Developing capacity for water demand & water conservation management

Ba-Phalaborwa Municipality

USAID: RESILIENCE IN THE LIMPOPO BASIN PROGRAM (RESILIM) – OLIFANTS

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Introduction

The Olifants River Water Supply System provides water for domestic and industrial water use purposes, irrigation, mining and power generation. The system serves more than 3 million people comprising 18 local municipalities and parts of City of Tshwane metro inside the catchment area and Polokwane and Mokopane and their surrounding rural areas outside of the catchment area.

Key results from the Reconciliation Strategy for the Olifants River Water Supply System (DWS, 2015) indicate that the system is under stress and the demand is expected to exceed the supply by 2017 once the ecological reserve is implemented. The situation is exacerbated by poor water quality from coal mining activities in the area, and in particular acid water decanting from existing and defunct mines.

The following interventions were projected prior to the project implementation and are necessary to overcome the expected water deficit from 2017:

- Water Conservation and Demand Management for the Irrigation, Urban and Mining Water Use Sectors – phased in over 5 years for the former two sectors and over 10 years for the latter, all from 2013. A reduction in urban consumption of 20 million m3/annum has been set over this period.
- Eliminating unlawful water use – phased in over 5 years from 2015.
- Interventions that will increase the water supply:
- Removal of invasive alien plants – implemented over 25 years from 2010. (A continuation of the programmes already running).
- Groundwater development from 2012 over the next 23 years.
- Treatment of additional decant water from existing and decommissioned and rehabilitated coal mines.
- Sewage water reuse in Polokwane and Mokopane.

Ba-Phalaborwa municipality is situated in the Olifants catchment area. After Emalahleni, Ba-Phalaborwa local municipality was identified as the second largest urban water user and the municipality with the highest per capita consumption in the Olifants river catchment. Ba-Phalaborwa local municipality has no WCWDM programmes while its water losses and non-revenue water is in excess of 50% and it is unlikely that water services could be sustained unless urgent WCWDM interventions are undertaken.Ba-Phalaborwa needs to reduce its consumption by 20% in the next two years to ensure that the overall target of 20 million m3/a reduction by 2018 is achieved.

Project objectives

The objectives of the project were as follows:

- Development of a WCWDM strategy and business plan for Maruleng and Ba-Phalaborwa local municipalities
- Detailed analysis to
  - Identify and quantify water loss contributing factors
  - Identify potential interventions, budgets and timelines
  - Prepare business plan to unlock funding for implementation
- Focus on the enhancement of long-term water security and protection, climate change adaptation and catchment resilience through the reduction of water losses, non-revenue water and the improvement of water use efficiency
- Training and capacity building through social learning and systems thinking

Project activities

In order to achieve the overall vision of RESILIM-O programme, to improve consumer water use efficiency and reduce water losses, the project included the following main tasks:

- Task 1 - Desktop study, collect and collate information
- Task 2 - Skills gap assessment, training and capacity building
- Task 3 - Knowledge Attitude Perception survey
- Task 4 - Schools audit and awareness campaign
- Task 5 - Field investigations
- Task 6 - Retrofitting and repairs
- Task 7 - Pressure and flow logging
- Task 8 - Analysis, completion report and documentation
- Task 9 - Development of a WCWDM strategy and business plan
- Task 10 - Stakeholder workshops and strategy approval
- Task 11 - Media and communication strategy
- Task 12 - Project management

Project findings

Ba-Phalaborwa

- Water use in Ba-Phalaborwa is still within the licenced abstraction and capacity of the water treatment plant.
- The municipality has been tracking the water demand projection with WCWDM as included in the all town study which is encouraging. There is very little seasonal fluctuations in the demand.
- Approximately 39% of consumers are metered and billed. The remaining 61% receives water at no cost which leads to excessive leakage and wastage to the detriment of service delivery and sustainability of the municipality.
- Water tariffs are very low and do not promote water use efficiency

- There are a large number of visible leaks as a result of deteriorating infrastructure and lack of maintenance
- Water loss key performance indicators for Ba-Phalaborwa indicates high water losses (37.7%), non-revenue water (61.0%) and inefficient water use (388 ℓ/c/d).
- Flow and pressure logging profiles are erratic and highlights the excessive leakages in the system with resultant throttling of reservoir outflows to pressurise the system and poor service delivery.
- A total of 3699 or 22% of accounts have a zero consumption and the average consumption in Phalaborwa town is very high at 65 kℓ/household/month.
- 35 consumers use in excess of a 1000 kℓ per month. Emphasis should be placed on the top consumers as 804 (5%) consumers uses 349 961 kℓ/month (50%) of the total water billed
- There is scope for community awareness and training.
- A desktop study, Knowledge, Attitude and Perceptions (KAP) survey and in-depth interviews were undertaken to:
    - Establish knowledge on water resources, the value of water and water use patterns in the community.
    - Identify potential interventions to improve efficiency.
    - Identify perception of the municipality and service delivery.
    - Water conservation and awareness campaigns are required in all areas to address water wastage and improve efficiency.
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- All key performance indicators for Ba-Phalaborwa indicate high water losses, NRW and inefficiency. The municipality should target 250 ℓ/c/d and NRW of 35% in line with national averages (DWS - No Drop reports, 2015). These targets should be achievable with the current infrastructure and capacity. The results indicate that if the system input could be reduced by 35% and billed consumption increased by 35%, without reducing the industrial billed consumption, the non-revenue water would reduce to 24% and the litres per capita per day to 252.
- The municipality stands to gain R 62.3 million per annum if the system input could be reduced by 35% and billed consumption increased by 35%.
- Potential savings will contribute to enhancement of long-term water security and protection, climate change adaptation and catchment resilience.
- Maintain billing and payment performance with respect to correctness of accounts, regularity of accounts received and sufficiency of information to understand municipal bills.
- A large proportion of some residential areas do not have water meters. Should the Municipality install meters in future, there would be a need to educate the residents on how to read their meters, understand their water consumption and interpret their water bill. This would promote water use efficiency and the culture of paying for water services. If residents pay for their water consumption it would encourage them to use it more sparingly and wisely and to be more aware of the importance of water conservation.
- Municipality to improve timelines of responding to enquiries/complaints.

The *Association for Water & Rural Development [AWARD]*

AWARD is a non-profit organisation specializing in participatory, research-based project implementation. Their work addresses issues of sustainability, inequity and poverty by building natural-resource management competence and supporting sustainable livelihoods. One of their current projects, supported by USAID, focuses on the Olifants River and the way in which people living in South Africa and Mozambique depend on the Olifants and its contributing waterways. It aims to improve water security and resource management in support of the healthy ecosystems to sustain livelihoods and resilient economic development in the catchment.

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About USAID RESILIM-O

USAID: RESILIM-O focuses on the Olifants River Basin and the way in which people living in South Africa and Mozambique depend on the Olifants and its contributing waterways. It aims to improve water security and resource management in support of the healthy ecosystems that support livelihoods and resilient economic development in the catchment. The 5-year program, involving the South African and Mozambican portions of the Olifants catchment, is being implemented by the Association for Water and Rural Development (AWARD) and is funded by USAID Southern Africa.

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