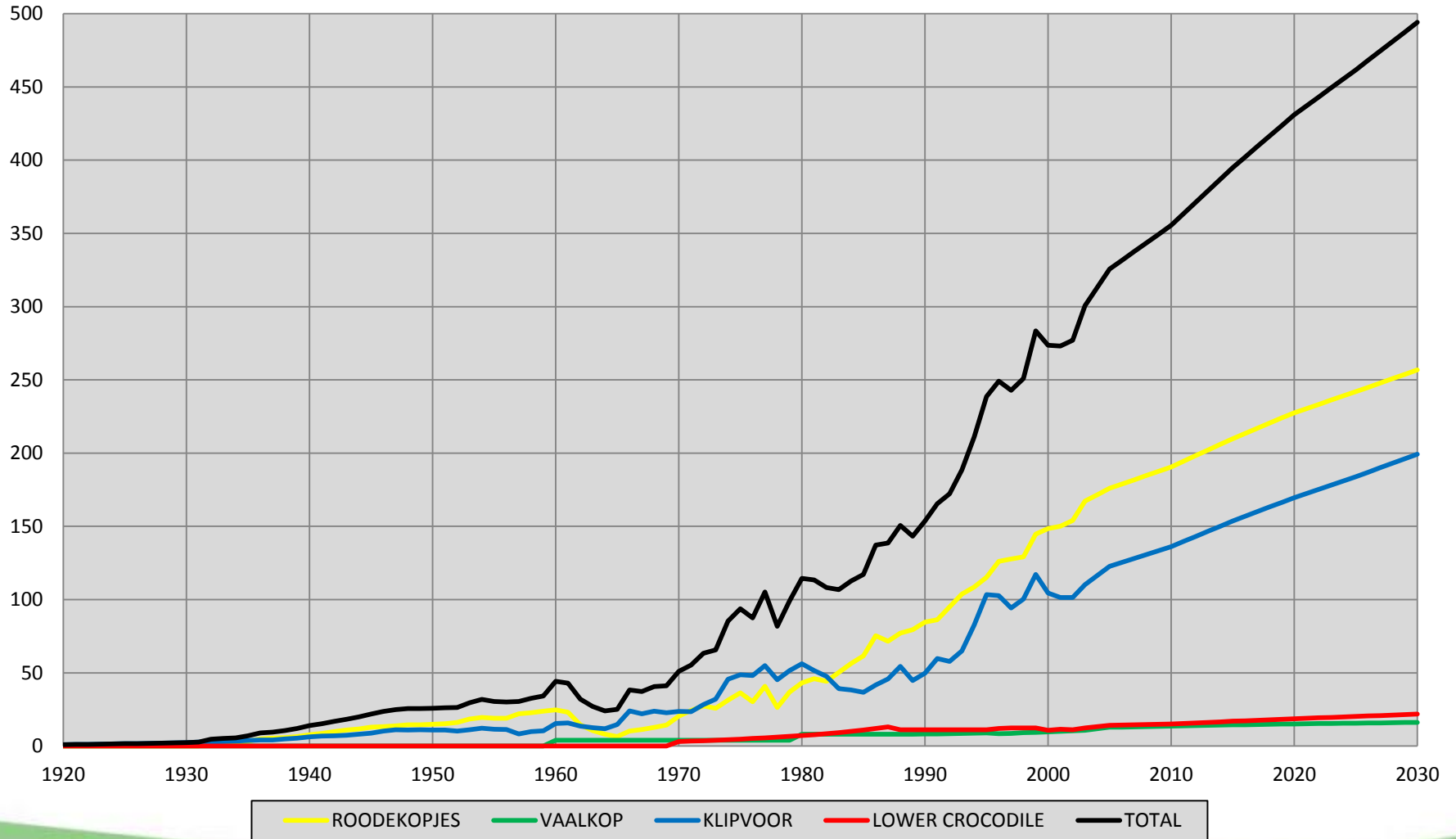


Sources of Water

- **Mokolo Dam (Existing supply),**
Switch from irrigation to game and cattle farming in the catchment of the Dam resulted in significant increase in yield
- **Groundwater (limited)**
- **Water conservation & demand management**
- **Re-use of local return flows**
- **Return Flows in Crocodile West River (Future supply - indirectly imported via Vaal River system)**
- **Augmentation from the Vaal River**

Some stakeholders proposed additional storage (new dams and/or raising of existing dams) as solution

Return Flows in Crocodile West River Catchment (million m³/annum)

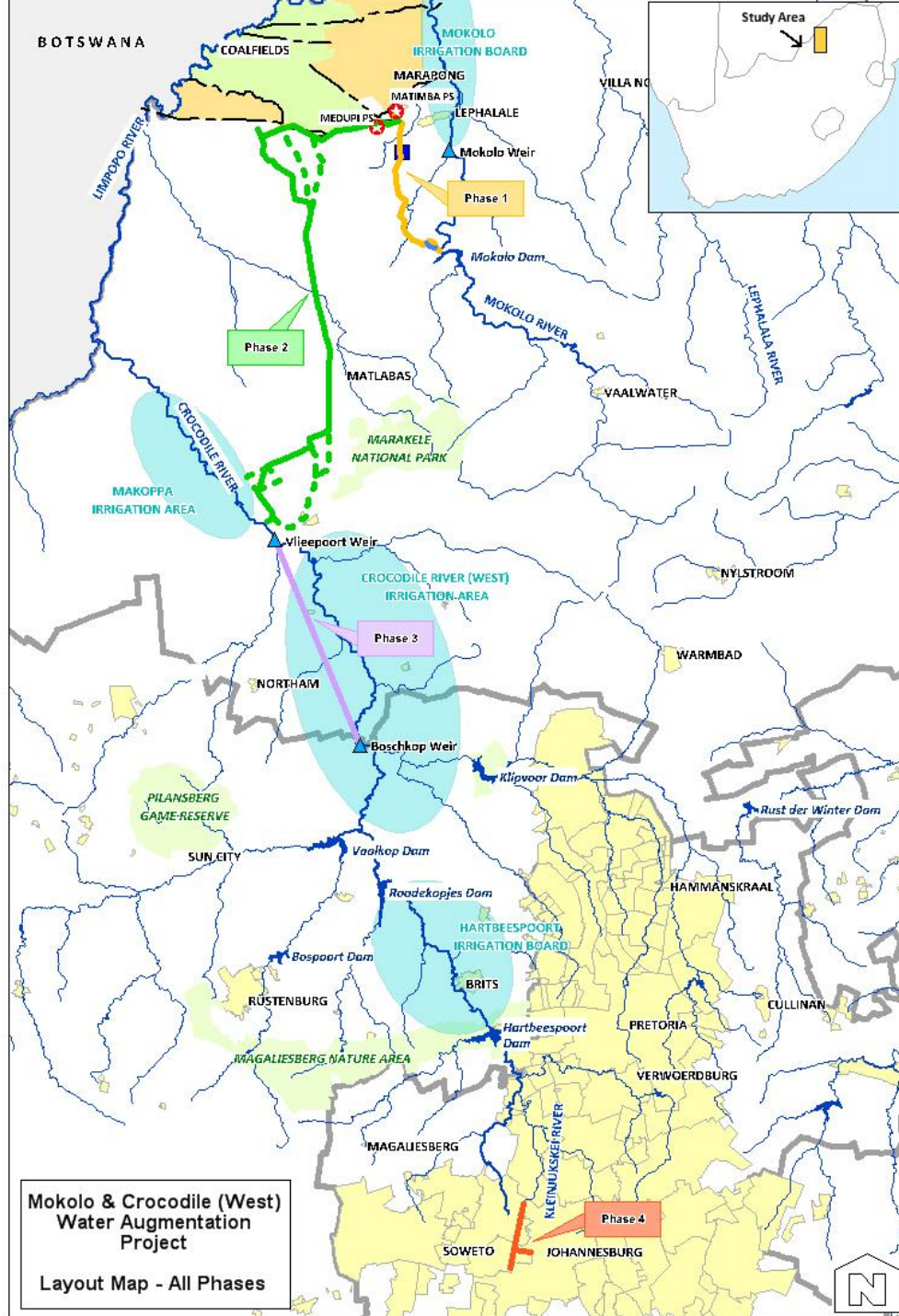


The Proposed Project

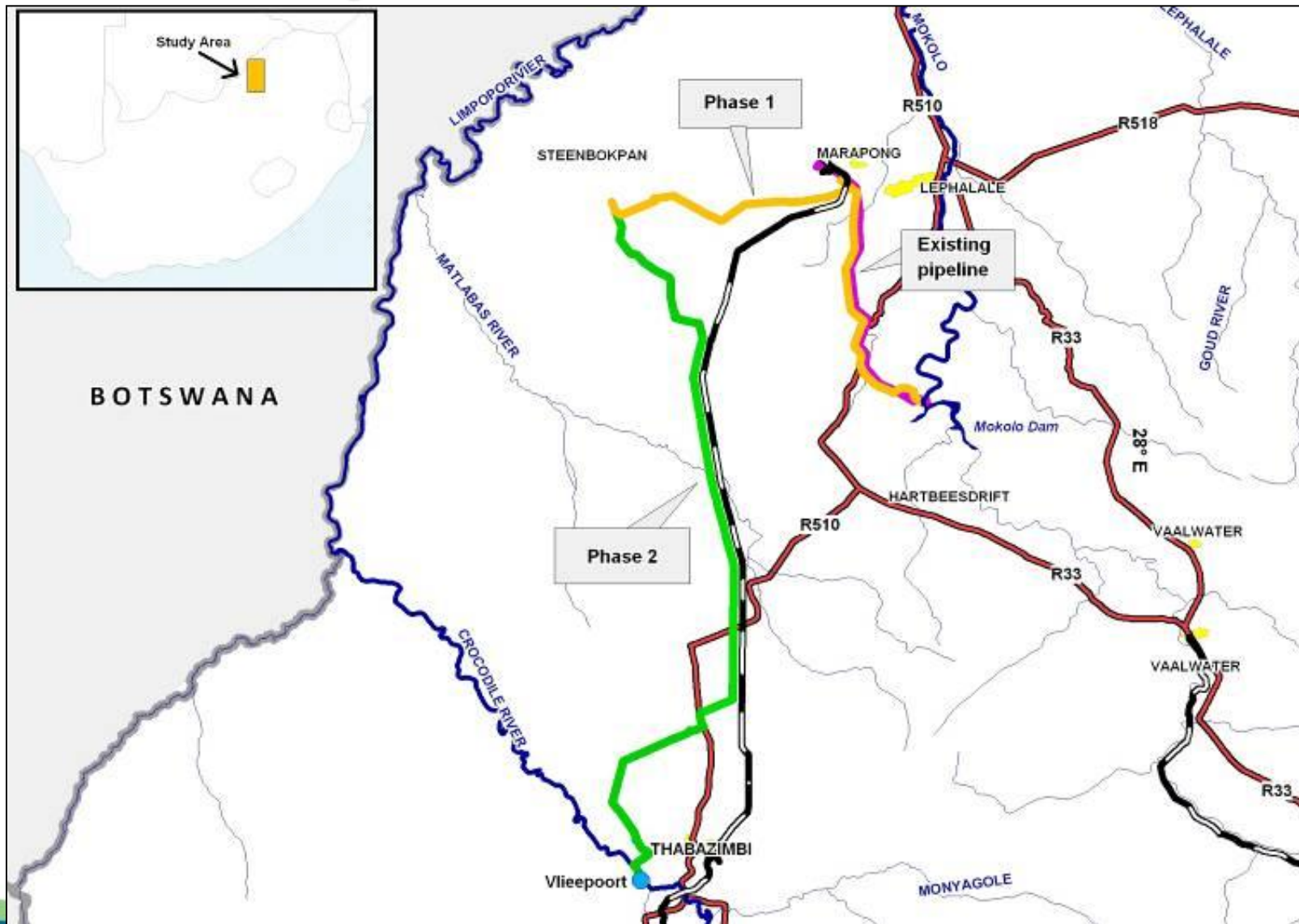
Feasibility Studies

Main recommendations

- **Proceed with phase 1 – duplicate pipeline and including incorporation of existing Exxaro infrastructure**
- **Phase 2A (to be followed by 2B when required) – transfer scheme from Crocodile West River**
- **Operating rules for Mokolo & Crocodile Rivers (operate as integrated system)**
- **River mangement system for Crocodile West River System**
- **Investigate feasibility of Vaal Augmentation (phase 4)**



Layout Phases 1 and 2



Crocodile River Management System

Monitoring and Management of :

- Entitlements
- Allocations
- Restrictions
- Releases
- River Flows
- Abstraction Control, etc

Crocodile River Management System

**Plan jointly with Irrigation Boards and
Crocodile West River Working Group**

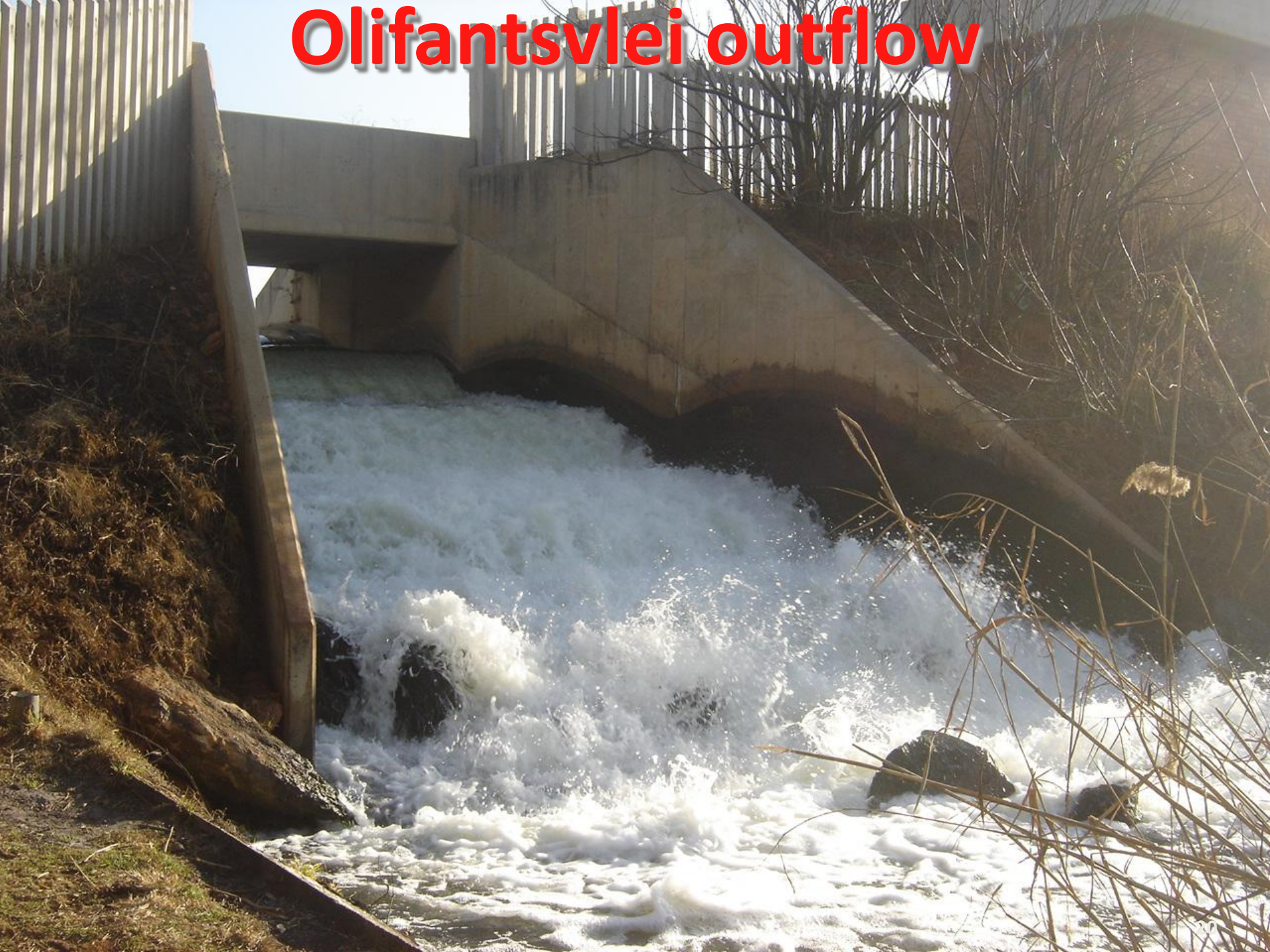
**Important for optimal water resources
management**

**Validation and Verification of water use an
important step**

Vaal River Augmentation to Crocodile West River

- **Available water in Crocodile catchment under some scenarios insufficient for needs in Lephhalale area**
- **Return flows in Klip River close to the catchment boundary, currently exceed projected 2025 Lephhalale water requirements**

Olifantsvlei outflow



Milestone Dates

Environmental Authorisation Phase 1	Nov 2010
Environmental Authorisation Phase 2	May 2011
Water Supply Agreements Phase 1	Jun 2010
Water Supply Agreements Phase 2A	Mar 2011
Deliver Water Phase 1	Jul 2013
Deliver Water Phase 2A	Dec 2015 (+6m)
Medupi Unit 6 COD	Jan 2012
(5 months intervals thereafter)	

Thank you



water affairs

Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA