

NOVEMBER 2017



# IWQMP FOR THE OLIFANTS RIVER SYSTEM NEWSLETTER EDITION 6



## 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:

### *DWS Project Managers:*

Dr B Mwaka: Project Director:  
mwakab@dws.gov.za

Mr P Viljoen: Project Leader:  
viljoenp2@dws.gov.za

Ms MW Mosoa: Project Manager:  
mosoal@dws.gov.za

Website: <https://www.dwa.gov.za/projects/iwqmp/default.aspx>

### *Golder Project Team:*

Technical support:

Mr T Coleman: Project Leader:  
tcoleman@golder.co.za

Ms L Boyd: Project Manager:  
lboyd@golder.co.za

Stakeholder engagement:  
Ms A Pietersen:  
apietersen@golder.co.za

## 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, overarching IWQMP and Implementation Plan 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);
- 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);
- IWQMP for the Upper Olifants sub-catchment (P WMA 04/B50/00/8916/8);
- IWQMP for the Middle Olifants sub-catchment (P WMA 04/B50/00/8916/9);
- IWQMP for the Lower Olifants sub-catchment (P WMA 04/B50/00/8916/10);
- IWQMP for the Steelpoort sub-catchment (P WMA 04/B50/00/8916/11);
- IWQMP for the Letaba and Shingwedzi sub-catchments (P WMA 04/B50/00/8916/12); and
- Monitoring Programme Report (P WMA 04/B50/00/8916/13).

## 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 Provincial DWS/ Water Management Institution (WMI), 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.



Figure 1: Five sub-catchment IWQMPs



## Overarching IWQMP

The IWQMP for the Olifants catchment has run in parallel with the development of the national IWQM Policy and Strategy. While the focus of the IWQM Policy and Strategy provides the overall framework for WQM in the country, the IWQMP for the Olifants provides a localised framing in the Olifants catchment.

South Africa's Vision for IWQM, mandates that everyone has a role to play in improving resource water quality, especially in those critical areas where rural and peri-urban inhabitants are dependent directly on the resource itself. This improved water quality is crucial to improve socio-economic and environmental development.

The 2017 IWQM Policy recognises that managing water quality is a complex problem. Contrary to historical views that relatively simple command and control approaches could be used to manage water quality, it is now recognised that in the water quality domain, human and bio-physical systems interact, increasing the complexity of water quality management. In dealing with complex systems, the pathway is often affected by unexpected events and developments, calling for course corrections and new approaches.

Noting that the IWQMP of the Olifants River is a subset of the Catchment Management Strategy it is useful to note that catchment plans are often structured around the concepts of resource protection, resource development, the management of disasters and risk, and governance frameworks. This is a useful framework when holistically considering sustainable resource development and the management of water quality.

## The global development agenda

The Sustainable Development Goals (SDGs) adopted in December 2015, are aimed at ending poverty, protecting the planet, and ensuring prosperity for all as part of a sustainable development agenda. Under Goal 6, there are three targets that are particularly relevant to water quality:

- By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally;
- By 2030, implement integrated water resources management at all levels, including through trans-boundary cooperation as appropriate; and
- By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.

**The management of water quality requires the bringing together of a wide range of knowledge in a structured process that allows co-learning, co-creation, and co-adaptation to move forward**

## Transboundary alignment

The Southern African Development Community (SADC) Revised Protocol on Shared Watercourses has as objective to foster closer cooperation for judicious, sustainable and coordinated management, protection and utilization of shared watercourses and advance the SADC agenda of regional integration and poverty alleviation. This Protocol entered into force in 2003. The Protocol calls for the need to establish river basin institutions, such as river basin Commissions, joint water Commissions and water sharing agreements. It is within this framework that the riparian states of the Limpopo river basin, namely Botswana, Mozambique, South Africa and Zimbabwe, signed the Agreement for the Establishment of the Limpopo Watercourse Commission (LIMCOM) in 2003. The Commission, among other objectives advises the Contracting Parties and provides recommendations on the uses of the Limpopo River, its tributaries and its waters for purposes and measures of protection, preservation and management of the river.

According to the LIMCOM Agreement, the Commission shall serve as advisor to the parties on matters relating to the development, utilization and conservation of the transboundary water resources of common interest within the Limpopo River Basin, and shall perform such other functions pertaining to the development and utilization of water resources that the parties may agree to assign to the council.

The Commission recently appointed an Executive Secretariat and is busy mobilising other organs of the Commission. This will pave the way to implement its Water Resources Management Strategy and Plan (IWRM Strategy and Plan) for the sustainable management of the Basin. In the Olifants catchment the only country affected directly is Mozambique.

- In 1971 Portugal and South Africa agreed to raise Massingir Dam with no compensation payable to South Africa. Portugal accepted that water in the Olifants River will decrease. South Africa may not use Massingir water except for domestic and stock drinking purposes.
- Previous agreements between South Africa and Portugal still remain and in terms of these agreements there are no limitations to further developments in the catchment by South Africa. The Government of South Africa is also a signatory to the Revised Protocol on Shared Watercourse Systems in the SADC Region. The character of this protocol promotes inter alia the sustainable, equitable and reasonable utilisation of shared watercourse systems and avoiding causing any negative impact to the neighbouring state. There are specific provisions in terms of which State Parties shall exchange information and consult each other and, if necessary, negotiate the possible effects of planned measures on the condition of a shared watercourse.

*(Thanks to Tendani Nditwani for inputs)*

## The current situation

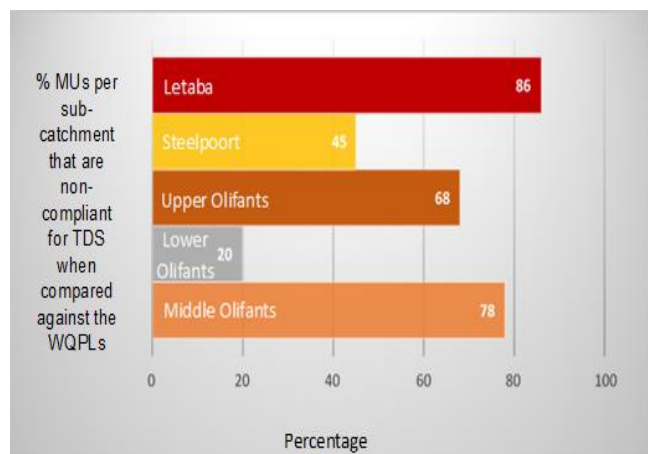


Figure 2: % Management Units per sub-catchment showing non-compliance for TDS

In the Upper Olifants the number of mines and the mining operations have grown significantly in the last 15 to 20 years, resulting in growth increases in excess mine water that needs to be managed. In most cases the fitness for use has been severely compromised. The river systems do not have any assimilative capacity for further salinity pollutant loads. In addition, the water reconciliation and dam system operation and effects of the prolonged drought are such that there is no water available in the dams to provide dilution water to maintain the salinity in the downstream rivers at a suitable level. The end result is that to prevent further deterioration no further diffuse or point source loads can be accepted in the river systems. The Wilge River catchment is mostly in compliance, however, is showing increased salinity levels. As this system has been classified as a Class II river, it is important that any increased salinity trends are reversed.



Figure 3: Eutrophication in the Letaba River at Lesitele

In the Middle Olifants, while the salinity decreases dramatically, there are still some increasing trends that need to be halted, specifically coming from Loskop Dam as well as the Moses and Elands tributaries. In addition, an important consideration is that the downstream irrigators need to comply with strict chemical, physical and microbiological water quality for export requirements. Higher salinity would also imply that subsistence farmers irrigating from the river would have poorer yields.



Figure 4: Fruit trees in the Loskop irrigation area

The Lower Olifants sub-catchment falls in the Kruger to Canyons Biosphere Reserve and the Kruger National Park, and essentially bears the brunt of the upstream impacts in the Olifants, and impacts from the Phalaborwa industries and mines in the Ga-Selati River. There are a number of areas that have been designated Protected Areas under PAA, including the Blyde River area which has been classed as a Class I. This area supplies good quality water to the Olifants and due to the classification should not be developed: the major portion falls with a Nature Reserve and the Kruger to Canyons Biosphere Reserve.

In the Steelpoort sub-catchment, there are a number of areas that have been designated Protected Areas under PAA, specifically in the areas of the upper Steelpoort sub-catchment, including the Dorps River. This area supplies good quality water to the Olifants and development in respect of mines and industries in the Steelpoort should be managed to maintain the current chemical and physical water quality.

The upper portions of the Letaba sub-catchment (MU69) are located within the Kruger to Canyons Biosphere Reserve and several smaller protected areas (Wolkeberg Wilderness Area and the Nature Reserve: Co-operation and Development), and releases of very good chemical and physical quality water downstream of Tzaneen Dam are noted. However downstream of this area, large urban settlements (and to a much lesser extent irrigation) impact considerably on any available assimilative capacity in respect of nutrients.

## The need to act

The pressure upon water resources of the Olifants WMA will only increase with time. The current water quality challenges will potentially only get worse as new and emergent forms of pollution complicate an already complex situation. The need to strengthen matters of governance are imperative and need to be supported by drives to improve key dimensions of the WQM business. During the situation analysis the identified issues of concern, included:

- Data collection, handling and management;
- Lack of Water Quality Planning Limits for the middle and lower Olifants;
- Impacts of the mining activities and mine closure;
- Management of wastewater treatment works discharges;
- Urbanisation and improved planning;
- Irrigation return flows;
- Implementation of the Waste Discharge Charge Strategy;
- Ongoing research;
- Improved monitoring; and
- Integrated management.

## Key Strategic Areas

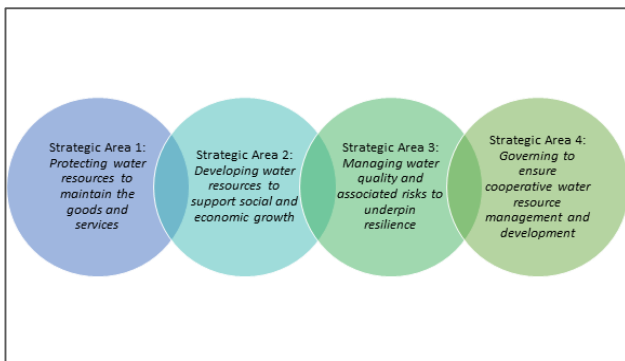


Figure 5: Overarching Strategic Areas

The only way to manage the complex challenge of water quality in South Africa is through the adoption of adaptive management, a process that calls for flexibility, and for structured learning throughout the process in order to inform and amend Policy and practice over time.

## Vision for the Olifants IWQMP

Considering the classification outcomes and aligned to the national vision:

**Government, in partnership with private sector and civil society, secures water in the Olifants water management area that is fit for use, for all, forever.**

In adopting this vision:

- We understand that we need to protect water resources to enable their sustainable development so that future generations also enjoy the benefits that are accrued from water use;
- We recognise the need to ensure that water is fit for use to support the growth and development of society and the economy of the Olifants WMA;
- We recognise that managing water quality and associated risks are a critical dimension of the water security that underpins our resilience; and
- We understand that we as key stakeholders, across Government, the private sector and civil society need to jointly cooperate to ensure that water quality is effectively managed.

With this in mind the structure of the IWQMP for the Olifants WMA is based around the following core strategic areas:

- **Strategic Area 1:** Protecting water resources to maintain the goods and services that are accrued from functioning ecosystems;
- **Strategic Area 2:** Developing water resources to support social and economic growth;
- **Strategic Area 3:** Managing water quality and associated risks to underpin resilience; and
- **Strategic Area 4:** Governing to ensure cooperative water resource management and development.



Figure 6: Stakeholder participation – the start of the Community of Practice



The plan sets out strategic areas, measures and objectives described in the overarching IWQMP for the Olifants WMA. These include:

*Protecting water resources to maintain the goods and services that are accrued from functioning ecosystems:*

- Strategic Measure 1-A: Meeting Resource Quality Objectives
- Strategic Measure 1-B: Water quality management
- Strategic Measure 1-C: Groundwater protection
- Strategic measure 1-D: Conserving ecological infrastructure
- Strategic Measure 1-E: Catchment and land use planning

*Developing water resources to support social and economic growth:*

- Strategic Measure 2-A: Water resources assessment
- Strategic Measure 2-B: Water conservation and water demand management
- Strategic Measure 2-C: Water availability and augmentation
- Strategic measure 2-D: Water Allocation
- Strategic Measure 2-E: Climate change resilience

*Managing water quality and associated risks to underpin resilience*

- Strategic measure 3-A: Monitoring and information
- Strategic Measure 3-B: Water use compliance
- Strategic Measure 3-C: Financial and economic instruments
- Strategic Measure 3-D: Adaptation and risk management

*Governing to ensure cooperative water resource management and development*

- Strategic Measure 4-A: Institutional arrangements
- Strategic Measure 4-B: Partnerships
- Strategic Measure 4-C: Stakeholder engagement

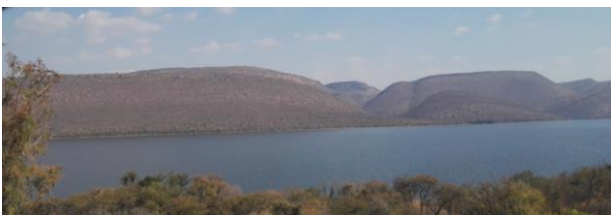


Figure 7: Loskop Dam

The implementation plan considers activities across a range of different spatial scales. In the Olifants WMA this includes transboundary, national, catchment and local (sub-catchment and even at management unit level) while also addressing the issues that are specific to certain sectors, as well as between sectors.

## Core considerations for the Implementation Plan

Core considerations for the formulation of the implementation plan include:

- **Focus on short to medium term timeframes, while building a platform for future strategies** in line with the policy and visions for water quality management
- **Prioritising critical concerns**, while ensuring that other issues are addressed through on-going management or monitoring for future prioritisation and action
- **Relevance at national, catchment and local scales**, while ensuring horizontal alignment across sectors and institutions at each scale
- **Provide the strategic intent and framework for actions** to be described in the implementation plans
- **Enables adaptive response** to changing circumstances and achievements based on effective on-going monitoring and evaluation

## Critical elements

The national IWQM Strategy articulates the need to show success. It is therefore important to be able to reflect that the efforts that have been put into developing the Olifants IWQMP and sub-catchment plans will make a difference to the status of water quality in the six identified sub-catchments.

The implementation plan deals with the identified issues of concern in each of the sub-catchments, highlighting the roles and responsibilities for the various government department and other stakeholders. The critical elements include:

- The strengthening of the water quality management function by assigning roles and responsibilities to the various measures and associated actions identified and assigning reporting functions;

Realising impact and recognising successes are important aspects of ensuring that implementation of the plan is maintained.

- Improving the information management system to enable a more integrated approach to collecting and storing data from all relevant sources to:
  - allow for a better understanding of the status and trends of parameters of concern within the sub-catchments;
  - consolidate monitoring programmes (including levels 1 – 4 monitoring points);
  - prioritise hot spots; and
  - report easily at various levels.
- Mobilising the various sectors and developing stewardships/ partnerships/ Management Unit Task Teams (MUTTs) within the Olifants WMA is critical, and the establishment of a “Community of Practice” is a priority to maintain sector wide engagement. Stakeholders who have been involved in this project, and specifically the sub-catchment workshops, are seen as initiating this Community of Practice. The DWS/ WMI needs to ensure that these stakeholders remain committed and are able to assist in sector wide engagement and create awareness at various levels.

### *Measuring and refining implementation*

DWS Provincial Office/ WMI will take the lead in monitoring implementation of the plan and will develop an implementation scorecard that will annually measure the progress of implementation in respect of timeframes and resource allocation.

While monitoring on some of the actions, such as quality and quantity measurements, are technical, there are several actions that are less easily measureable. The DWS therefore needs to determine a suitable indicator and method for monitoring progress on each action. It is proposed that this is done at the various forum level meetings so that all stakeholders agree on the measure. The DWS can then work with the appropriate government departments, organisations and institutions as part of the collaboration to track these measures. Progress on other actions, including the collection of information or the formation of further plans and strategies in the Olifants WMA, and partnerships, should be monitored through the completion of the action or evidence of progress against the action. It is proposed that the Catchment Management Forums take a lead in the appraising of the implementation of projects that may be happening on the ground.

The DWS Provincial or mandated WMI will provide reporting on implementation progress to ensure that responsible parties and stakeholders are kept abreast of progress and developments. Finally, monitoring and refining the implementation plan needs to feed into the development of the Catchment Management Strategy when developed.

## *News from the Sub-Directorate: Resource Protection and Waste: WATER QUALITY MANAGEMENT FORUM*

The National Water Act, 1998 (“the Act”) is founded on the principle that the National Government has overall responsibility for and authority over water resources management, including equitable allocation and ensuring beneficial use of water in the public interest. The ultimate aim of water resources management is to achieve the sustainable use of water for the benefit of all users.

One of the key aspects of water resources management is protecting the water resource by managing and protecting the quality and quantity of that resource. Various directorates within the Department are performing functions that eventually contribute to the Department’s aim of protecting the resource. These directorates are however doing these functions in isolation resulting in fragmentation when it comes to the management of our precious resources.

As a way of addressing this fragmentation, a **National Water Quality Management Forum** was established in June 2017. The main aim of the forum is to create a platform where all issues related to water quality management can be discussed and addressed in an integrated manner.

The main objectives of the forum are to:

- Ensure the management of pollution in an integrated and sustainable manner, specifically in relation to how water quality is protected in the Department of Water and Sanitation
- To ensure the improvement of the state of the water resources in the country by providing oversight on water quality issues by aligning source directed controls with resource directed measures;
- To ensure coordinated and consolidated planning and implementation of policies, guidelines and strategies;
- To provide a platform where international trends and developments in environmental management can be discussed;
- Identify and provide an endorsed National Water Quality Priority List
- To draft and ensure implementation a water quality management action plan to address the current water quality challenges faced by the Department
- To ensure uniformity in how water quality concepts are implemented in all regions/proto-CMAs and
- To consolidate water quality management inputs into the Department’s Master Plan

*(Article contributed by Thivhafuni Nemataheni)*

# National Water and Sanitation Master Plan

The National Water and Sanitation Master Plan (NW&SMP) seeks to rally every water sector stakeholder in South Africa to work together to address the challenges confronting the water and sanitation sector and will set out the critical actions and investments the country must implement between now and 2030 to overcome challenges and ensure a water secure future. The Master Plan also sets out the roles and responsibilities, targets, timeframes and how performance will be monitored.

This first-of-its-kind NW&SMP introduces a new paradigm that will guide the South African water sector, led by the Department of Water and Sanitation and supported by local government and other sector partners, towards the urgent execution of tangible actions that will make a real impact on the supply and use of water and sanitation. The impact of this plan will be delivered through action, and through the recognition that “you cannot drink paper plans”.

South Africa is a water scarce country with a growing demand for water to meet its developmental and economic growth objectives. Climate change will increase the variability of the weather patterns resulting in more frequent floods and more severe droughts. These challenges are exacerbated by poor management, aging infrastructure.

The NW&SMP forms part of a suite of initiatives led by the Department of Water and Sanitation (DWS) in conjunction with other government departments and agencies, the private sector and civil society. The NW&SMP to aim for a water secure future with reliable water and sanitation services for all, and is to contribute towards meeting national development objectives.

While the plan is led by DWS, it is a country-wide plan. A high-level first draft of the NW&SMP: Call to Action is currently presented for consultation with selected stakeholders, the outcomes of which will inform the finalisation of the draft Master Plan to be tabled for Cabinet-approval in March 2018.

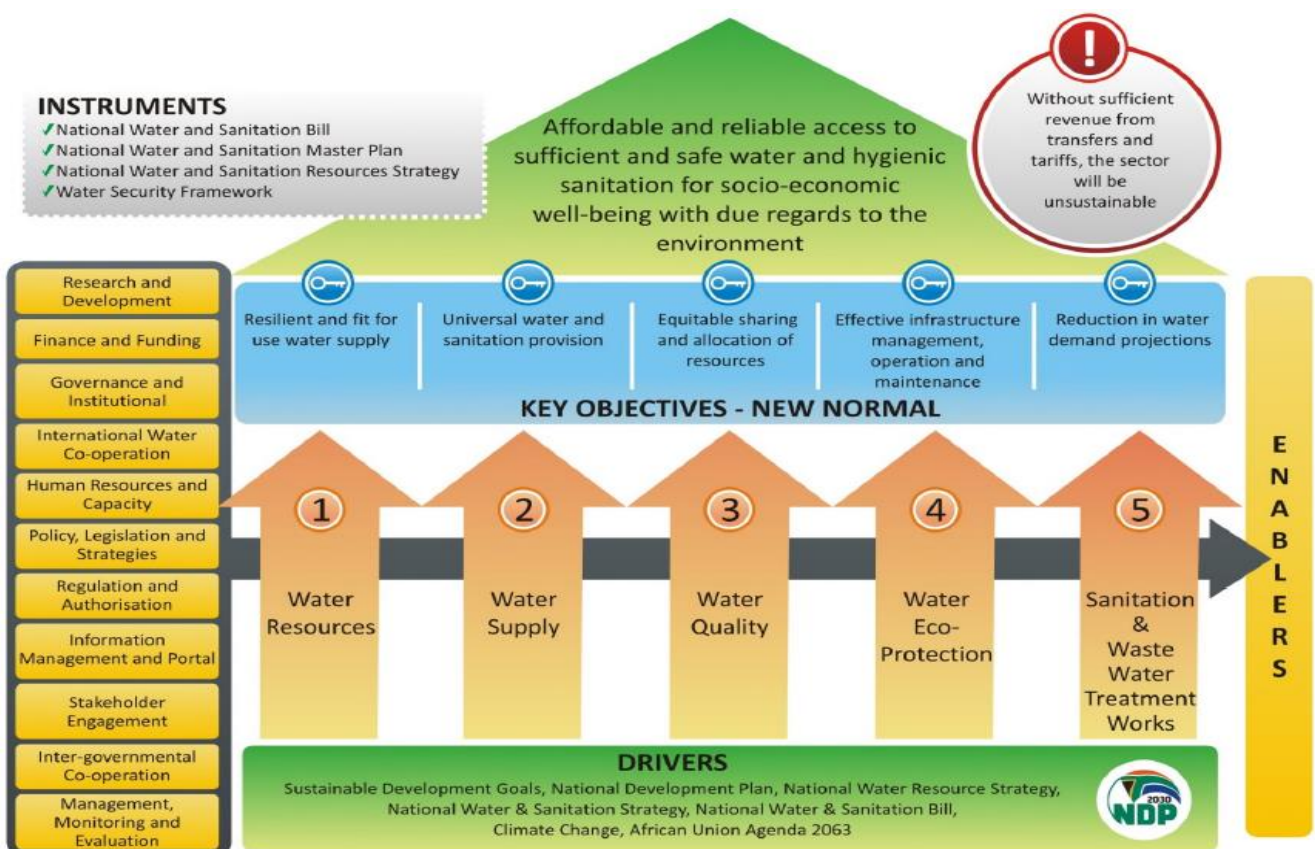


Figure 8: Summary illustration of the NW&SMP Philosophy



# *iWaGSS*

## *Integrated Water Governance*

### *Support System*

The objective of the iWaGSS research project is the development and practical pilot implementation of an innovative water governance system based on new technologies and tools for mitigating water stress and for a sustainable management of the water resources in the South African pilot region as well as in other regions with overstressed water resources in Africa and worldwide.

Based on current research and new methods, the sustainable water governance system to be developed under the iWaGSS joint research project will contribute to identifying and minimising the risks for sustainable water supply, increasing the efficiency of water utilisation and protecting natural resources and ecosystems. Transboundary water governance, a concern in the selected pilot region, is also included in the work programme. The project contains two components: 1) development of a real-time water management system to support local and regional decision makers comprising: a risk assessment module for prioritising of measures; an innovative real-time monitoring network for water quality monitoring; a user-friendly and application-oriented decision support system; socio-economic studies as a basis for ecologically sustainable recommendations for action in order to support operative local and regional management institutions; and 2) socio-economic analyses on for example, ecosystem services, efficient water utilisation and allocation, including holistic cost considerations as well as adapted service and financing concepts for the water sector, will deliver a system of parameters for monitoring and evaluating the level of achievement of the objectives in order to enable a sustainable use and management of the water resources.



Figure 8: iWaGSS study area

The consortium of international cooperation partners has selected the Lower Olifants sub-catchment as the primary iWaGSS demonstration area including the Phalaborwa pilot

## *WHAT NEXT FOR THE*

### *OIWQMP project?*

The project to develop an IWQMP for the Olifants WMA will be completed in February 2017. However this is in fact just the start of the implementation by the relevant role players.

Importantly, water legislation and associated policy and strategies have included considerable stakeholder engagement allowing citizens to become involved in water resource management in a way that was previously not possible. This has enabled considerable capacity building to take place to allow individuals and stakeholder groups to participate constructively. The DWS Provincial Office/ WMI therefore needs to be fully engaged with individuals and stakeholders groups to allow:

- Continued participation in regional and local decision-making and governance processes through forums and other structures, such as the proposed Management Unit Task Teams (MUTT);
- Engagement with implementation actions, whether as the lead or the support institution;
- Building and sharing knowledge at various levels; and
- Playing a leadership role in the communities and championing local resource protection.



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

Antoinette Pietersen

Email: [PPoffice@golder.co.za](mailto:PPoffice@golder.co.za) or

Tel: (011) 254 4805