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

First Study Steering Committee Meeting

5 May 2010





Welcome

- The Olifants River Water Supply System is very important for the Province and RSA
- Collaboration in the development of management strategies is essential
- Main clients of study products are represented
- We therefore welcome you to these proceedings and would appreciate your valued contributions during the process

Meeting Objectives

- 1. Convene the Study Steering Committee
- 2. To confirm the roles and functions of the Study Steering Committee
- **3**. To explain what this study is about
- 4. To explain what is expected from the committee
- To provide the committee an understanding of the problems in- and the possible solutions for the catchment
- 6. To outline the programme for the study and decide on future meetings.
- 7. To open communication channels

 To strengthen the partnership between DWA and key stakeholders

Introduction

- DWA representatives
- Stakeholders
- PSP

Proposed Agenda

- 1. Opening and welcome
- 2. Introduction of attendees
- 3. Meeting objectives
- 4. Adoption of agenda
- 5. Overview of study and functioning of SSC
- 6. Status of the study area
- 7. Tea/Coffee
- 8. Status of the study area (Cont)
- 9. Questions and Discussion
- 10. Study outline and programme
- 11. Future meetings & date of next meeting
- 12. Communication and distribution of information
- 13. Closure and Lunch

Location of the Olifants WMA relative to the others



NWRS in 2004: Already A WMA Under Stress



Olifants Overview

- Diverse activities power generation, mining, steel industry, urban development, eco-tourism and agriculture
- Strong growth in the urban, power generation and mining sectors
- Stressed catchment water deficit
- Water quality issues Increasing pressure with expanding mining

Need for a Water Reconciliation Strategy

- Due to "water stress" situation in the Olifants River the catchment was prioritized for compulsory licensing.
- To ease some of the pressure put on water resources and to facilitate further economic development within the Olifants River system, DWA commissioned the construction of the De Hoop Dam in the Steelpoort River.
- However, since then water requirements in the area have increased substantially.
- There is an urgent need to develop a comprehensive reconciliation strategy for the whole Olifants River system to ensure a sustainable water supply for the next 15-30 years.

Study Objectives

- Address growing water demands
- Address serious water quality problems
- Identify resource development options
- Provide reconciliation interventions
 - Structural
 - Administrative/regulatory
- Ensure technical requirements i.t.o. future resource classification regulations are followed (Not part of the study- Currently under consideration)

Strategy Implementation and Monitoring Process

- Strategy of interventions for period up to 2030 covering a wide geographical footprint.
- Interventions include demand side measures and supply options.
- The implementation of strategy components are the responsibility of various institutions.
- Therefore, there is a need for implementation and monitoring of the strategy beyond this study.
- Consideration should be given to establish an Strategy Implementation and Monitoring Committee.

Overview of the Study Area Status

Study Steering Committee 5 May 2010





Contents

- Characteristics of the Study Area
- Challenges of the Study Area
- Initial Observations

Study Area



Sub Catchments as per ISP



Characteristics Of The Study Area

- Catchment Area 54 570 km²
- Overlaps with 3 Provinces and KNP
- 8 District Municipalities
- Population <u>+</u> 3 million people
- Economic Activity Generates <u>+</u> 5% of GDP of SA
- Economic Sectors (as per ISP Report)
 - Mining 22%
 - Manufacturing 18%
 - Electricity 16%
 - Government 16%
 - Agriculture 7%
- 8 ESKOM power stations in the study area
- International River Flows into Moçambique

Three Provinces



District Municipalities



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Urban and Rural Population (Year 2000 - DWA ISP Report)

	Urban	Rural	Total
Upper Olifants	597 882	125 126	723 008
Middle Olifants	231 226	1 353 223	1 584 449
Steelpoort	28 352	184 547	212 899
Lower Olifants	54 691	208 074	262 765
Total	912 151	1 870 970	2 783 121

Traditional Authorities and Rural Areas



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ESKOM Power Stations



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Challenges of the Study Area

- Water quality problems as a result of industries, mining and irrigation
- Effluent from municipalities
- Mining operations in the catchment water supply and effluent water
 - Coal Mining
 - Other Mining
- Growing domestic Water Requirements Urban and Rural
- Water Transfers in and out
- Sustaining current irrigation use
- Alien invasive plants
- Ecological Water Requirements

Mines in the Study Area



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Transfers – In and Out



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Initial Observations

- Complicated study area with all types of water use
- Stressed ito water quality and water quantity
- High profile study area (e.g. regular news articles, SABC 50/50 Programme, etc.)
- International obligations
- A WMA with several inter-catchment obligations
- Study area with significant economic opportunities (e.g. mining, tourism, irrigation, etc)
- Finding the correct balance between economic and social development and environmental protection is a huge challenge

Study Overview and Functioning of the Study Steering Committee

Study Steering Committee 5 May 2010





Contents

- Membership
- Roles and Responsibilities
- SSC Arrangements
- Strategy Implementation and Monitoring Process

SSC Membership

- Selection of SSC members based on representation of:
 - National Government Departments
 - Provincial Government Departments
 - Local Government
 - Organised Business and Industry
 - Water Boards
 - Associations and fora active in the WMA

SSC Membership (Continued)

- Preliminary list of SSC compiled and presented for comments (this meeting)
- List review (identifying gaps, sector representation, new nominations)
- Final approved list
Proposed members of SSC

- National Departments
 - Water Affairs
 - Environmental Affairs
 - Energy Affairs
 - Mineral Affairs
 - Agriculture
- Provincial Government
 - Offices of the Premier: Limpopo and Mpumalanga
 - Agriculture: Limpopo and Mpumalanga
 - Environmental Affairs: Limpopo and Mpumalanga

- Local Government: District Municipalities
 - Nkangala
 - Greater Sekhukune
 - Gert Sibande
 - Metsweding
 - Waterberg
 - Ehlanzeni
 - Mopani
 - Capricorn
- Salga National

- Organised business and industry
 - ESKOM
 - Mining: Coal
 - Mining: Platinum group
 - Mining: Other

- Non-governmental organisations and CBOs
 - SANParks
 - Joint Water Forum
 - Olifants Water Forum
 - Water Boards
 - Lepelle Northern Water
 - Magalies Water
 - Rand Water
 - Lebalelo WUA
 - House of Traditional Leaders

- Non-governmental organisations and CBOs (continued)
 - One representative of the IBs and WUAs in each of the following
 - Upper Olifants
 - Middle Olifants
 - Lower Olifants
 - Steelpoort Catchment
 - Agri-SA
 - TLU
 - NAFU
 - Forestry SA

Roles and Responsibilities

To give guidance in steering the study by providing advisory support to the study team, identifying problems and / or problem areas in the study as well as sensitive technical and political issues

Proposed Terms of Reference

- Executive support, guidance and commitment to the direction and outcomes of the study
- Share / facilitate the sharing of information / data where possible
- Facilitate strategic linkages with other projects and stakeholders
- Study reports and provide comments
- Provide strategic advise
- Provide feedback to constituencies
- Act in the interest of the study and promote consensus
- Take ownership of final reports and recommendations

Steering Committee Arrangements

- Voluntary institution
- Study Team to provide secretarial support
 - Recording procedures
 - Distribution of documents
 - Arrange meetings

Preliminary Meeting Dates and Process

• 2010: 5 May

- SSC agree on arrangements
- Study Team to give feedback on progress
- 2010: Beginning of November
 - Study Team to present Preliminary Strategy

• 2011: Beginning of May

- Study Team to report progress on study
- 2011: Beginning of November
 - Study Team to present the draft Final Strategy

Process of Stakeholder Engagement



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Water Requirements, Water availability and Reconciliation of Availability and Requirements

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Contents

- Situation in 2000, as per the NWRS
- Update on this situation based on various recent studies



Reconciliation (2005)

	Water	Water	Ecological	
Catchment	Requirements	Resource	Reserve	Balance
Upper				
Olifants	381	342		-39
Middle				
Olfants	77	105		28
Steelpoort	71	60		-11
Lower				
Olifants	188	205		17
			~200	
Total	717	738		-205

Conclusion

- The Olifants study area was already identified as being water stressed in the NWRS, taking into account the ecological water requirements (EWR).
- While the study area as a whole may not appear to be particularly stressed at present, this is because the EWR is not being met.
- Even without the EWR taken into account, the latest water balance (2005) indicates that the Steelpoort and Upper Olifants catchments are currently stressed.

Conclusion cont.

- The completion of the De Hoop Dam will alleviate the situation within the Steelpoort catchment and allow for increased water demands in the Middle and Lower Olifants catchments, but will not solve the growing water shortages in the Upper Olifants.
- Reconciliation strategies are required in order to meet the EWR as well as increasing mining and domestic water requirements.

Water Resource Protection





Landuse



Upper Olifants River catchment

Acid conditions in the Klipspruit and the Kromdraaispruit. due to decants from the defunct mines and non performance of the neutralisation plants at Brugspruit

Salinity Water quality in Witbank, Middelburg and Loskop Dams deteriorating Bronkhorstspruit eMalahleni osmanspruit Nutrients from Kendal **WWTW** Delmas Leeufonte Hendrina Kriel LEGEND Rivers Roads ikoolspru/ Devon Towns Leand Catchment Boundaries Water Quality Kinross Good State (Class B) pspr Fair State (Class C) Medium State (Class D) richardt Poor State (Class E) Very Poor State (Class F

Middle Olifants River catchment



Steelpoort River catchment



Lower Olifants River catchment



This study

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- Water quality report
- Management objections and recommendations

Possible Intervention Options

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Contents

- Possible Structural Interventions
- Possible Management /Administrative Interventions
- Conclusions

Types of Interventions

- Structural interventions
 - Interventions that could increase the yield of the system
 - Interventions that could optimise the use of the available resource
- Management interventions
 - Interventions that could reduce the demand
 - Interventions that could increase the yield
 - Interventions that could promote equity

Structural Interventions That Could Increase the System Yield

- Development of ground water
 - Two significant sources in the Olifants study area
 - Delmas Area
 - Springbok Flats
 - Boreholes with reasonable yields spread over the entire study area
 - Treatment plant for the desalination of brackish groundwater
 - Coal mine owners should be encouraged to use ground water in order to reduce the acid mine drainage problem

Structural Interventions That Could Increase the System Yield (Cont)

- Construction of a dam
 - E.g. dam downstream of Flag
 Boshielo on Middle Olifants?
 - Smaller dams e.g. Richmond?
 - Another dam on the Blyde
 River to regulate environmental flows?



Structural Interventions That Could Increase the System Yield (Cont)

- Water transfers from neighbouring catchments
 - More water from the Vaal catchment (indirectly Lesotho Highlands)?
 - Will transfers from the Komati, Usutu or Vaal continue when it is time for ESKOM to decommission one or more power stations?
 - Is the bringing in of water from the Zambezi farfetched thinking?
 - When should we start thinking of bringing in desalinated seawater from the coast?

Structural Interventions that Could Optimise the Use of the Available Resource

- Reusing/reclaiming/recycling of water
 - Sewage water
 - Acid mine water
 - Industrial effluent
 - Irrigation return flows



Emalahleni treatment works for AMD

Structural Interventions that Could Optimise the Use of the Available Resource (Continued)

Rainwater harvesting



Management Interventions That Could Reduce Water Demand

- Water Conservation and Demand Management Typical activities that will improve efficiency in water use:
 - Pressure management on municipal systems
 - Retrofitting and removal of wasteful devices
 - Reinstating/installing management meters
 - Installing and maintaining consumer meters
 - Infrastructure replacement
 - Leakage control
 - Water audits
 - Improving billing and cost recovery
 - Awareness campaigns
 - Adjusting assurance of supply

Example of retrofitting dual systems as part of WCDM

 Dual systems – Tokyo, Japan example of dual systems for large buildings



Management Interventions That Could Increase the System Yield

- Alien plants removal
- Rainfall enhancement
- Optimising operating rules

Management Interventions That Could Promote Equity

- Compulsory licensing
- Water trading

Conclusions

- Many types of intervention options to consider
- Some options are relatively easy and quick to implement

 these will be considered for the Preliminary Strategy
- Other options require huge amounts of capital and must be carefully weighed up against each other – Will be incorporated in the Final Strategy
Study Outline and Programme

Study Steering Committee 5 May 2010





Contents

- Approach
- Tasks and Deliverables
- Study Hierarchy
- PSP team
- Work Schedule

Study Approach



Review Current Information

- Task 1: Review of Current Information
- Deliverables:
 - Summary Report of Previous and Current Studies
 - Powerpoint Presentation of Current Position

Preliminary Screening of Options

- Task 2: Preliminary Screening Workshop
- Deliverables:
 - A document summarising the workshop proceedings and defining schemes to be investigated

Baseline Evaluation and Scoping

- Task 3: Current and future water requirements and return flows
- Deliverables:
 - An updated water usage database
 - Will include projected water usage database
- Task 4: Water Conservation and Demand Management
- Deliverables:
 - Report on possible WCDM measures
- **Task 5:** Assess opportunities for water reuse
- Deliverables:
 - Report on existing practices and reuse possibilities

Baseline Evaluation and Scoping (Continued)

- **Task 6:** Invasive Aien Plants (IAPs)
- Deliverables:
 - Report on IAP and possibilities of increased yield by removal of these plants
- Task 7: Surface water hydrology no further work required
- **Task 8:** Assess the water quality
- Deliverables:
 - A Water Quality report with management objectives and recommendations to overcome WQ problems

Baseline Evaluation and Scoping (Continued)

- Task 9: Reserve requirement scenarios and scenario analysis
- Deliverables:
 - Report on present ecological state and recommended ecological category for each of 17 EWR sites
- Task 10: Groundwater
- Deliverables:
 - Report on groundwater options

Investigate Structural and Management Options

- **Task 11:** Review schemes and update cost estimates
- Deliverables:
 - Report with a summary of identified interventions

Assess Environmental Impacts

- Task 12: Review or assess social and environmental impacts
- Deliverables:
 - Environmental and Social Screening Report

Develop Reconciliation Strategies

- Task 13: Assembly of information and formulation of scenarios
- Deliverables:
 - Report integrating findings of the previous tasks
 - Recommended development/management options for screening
- Task 14: Final Screening Workshop
- Deliverables:
 - Summary of workshop proceedings and outcomes

Develop Reconciliation Strategies (Continued)

- Task 15: Public participation
- Deliverables:
 - Database of I&AP
 - 2 Screening Workshops with Key Stakeholders
 - 2 Public meetings and proceedings
 - 2 Newsletters

Study Management

- Task 16: Study management
- Deliverables:
 - Arrange SMT, SSC, Stakeholder workshops and public meetings
 - Agendas, minutes, progress reports
 - Correspondence
 - Presentations
 - etc

Study Hierarchy





Work Schedule

Activity	Dec 09 -	Mar 10 -	Jun 10 -	Sep 10 -	Dec 10 -	Mar 11-	Jun 11 -	Sep 11 -
Activity	Feb 10	May 10	Aug10	Nov 10	Feb 11	May 11	Aug 11	Nov 11
Phase 1								
Study Planning	; }							
Phase 2:								
Review Current Information								
Preliminary Screening of Options								
Baseline Evaluation and Scoping								
Investigate Options								
Assess Environmental Impacts								
Develop Strategies			}					
Final Screening								
Public Participation								

Thank You