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Development of a Water Reconciliation Strategy Study for the KwaZulu Natal Coastal Metropolitan Areas

Conducted by the Directorate: National Water Resource Planning, Department of Water Affairs and Forestry (DWAF) DECEMBER 2008

INTRODUCTION

The water requirements of the KwaZulu-Natal (KZN) metropolitan areas have been growing rapidly as a result of the expanding economy, urbanisation and improved water supply services. Over the years various studies focusing on intervention measures have been conducted by the Department of Water Affairs and Forestry (DWAF) and other institutions in the management of the area's water resource and supply systems to improve the water supply situation. However, the need for a reconciliation study became eminent and the current study, the Development of a Water Reconciliation Strategy commenced at the end of 2006. The study is conducted in collaboration with eThekwini Metropolitan Municipality, Msunduzi, iLembe, Ugu and uMgungundlovu municipalities as well as Umgeni Water and the past studies are forming the platform from which the reconciliation strategy is being developed.

From the onset of the study partnerships were formed with key stakeholders, representing all three tiers of government; parastatals, non-governmental organisations (NGOs) and community based organisations (CBOs); research institutions and universities; organised business and industry; organised agriculture; organised commercial forestry and conservancy.

This first newsletter follows the Background Information Document (BID) that was published in June 2007. It describes the objectives of the strategy and the study area. It explains the milestones reached to date, the findings as well as the interventions that will be undertaken to deal with the present situation.

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OBJECTIVES OF THE STRATEGY

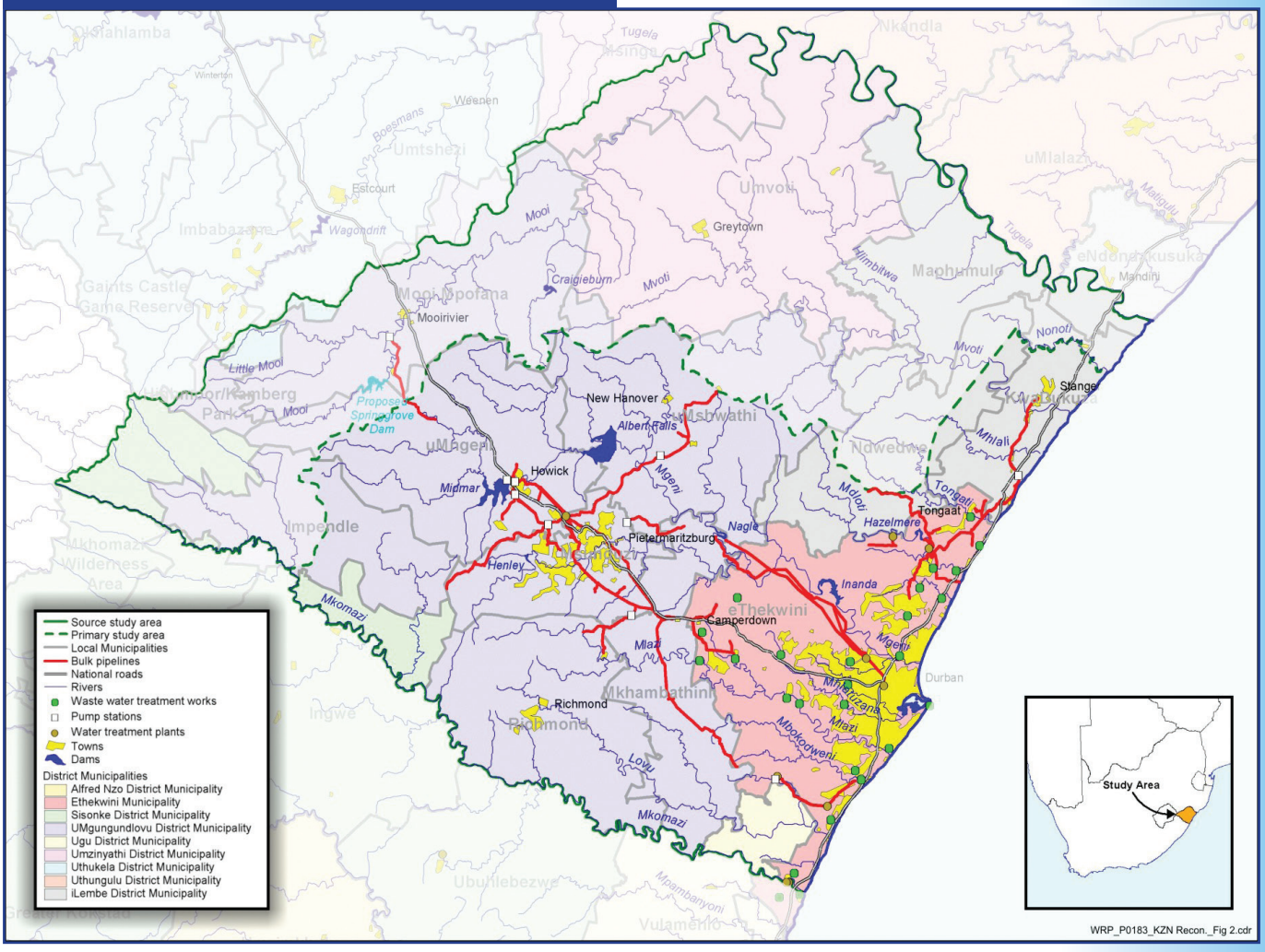
The aim of the reconciliation strategy is to identify, evaluate and prioritise interventions to reconcile the water requirements with the available water resources, involving the different key stakeholders and developing a reconciliation strategy with collective endorsement.
The following objectives have been set for the water reconciliation strategy:

- To identify interventions that will reconcile the water requirements with the available water up to 2030;
- To develop a strategy that will be flexible to accommodate future changes in actual water use;
- To integrate augmentation and bulk supply options to achieve optimised overall benefits;
- To engage with stakeholders in order to build partnerships and promote cooperation;
- To assess the potential savings that can be achieved through Water Conservation and Demand Management (WC/WDM) measures as well as the potential for reconciling current and future water requirements.

THE AREA IN KWAZULU-NATAL BEING STUDIED

The study area extends from Pietermaritzburg to Durban (west to east) and from KwaDukuza (Stanger) in the north, to Amanzimtoti in the south. It includes the eThekwini Metropolitan area and the Msunduzi and iLembe Municipalities. The area being studied has the second largest concentration of population in the country and is the third largest contributor to the national economy. It is considered the economic hub of KZN and has growing water demands as a result of new urban developments, influx of people from the rural areas and associated economic growth and developments, such as the Dube Trade Port.

Map of the metropolitan areas and the river systems forming part of the study in KwaZulu-Natal. The study area is indicated by the green broken lines



MILESTONES REACHED

The study is being conducted in phases and is expected to be completed in the first half of 2009. A public engagement process forms part of the study. This includes advisory support by a Study Steering Committee comprising representatives of the key stakeholders, input from and feedback to the public through public meetings and support material being made available to all stakeholders registered on the KZN water reconciliation strategy database.

The first stage reconciliation strategy has been completed and it indicates that urgent interventions are required to prevent an eminent water supply crisis in the area.

FINDINGS FROM THE STUDY

Water balance analysis, where the available water from the resource is compared to the current as well as future water requirements, shows that urgent interventions are required to prevent a shortfall in water supply over the short term. Coordinated management among water supply institutions and water users are required to deal with the short term situation.

The rapid growth in water demand that the KZN Coastal Metropolitan Areas have been experiencing over the last years is expected to continue over the next twenty years. Therefore additional water will be required to meet the increasing needs.

In order to address the situation various interventions, covering the geographical area and dealing with both water resource developments and demand side management measures, are needed.

MEASURES / INTERVENTIONS TO BE TAKEN TO DEAL WITH THE SITUATION

The required measures are briefly described below and include drought management, WC/WDM, the use of treated effluent and water resource infrastructure developments:

- **Drought management**

Although the immediate supply situation in the Mgeni River System is not under threat there is a twenty-five percent possibility that drought restrictions will have to be implemented by May 2009. High risk of drought restrictions is expected to prevail until 2012 when Spring Grove Dam starts delivering water. Close monitoring of the supply situation will be undertaken and interventions planned accordingly.

A System Operation Management Forum (SOMF) will be established to promote active involvement in the operational management of the systems with participation by Umgeni Water, eThekwini, Msunduzi, iLembe, Ugu municipalities and representatives of irrigated agriculture. DWAF's KZN Regional Office will take the lead in establishing the SOMF.

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- **Water conservation and demand management (WC/WDM)**

Demand side management should be a high priority and WC/WDM is the only measure that will mitigate shortages over the short term. eThekwini Metropolitan Municipality is for instance already implementing WC/WDM and will continue with these measures. Other municipalities should implement WC/WDM and DWAF will support them in doing so through a regional forum that will be established to enhance WC/WDM coordination.

Rain water harvesting through the use of roof tanks will be promoted and encouraged. This will limit users' dependence on formal water supply as it can be used for food gardening and in times of severe water restrictions provide important relief for basic needs and stimulate a culture of efficient water use.

- **The use of treated effluent**

Significant volumes of treated waste water processed by municipalities, which is either discharged directly or indirectly through the coastal rivers into the ocean, can be re-used. This can be done by applying additional nutrient removal treatment processes (in addition to current wastewater treatment plants). Although eThekwini Metropolitan Municipality has already successfully implemented reuse for industrial purposes, further re-use is economically comparable to other alternatives and will be investigated further by eThekwini and other with DWAF's assistance where necessary.

- **Water resource development options**

There is a variety of water resource development options that can be implemented to supply the expected future growth in water requirements. Some of these require immediate implementation and others can only be implemented over the long term.

With regards to the immediate and short-term future further phases of the Mooi-Mgeni Transfer Scheme will be implemented. This consists of building the Spring Grove Dam and the associated transfer infra-structure which will add 60 million cubic meters of water annually to the system yield when completed in 2012.

Although the South Coast *per se* is not included in the study the area is relevant to the study as water from the study area is transferred to augment its water supply. Substantial drought restrictions were implemented on the South Coast in the recent past as the water resources supplying the Ugu District Municipality are not sufficient. However, Umgeni Water, in its role as regional Water Services Provider, is implementing the South Coast Augmentation Pipeline (SCA) to augment the water supply of the South Coast System from the water resources of the Mgeni River System. This pipeline is currently under construction and will transfer purified water to the South Coast Supply area.

With regards to the North Coast metropolitan area the raising of Hazelmere Dam will be expedited to augment the water supply and reduce the risk of shortages.

The far North Coast supply area which stretches from the Tongaat River to the Thukela River receives its water from the Mvoti River and Hazelmere Dam via a pipeline of which the capacity is not sufficient. Umgeni Water is investigating the construction of a further pipeline (bi-directional) to alleviate the short-term water shortage as well as other options.

With regards to the medium and long-term further interventions are required that will provide additional water after the implementation of the Spring Grove Dam and its transfer infra-structure (Mooi-Mgeni Transfer Scheme). The following options are being considered for which feasibility studies must be conducted:

- The Mkomazi-Mgeni Transfer Scheme: The scheme consist of a dam on the Mkomazi River (near Smithfield), with a pump station and transfer tunnel to transfer the water to the Mgeni System (10-year implementation time frame);
- Use of treated effluent: This includes indirect re-use of the treated effluent for the KwaMashu and the Northern waste water treatment plants (5-year implementation timeframe);
- Desalination of sea water: Although it is more costly than other options it could become feasible once the other options have been implemented.

With regards to the North Coast and far North Coast supply area the following is being considered and should be investigated further:

- DWAF will conduct feasibility studies to determine potential water resource developments on the Mvoti and Thukela Rivers;
- Additional interventions should be embarked on in the Mdloti River System after the raising of the Hazelmere Dam wall. Possible options for this area include transfers from either the Lower Thukela or the Mvoti River Development Schemes to augment the far north coast and north coast metropolitan area. The former is a 5-year implementation plan and the latter a 10-year implementation plan. Furthermore, eThekwini will conduct a feasibility study for the use of treated effluent as the indirect re-use of the treated effluent from the KwaMashu and the North Coast waste water treatment plants could alleviate the water supply problem.

- **Establishment of a Strategy Steering Committee**

In order to ensure that the strategy's recommendations are implemented after completion of the study it is recommended that a Strategy Steering Committee be constituted at the end of the project. In the meantime the current Study Steering Committee can fulfil the role of facilitating communication between their constituencies to inform them of the recommendations.

CONCLUSION

This study is developing a strategy that, when fully implemented, will ensure that enough water will be available for the KwaZulu-Natal Coastal Metropolitan Areas when it is required in the future. In this first stage reconciliation strategy certain recommendations are made that need to be implemented in the short and medium term to ensure that a water supply crisis does not ensue in the KwaZulu-Natal Coastal Metropolitan Areas. Further feasibility studies are being undertaken of which some of the results will be made available in the second stage strategy.

CONTACT INFORMATION

For further information on the study, or to register as a stakeholder please contact Wilheminah Mosupye at the Public Participation Office at 011 805-2100 or e-mail wmosupye@zitholele.co.za or Rachelle Seymore at rseymore@telkomsa.net. For more information on the study visit the Department's website at www.dwaf.gov.za/projects/KZNWaterRecon.