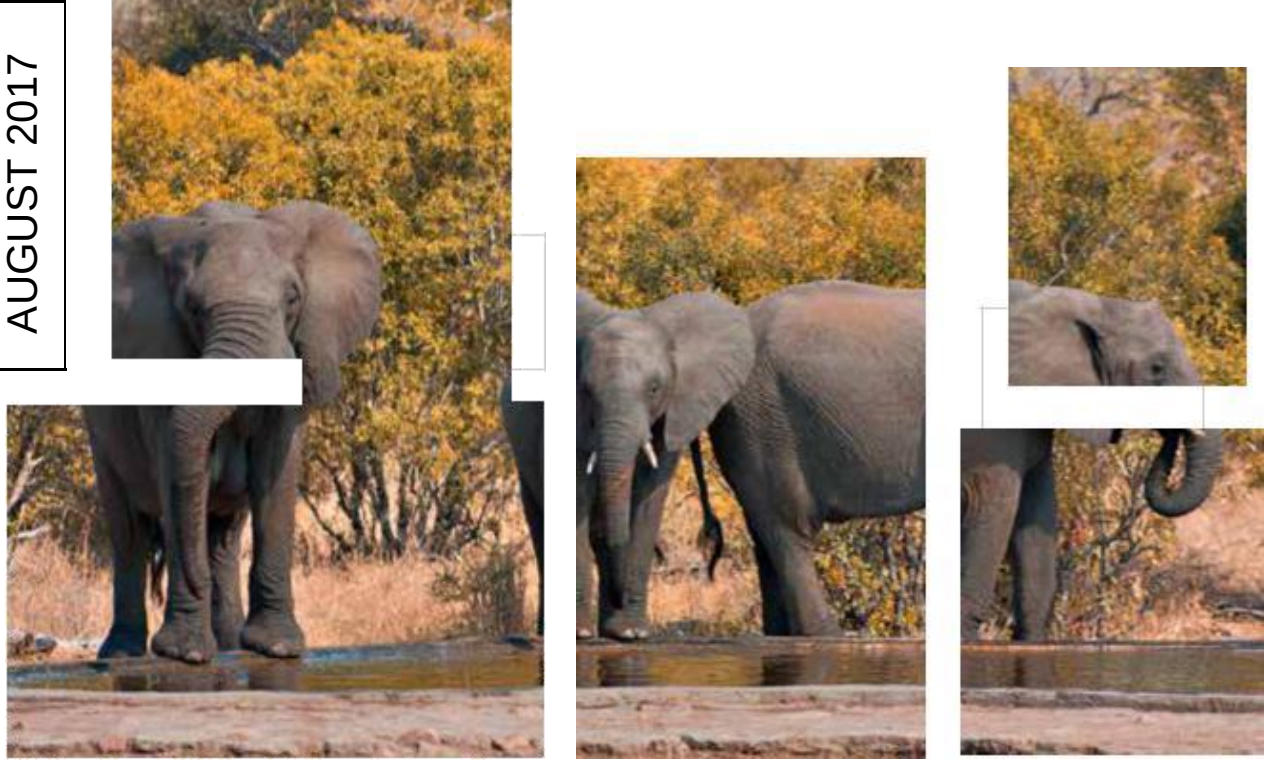
Integrated Water Quality Management Plan (IWQMP)

AUGUST 2017



IWQMP FOR THE OLIFANTS RIVER SYSTEM

NEWSLETTER

EDITION 5

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

PURPOSE OF THIS DOCUMENT

The purpose of this document is to provide water users in the Olifants River Water Management Area (WMA) with information about the Department of Water and Sanitation's project to develop an Integrated Water Quality Management Plan for the Olifants River system. This document provides feedback on the project and a summary of the most recent tasks as well as an opportunity for comment by stakeholders.

In this newsletter we include various other related projects taking place in the Olifants WMA. Please contact the following Project Team members for more information:

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INTRODUCTION

In terms of the National Water Act (NWA) (Act 36 of 1998) and in line with the Department of Water and Sanitation's (DWS) obligation to ensure that the country's water resources are fit for use on an equitable and sustainable basis, it has adopted the approach of the progressive development and implementation of catchment management strategies (CMS) to fulfil this mandate. The development of the Integrated Water Quality Management Plan (IWQMP) for the Olifants WMA is being undertaken by the National Office in consultation with the Proto CMA, DWS and other relevant stakeholders to support the CMS.

The main objective of the study is to develop management measures to maintain and improve the water quality in the Olifants WMA in a holistic and sustainable manner so as to ensure sustainable provision of water to local and international users.

PROGRESS TO DATE

The following aspects have been included as part of the study and have been used to inform and develop the sub-catchment IWQMPs and overarching IWQMP for the WMA:

- Inception Report (Report No: P WMA 04/B50/00/8916/1);
- Water Quality Status Assessment and International Obligations With Respect To Water Quality Report: (Report No: P WMA 04/B50/00/8916/3); and
- Water Quality Planning Limits Report: (Report No: P WMA 04/B50/00/8916/4).
- Scenario Analysis Report (P WMA 04/B50/00/8916/5);
- Reconciliation and Foresight Report (P WMA 04/B50/00/8916/6);
- Management Options Report (P WMA 04/B50/00/8916/7).

SUB-CATCHMENT WORKSHOPS

During July 2017 five stakeholder workshops were held with various stakeholders throughout the WMA in Phalaborwa, Tzaneen, Burgersfort, Groblersdal and Middelburg. The objectives of the workshops were threefold:

- to show the linkages between the National Water Quality Policy and Strategy and the Olifants IWQMP;
- to give background and feedback on the project thus far; and
- to workshop with stakeholders to get innovative, integrated solutions specific to each of the sub-catchments.

This newsletter summarises the inputs received at the 5 workshops.

Figure 1: Participants at the Upper Olifants Sub-catchment workshop

Stakeholders represented

The stakeholders represented various sectors including:

- Local Government and SALGA,
- Mining groups (Lonmin Akanani, Exxaro, Glencore Eastern Chrome Mines, Wescoal, Mbuyelo Group, Two Rivers Platinum, Palabora Mining Company, Tubatse Chrome, ASA Metals/ Dilokong Chrome Mines, Glencore Lion, Modikwa Platinum, Mkwe Platinum, Anglo American Platinum))
- Industries (Samancor, Foskor, Rand Carbide, Evraz Highveld, Bosveld Phosphate,
- Agriculture including National Department of Agriculture, the African Farmers Association of South Africa (AFASA), the National Emergent Red Meat Producer Organisation (NEPRO), Irrigation Boards and Water User Associations (Loskop and Letaba, Agri-Letaba, Limpopo Department of Agriculture and Rural Development (LDARD);
- National Department of Environmental Affairs (DEA);
- Limpopo Economic Development, Environment and Tourism (LEDET);
- Olifants Joint Water Forum, Olifants River Forum, Lebalelo Water User Association,
- SANParks,
- Private organisations (Topigs), Mpumamanzi Group, MCCI, Kungwini Wise, Loskop Water Forum, Residents associations;
- Lepelle Northern Water;
- Steelpoort Business Bridge Chamber;
- National and Provincial Department of Water and Sanitation (DWS);
- Members from the Olifants Proto CMA;

Figure 2: Participants workshopping to find solutions for the Upper Olifants sub-catchment

Upper Olifants Sub-catchment

The Upper Olifants catchment area is characterized by intensive coal mining and associated energy and manufacturing. The area includes a large number of coal mines, steel industry, urban areas and return flows and is highly used and impacted. Secondary economic activities include dryland agriculture and a wide variety of industrial and commercial sectors.

In the upper reaches of the Olifants catchment the economically exploitable ore reserves in several of the older coal mines have been worked out and the mines have been abandoned. However, in recent years, the Department of Mineral Resources (DMR) has granted a large number of permits for additional exploration, prospecting and mining activities – principally for coal deposits – in the upper reaches of the Olifants catchment, which will ultimately increase the impact of mining in the Olifants River. These aspects lead to the largest sulphate load to the WMA, with even the Wilge River starting to show salinity impacts.

The development also means that the Upper Olifants contributes the largest nutrient load from the six major wastewater treatment works.

The following summarises the main points put forward to consider in developing the sub-catchment plan for the Upper Olifants sub-catchment.

Domestic

- Enforce green & blue drop so as to assist municipality to plan/budget.
- Have greenbelt and buffer zones within pristine areas
- Maintain the Plan-do-check-act process
- Implement maintenance programmes
- Upgrades – town planning to be involved
- Sub-contracts and privatization of wastewater treatment works (WWTW)
- Implementation of management systems like ISO 14001 (make it mandatory for municipalities)
- Succession planning
- On the job training

Mining/ Industry

- Centralized water quality database
- Rehabilitation of mines
- Closure certificates issued from relevant government departments where collaboration may be needed between DMR/ DWS/ DEA
- DMR, in collaboration with DWS, should take the lead in ensuring proper water management of decanting water from defunct mines
- Practicing of regional mine management
- Mines must re-use their waste water

Agriculture

- Increased engagement with regulators in the sector and correct monitoring
- Restrictions should be placed on pesticides and herbicides
- Have a buffer zone of 500m from the water source

Stakeholder Engagement

- One integrated Upper Olifants Catchment management Forum (CMF)
- Wilge forum and Olifants forum
- Use social media (eg. Facebook, WhatsApp) to communicate with stakeholders
- Send notifications to churches, NGOs, podcasts, schools

Resources

- Fundraising projects
- Budget allocation – prioritization to water quality
- Implement a rewards policy (incentives)

Monitoring and Information

- Adhere to monitoring/sampling standards
- Proper enforcement tools
- Penalty implementation
- Review methodology of enforcement
- Regular licence audits with timelines

Recreation

- Education
- Have strict rules for public using water resource
- Eco-tourism

Middle Olifants Sub-catchment

The Middle Olifants is largely rural in nature dominated by commercial agriculture, grazing, light manufacturing, associated activities and tourism.

Intensive irrigation agriculture occurs around the Marble Hall and Groblersdal areas. Commercial dryland agriculture and some subsistence agriculture takes place in the Springbok Flats region. The agricultural sector in the region is relatively stable and will continue to make an important contribution to the regional economy. Protected areas in the Middle Olifants include Mbusa, Moutse, Kwaggavoetpad and Schuinsdraai Nature Reserves.

The Middle Olifants sub-catchment is in the precarious position of being directly below the most developed and impacted areas of the Olifants WMA. This is detrimental to the economy related to the international export of fruit in the sub-catchment.

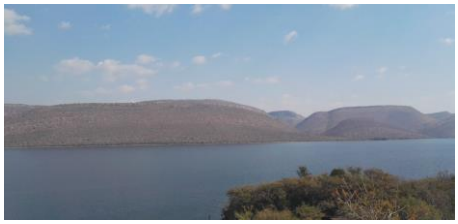

Figure 3: Loskop Dam

The following summarises the main points put forward to consider in developing the sub-catchment plan for the Middle Olifants sub-catchment.

Domestic

- Have one utility to deal (the operators) with wastewater treatment plants due to lack of technical capacity within municipalities and DWS, specifically related to operation and maintenance
- Co-ordination of planning (town planning) to be improved
- Stronger enforcement by DWS on local municipality

Agriculture

- Establish a Water User Association and bring capacity to the people.
- Best practice guidelines for irrigation

Figure 4: Stakeholder discussions in the Middle Olifants sub-catchments

Stakeholder Engagement

- Have public awareness programmes
- CMF – bring in all relevant stakeholders and involve other government departments

Resources

- Fill vacant posts within the various departments
- Skills & training for operators
- Have smaller and/or mobile laboratories

Monitoring and Information

- Central repository for water monitoring data (electronics)
- Enforcement of monitoring/ Water Use Licence (WUL) conditions

Recreation

- Building of pocket/ package plants for domestic wastewater treatment
- Capacitate our community on waste dumping. Establish dumpsite – municipality need to collect waste at the rural areas because that is where the pollution of solid waste is happening.

An important aspect that came through in all the sub-catchments was the need for the development of an integrated information management system that will allow access to all users to input data directly. This would ultimately allow the regulators to act more quickly when non-compliances are noted.

Steelpoort Sub-catchment

The Steelpoort is a major mining area with extensive platinum and chrome mining. There is also a large industrial area with the operations.

Other mining products include granite and coal. The existing mines use mainly public and borehole water and a small amount of excess water pumped from the workings. The sub-catchment also includes limited irrigation crops, large areas of dryland crops and some livestock and game.

The following summarises the main points put forward to consider in developing the sub-catchment plan for the Steelpoort sub-catchment.

Domestic

- Monitoring and enforcement
- Priority compliance
- Social and Labour Plans – how can these be enhanced to assist with municipal services?
- Public Private Partnerships for WWTW to improve operation and maintenance
- Implement waste management system
- Best management practices; guidelines specifically for groundwater use as it has become quite common for people to drill private boreholes. There is therefore a need to monitor volumes used to avoid over use and drawdown that may exacerbate pollution from existing pollution plumes,
- Lack of water for domestic use; groundwater quality therefore needs to be tested for fitness for use (domestic) and guidelines given if any treatment would be required; possible impacts on groundwater are not only from the mines but also related to pit latrines and oxidation pond systems.

Figure 5: Group participation in the Steelpoort sub-catchment

Mining/ Industry

- Implement regulation GN 704
- Enforcement
- Investment into infrastructure;
- Closed loop system - reuse; evaporation; dust suppression;
- Water reclamation by an Agency set up to do it (PPP)

Agriculture

- Monitoring and enforcement
- Construct excess water storage ponds
- Soil conservation management plans
- Wastewater reuse in agricultural sector – regulation
- Good on farm management practices
- Irrigation scheduling
- Water Conservation/ Water Demand Management (WC/ WDM)
- Need to monitor volumes used to avoid overuse;
- Quality needs to be tested and guidelines set on what the water can be used for (which crops)

Stakeholder Engagement

- Development of Steelpoort CMF – process, Proto CMA as the co-ordinator;
- Should not be a talk shop;
- Needs to be co-ordinated by the stakeholders themselves

Monitoring and Information

- Mines should be able to send electronic monitoring and compliance data to DWS
- Get health department involved to assist in monitoring and communicating with local communities

Recreation

- Best practice guidelines: control small vessels, zoning/ littering

Lower Olifants Sub-catchment

The lower Olifants catchment is characterized by intensive agriculture, rural subsistence, eco-tourism and light commercial activities. Mining and industrial activities as well as poor functioning WWTW impact on the Olifants River at the entrance to the Kruger National Park.

Figure 6: Extensive irrigation in the Ohrigstadt area of the Lower Olifants sub-catchment

The following summarises the main points put forward to consider in developing the sub-catchment plan for the Lower Olifants sub-catchment.

Domestic

- WC/ WDM Real time water loss monitoring
- Infrastructure upgrades RBIC etc
- Final effluent monitoring
- Downstream sector monitoring system
- Structural upgrades to the 1 mg/L
- Water quality and quantity alignment
- Wastewater reuse
- Waste reuse – turning waste into money
- Emergency response framework and District Municipality co-ordination
- Bulk water re-allocated storage

Figure 7: Group considerations in the Lower Olifants sub-catchment

Mining/ Industry

- WC/ WDM
- Green mining research
- Downstream sector monitoring system
- Integrated operating rules for the mining/ industrial area
- Wastewater reuse
- Lining of dams
- Waste reuse – turning waste into money – Corporate social responsibility (CSR)
- Integrated risk strategy and actions (Implementation plan)
- Water trading system
- Sediment/ sand mining strategy as key chapter in Olifants CMS and pricing
- Corporate social responsibility plan alignment to catchment water quality issues

Figure 8: Sand mining in the Lower Olifants sub-catchment (GaSelati River)

Agriculture

- Abstraction monitoring
- Downstream sector monitoring system
- Water quality and quantity alignment
- Integrated operation rules
- Wastewater reuse
- Water trading system
- International flow treaty (LIMCOM) – water quality aspects needed (impacts to the Massinguir Fisheries on the Elephantes in Mocambique)
- Lining of dams and canals

Stakeholder Engagement

- Transparency/ awareness system
- Information platforms
- Media and communications strategy
- CMFs
  - use for licence conditions review
  - need full representation
  - formalised protocols for restrictions etc (LOROC
- Engagement of communities at CMA level

Resources

- Waste reuse and beneficiation
- Resource capture research eg. phosphorous recapture systems
- Institutional memory recapture, eg. volunteer programmes with retired engineers in specific areas – could offer a municipal rebate subsidy?
- Extended public works programme (EPWP)/ Community Public Works Programme (CPWP) – multipliers – eg.
  - waste from digesters;
  - residual asset study eg. by-products in settling dams;
  - residual asset study eg. digesters and fertilisers

Monitoring and Information

- Near real-time water use monitoring and water quality measures and reporting
- Early warning system (for example having a threshold of potential concern for certain variables at which a warning is sent out)
- Central Information platform and electronic forums (WhatsApp)
- Stakeholder database and CMFs
- Near real-time toxicity monitoring (Middle Olifants SA project)

Figure 9: Olifants upstream of Ga-Selati confluence

Letaba and Shingwedzi Sub-catchments

The Letaba River catchment is a highly productive agricultural area with mixed farming including cattle ranching, game farming, dry land crop production and irrigated cropping. Agriculture, with the irrigation sector in particular, is the main base of the economy of the region. These areas occur mainly along the Groot Letaba River, and its tributaries, the Middle Letaba, Lower Klein Letaba, and the Letsitele Rivers.

Groot Letaba at Lesitele bridge on R 71

Figure 6: Considerable nutrient enrichment causing extensive hyacinth growth on the Letaba River

Permanent fruit crops (i.e. bananas, citrus and mangoes, 47%) and vegetable and grain cash crops (53%) are cultivated. Some 484 km^2 of pine and blue gum plantations have been established in areas with rainfall of more than 900 mm/a, mainly in the upper reaches of the Groot Letaba River catchment

Intensive irrigation farming is practised in the upper parts of the Klein Letaba River catchment, upstream and downstream of the Middle Letaba Dam, and particularly along the Groot Letaba and Letsitele Rivers, as well as in the upper Luvuvhu River catchment.

In the Shingwedzi, sub-catchment, most of which falls into the Kruger National Park, the dominant land use is open bush and grassland. Most of the areas outside the Kruger National Park are dominated by rural settlements, informal farming and very little industrial development. Small scale mining operations, of which the majority is defunct, are dotted through the landscape.

The following summarises the main points put forward to consider in developing the sub-catchment plan for the Letaba and Shingwedzi sub-catchments.

Domestic

- Reticulation (Infrastructure upgrades)
- Waste collection and disposal
  - Recycling
  - Proper landfilling
- Nutrients
  - Appropriate technology
  - Disposal (gases)
  - Reuse (compost)
- Domestic wastewater (sewage effluent) (Appropriate technology selection)
- Grey water (Reclamation and reuse)
- Poor storm water management (Innovative considerations)
- Wash-water/ sludges from water treatment (Recycle and reuse instead of just disposing to the river);
- Development and implementation of by-laws
- Best Practice Guidelines for funeral parlours; VIPs/ septic tanks; Car washes and storm water related aspects
- Census data – Local Municipalities don't always seem to have a good understanding of the population growth, so poor planning and inadequate upgrades to reticulation etc.

Mining/ Industry

- Best Practice Guidelines for sand mining and awareness creation regarding the impacts of mining too deep etc.

Agriculture

- Pesticides and fertilisers - (Persistent Organic Pesticides/ Endocrine Disrupting Chemicals) – regulations (cradle to grave)
- Feedlots (Reuse, Regulate, Biogas options?)
- Best Practice Guidelines: Commercial farmers are members of Global G.A.P.; emerging farmers are not therefore do need some guidelines, for example for fertiliser addition etc.

Stakeholder Engagement

- Poor attendance/ Poor commitment (awareness/ enforcement/ penalties for non-attendance?)

Resources

- Funding research
- Funding infrastructure development
- Capacity building
  - Human resources
  - Awareness programmes
- Corporate responsibility fund
  - Adopt a River
  - Adopt a WWTW

Monitoring and Information

- "Toolbox' of guidelines of existing BMPs for various sectors.
- Concern around non-enforcement of current conditions – need to review existing IWUL conditions so that they are meaningful

Recreation

  - Oil spillages in dams: Regulations
- Alien invasive plants brought into dams on boats
  - "gate keepers" need to inspect (wash bays) because of potential cross pollution from other dams (eg. seeds, snails); RMP (river management plan)

Malmani Dolomite project in the Middle and Lower Olifants and Steelpoort sub-catchments

The DWS is currently undertaking a project in the Middle and Lower Olifants and Steelpoort sub-catchments to assess the feasibility for groundwater resource development of the Malmani dolomites. The study area comprises the dolomites that outcrop in quaternary catchments B41K, B51G, B52A, D, G, J, B60A – D, H, B71A - D, F, G and B72F, and covers an area of approximately 1 600 km^2. The aquifers in question form part of the Chuniespoort Group outcrop (including the Black Reef) and a segment of the Pretoria Group along the Limpopo and Mpumalanga escarpment within the Olifants River Basin.

The area falls within Capricorn, Sekhukhune and Ehlanzeni District Municipalities (DMs). Capricorn DM, Sekhukhune DM and Thaba Chweu Local Municipality (LM) are the main water services authorities (WSAs) in the area. Lepelle Northern Water Board (Capricorn and Sekhukhune DMs) provides water for domestic supply as water services provider (WSP). The land use varies across the study area and includes agriculture, forest plantations, nature reserves and other protected areas, rural communities and mining.

The main aims of the study are:

- To secure groundwater as a long-term option to augment the water supply to the Olifants River Water Supply System (ORWSS) by optimising the conjunctive use between surface water and groundwater.
- To determine the possibilities of artificial recharge of the groundwater.

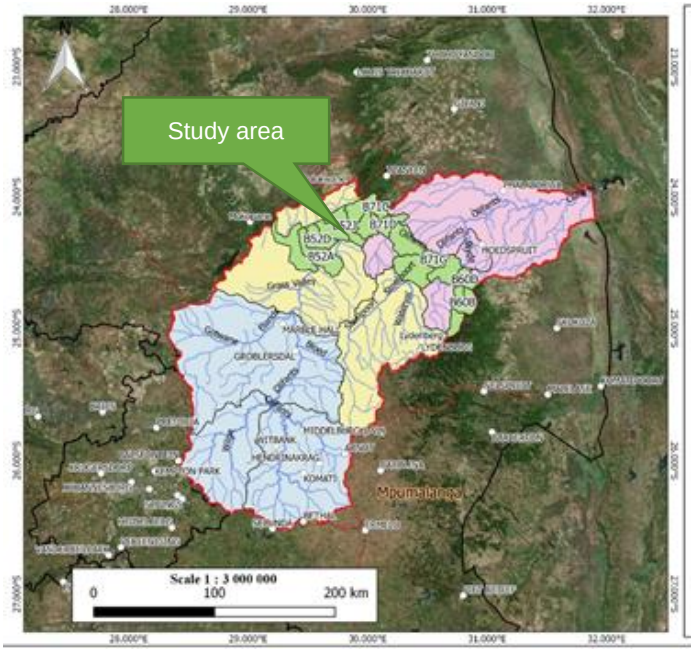

Figure 7: Malmani dolomites study area

The project comprises three phases: Inception, Resource Evaluation/ Target Prioritisation, Groundwater Feasibility Investigation and Hydrogeological Reporting.

The current tasks are the hydrogeological exploratory investigations and the numerical groundwater modelling.

For further information contact the Study Manager: Mr Sakhile Mndaweni: MndaweniS@dws.gov.za

Project site: http://www6.dwa.gov.za/DocPortal/

WHAT NEXT FOR THE OIWQMP project?

The following components are now underway and will take into consideration the inputs received at the five sub-catchment workshops:

- Integrated Water Quality Management Plans for each Sub-catchment:
  - IWQMP for the Upper Olifants sub-catchment;
  - IWQMP for the Middle Olifants sub-catchment;
  - IWQMP for the Lower Olifants sub-catchment;
  - IWQMP for the Steelpoort sub-catchment; and
  - IWQMP for the Letaba and Shingwedzi sub-catchments,
- Monitoring Programmes Report;
- Overarching IWQMP for the Olifants River System; and
- Implementation Plan Report.

Please contact the Public Participation Office should you wish to be kept informed of the project and progress:

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