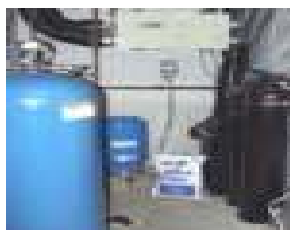


TOWARDS A RESEARCH STRATEGY AND AGENDA TO SUPPORT WATER SERVICES IN SOUTH AFRICA

Final report



Water Use and Waste Management KSA
Water Research Commission

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1. INTRODUCTION

1.1 Background

Since 1994 the national government of South Africa has been involved in the delivery of water and sanitation infrastructure to reduce the basic water services backlog. The Water Supply and Sanitation White Paper of 1994 and the Water Services Act of 1997 provided the policy and legislative context within which service delivery took place during the first ten years of democracy. The Local Government Act of 1998 and the Municipal Systems Act of 2000 provide the legislative framework for local government to take full responsibility for water services delivery as mandated by the Constitution of the Republic of South Africa (1996). The Strategic Framework for Water Services of 2003 sets out a comprehensive approach with respect to the provision of water services in South Africa. It outlines the change of approach needed to achieve policy goals as a result of the progress made in establishing democratic local government since 1994.

The national government has made significant progress in reducing the water services backlog. Approximately 9 million more people gained access to adequate water supply between 1995 and 2003. Progress in the reduction of the sanitation service backlog has been slow. According to March 2004 figures, it is estimated that 17,1million people still lack access to basic sanitation services; 4,2 million people have access to VIP toilets and 26,1 million have access to flush toilets.

1.2 Key challenges for the water services sector

Eradication of the water and sanitation service backlog

There is a need for the development of effective approaches for clearing the large sanitation services backlog and provision of higher levels of water services that can enable poor households to use water to escape from poverty through productive use of domestic water.

Sustainable delivery of free basic water and sanitation services

Cost-effective methods are required to support sustainable delivery of free basic water and sanitation services to poor households.

Sustainable use and management of the water resources

South Africa is a water scarce country which is characterized by an uneven temporal and spatial distribution of water resources. This necessitates an emphasis on water conservation and demand management as part and parcel of water services delivery. In addition, illegal connections, poor operation and maintenance of water services pose a challenge to most water services authorities and water service providers.

Institutional reform

The changes in institutional roles and responsibilities brought about by the completion of the Local Government transformation process and the Strategic Framework for Water Services must be supported by effective and efficient institutional support. This may require changes in the current institutional arrangements for water services delivery so that they can provide an enabling environment for the delivery of water services within the new policy and legislative context. It is important to ensure that the institutional reform processes contribute to the increase in the efficiency and cost-effectiveness of water services delivery.

1.3 The Strategic Framework for Water Services (SFWS)

The Strategic Framework for Water Services outlines a vision for improving the level of services delivered to households for the next ten years. It addresses the new role of the Department of Water Affairs & Forestry (DWAF) as the sector leader, regulator and supporter. The change in institutional roles and responsibilities for water services creates major challenges at national and provincial government levels such as a need for effective sector regulation, monitoring and evaluation of the sector performance. At municipality level, the challenges are more complex, for example, there is a need to strengthen the capacity of municipalities to manage large infrastructure projects and ensure effective operation and maintenance of water and sanitation infrastructure. Successful implementation of the SFWS will depend on effective institutional arrangements; this necessitates institutional reforms to make sure that water services institutions are best positioned to achieve the vision and goals of the SFWS. Other aspects that must be addressed include assessment of water quality and quantity, replacement of old infrastructure and implementation of free basic water and sanitation policies in all municipalities. The national government has set targets for clearing the water service backlog, namely, access to functioning basic water supply infrastructure for all by 2008, access to basic sanitation facilities

for all by 2010 and implementation of the free basic water policy in all municipalities by 2005.

The SFWS addresses the following key areas:

- Institutional reform
- Financial framework
- Planning framework
- Regulatory framework
- Support and monitoring framework
- National norms and standards

The following aspects must be addressed in order to support the successful implementation of the SFWS:

- Possible constraints to the achievement of water services delivery targets;
- Institutional reform of water services such as the rationalization of water boards and establishment of best institutional arrangements required to support the implementation of the SFWS;
- A definition of the basic level of water supply and sanitation service that is acceptable to all stakeholders;
- Review of the RDP standards for water supply to make provision for the use of domestic water supply to support income generating activities;
- Appropriate models for sector regulation;
- Capacity building strategies for preparing municipalities for the new roles and responsibilities;
- Review of sector legislation to ensure proper alignment with the SFWS and local government policy framework such as the Municipal Infrastructure Grant (MIG) policy framework.

1.4 The Water Research Commission

The Water Research Commission funds research on water services under the Water Services- Institutional and Management Issues thrust. The focus of this thrust is research on water service policy, institutional reform, sector regulation, asset management, water-related competencies and capacity required to strengthen water service institutions. Research outcomes must provide the knowledge base necessary to support the achievement of the vision that is articulated in the Strategic

Framework for Water Services. The change in the role of the Department of Water Affairs & Forestry from the implementer of water services infrastructure to that of sector leader, regulator and supporter has compelled the WRC to align its research strategy to the new needs of the changing and dynamic water services institutional environment. Thus there is the need to ensure that research addresses these emerging strategic water services issues, and also contribute to the development of the competencies and knowledge base that can provide ongoing innovative solutions to the water services sector.

WRC stakeholders

- Department of Water Affairs & Forestry
- Department of Provincial and Local Government
- Department of Health
- Municipalities
- South African Local Government Association
- South African Association of Water Utilities
- South African Municipal Workers Union
- Research institutions
- Science Councils
- NGOs
- Development Bank of Southern Africa
- Private Sector'
- Consultants
- International partners
- Politicians
- Water users

1.5 Purpose of the research strategy

This five year research strategy aims to guide the Water Research Commission in allocating funds to high priority research needed to support the delivery of sustainable water services within the context of the Strategic Framework for Water Services. The research outcome will contribute to the achievement of the sector vision, namely, effective, efficient and sustainable institutions that are accountable and responsive to their customers and ensure that water services contribute to the

reduction of poverty, improvement in health and promotion of economic development.

1.6 Scope of the strategy

The research strategy focuses on institutional and management issues that determine effective and efficient delivery of water services. The technical aspects of water supply, sanitation and wastewater treatment are addressed through other research thrusts within the Water Use and Waste Management Key Strategic Area. Each thrust has its own research strategy. There are many areas which require an integrated approach and cognizance is taken in addressing of these areas and issues within the KSA.

2. METHODOLOGY

Stakeholder participation was central to the development of this research strategy. The following steps were followed in the strategy development process:

- Review of the SFWS, relevant local government policies and other reports;
- In-depth discussions with officials from the Department of Water Affairs & Forestry (DWAF), Department of Provincial and Local Government (DPLG) and South African Local Government Association (SALGA). The information gathered was used to prepare a background document for the stakeholder workshops.
- Two stakeholder workshops were convened; the participants were drawn from the national sector departments, water boards, academic institutions, water service authorities, metros and Local Government Water SETA.
- An electronic questionnaire was distributed to all Water Services Authorities and other sector practitioners to facilitate broader stakeholder participation. Inputs from the workshops and electronic questionnaire were synthesized into a draft list of research topics.
- The workshop participants were given an opportunity to prioritize the research topics. A total of 40 participants representing 27 organizations contributed to the development of the research strategy.

3. RESEARCH THEMES

The research needs identified by participants have been synthesized and consolidated into seven research themes. Each theme is further subdivided into research topics and specific issues to be addressed are indicated under each topic.

3.1 Management of water services

Scope

The delivery of water services is a business; therefore, it is important to ensure that water service institutions operate according to sound business principles. The water services planning process must consider infrastructure, operation and maintenance requirements and the decisions taken on service levels and technology choice must be guided by affordability for the water services institutions and consumers. The planning process must assess water availability and explore opportunities for water demand management as a tool for meeting the water services delivery target without a need to invest in the development of new water resources. The following research topics will be addressed:

3.1.1 Evaluation of the appropriateness of the RDP standards for basic water supply and sanitation focusing on:

- Impact of RDP standards on the improvement of health for all including the elderly and disabled people.
- Assessment of the impact of providing a higher level of water service on the increase in ownership and willingness to pay for services.
- Assessment of the financial implications of revising the RDP standards for water and sanitation services.

3.1.2 Development of scenarios/models for clearing the sanitation service backlog focusing on:

- Assessment of capital investment requirements and implementation capacity.
- Institutional arrangement required to support accelerated sanitation service delivery.
- Investigation of factors that could hinder the achievement of 2010 sanitation target.

3.1.3 Water Services Development Planning

- Development of guidelines/models for assisting municipalities to align their water services development plans to the broader goals of integrated water resources management.
- Development of appropriate models for integrating water conservation and demand management strategies into water services development plan.

3.1.4 Improving asset management in municipalities

- Evaluate the state of asset management in municipalities
- Document best practice
- Develop guidelines for assisting municipalities in improving asset management.

3.1.5 Innovative institutional models for water services delivery

- Exploration of innovative institutional models for water services delivery to rural and peri-urban areas.
- Develop incentives for encouraging water services providers to serve the poor communities.
- Develop appropriate models for franchising water services delivery in South Africa.

3.2 Institutional reform and sector regulation

Scope

The current institutional framework for water services delivery is highly fragmented, functions and roles overlap in most cases, this leads to inefficient utilization of resources. There is a need to develop best institutional models that can support the establishment of more efficient and effective water services institutions. Research is required to guide the development and the implementation of the national institutional reform strategy.

Sector regulation must be implemented in order to ensure that WSAs are complying with national norms and standards; and to monitor performance management and efficient use of resources. There is a need to review international sector regulatory models in order to identify regulatory models that are suitable for South Africa. There is also a need to find a balance between regulation and providing support for the water services authorities because of the developmental nature of the local

government. Practical guidelines for sector regulations must be developed; the capacity required to implement sector regulation and financial implications of regulation for WSAs should also be assessed. The following research topics will be addressed:

3.2.1 Investigation of options for improving the efficiency and effectiveness of water services institutions focusing on the following:

- Financial viability and sustainability
- Rationalisation of water services institutions
- Improving customer relations
- Improving governance of water services institutions
- Guidelines for improving the performance of water services institutions

3.2.2 Sector regulation

Review of international models for water services sector regulation and highlight pros and cons of the different regulatory models

- Assessment of institutional and human capacity required to implement sector regulation.
- Evaluate the cost implication of sector regulation on municipalities
- Exploration of the feasibility of using incentives to regulate the water services sector.

3.3 Financing water services

Scope

Financing of the water and sanitation infrastructure necessary to achieve the national water and sanitation targets by 2010 remains a major challenge for the national - government and municipalities. Currently, the estimates of annual budgets required to clear the water and sanitation backlog tend to focus on capital investments without factoring the cost associated with the operation and maintenance of water and sanitation infrastructure and future infrastructure replacement costs. There is a need to develop user-friendly planning models to assist municipalities in planning for O&M of water services in order to ensure sustainable delivery of the services. Water Services Authorities are expected to assist households to move to higher levels of service wherever practical and affordable; currently, there are no subsidy models for supporting higher levels of service. Innovative cost recovery methods are required to

sustain the service and to fund the free basic water services delivery. Effective credit control policies and procedures must be developed in order to deal with the problem of poor cost recovery and financial sustainability of municipalities. The potential impact of the free basic water policy on the national economy, ownership and community empowerment should also be investigated. The following topics will be addressed:

3.3.1 Effective allocation of the equitable share

- Analysis of the financial requirements for the different categories of municipalities in relation to the equitable share. This analysis should include population size, availability of local revenue, institutional capacity, skills base, the cost of providing water services and O&M requirements in order to ensure that the allocation of the equitable share is based on the real needs of municipalities.
- Development of models for guiding the different categories of municipalities in the allocation of the equitable share.

3.3.2 Cost recovery and credit control procedures

- Assessment of the impact of free basic water services on cost recovery, national economy, financial sustainability and community empowerment.
- Development of innovative cost recovery mechanisms and credit control procedures including best approaches for managing water supply cut-offs for non-payment; this should include best practice case studies.
- Evaluation of the use of meter management of free basic water supply as a tool for assisting Water Services Authorities to determine the real cost of providing free basic water.
- Evaluation of the processes followed by DWAF in setting the raw water tariff and assessment of the impact of this tariff on the cost of water services to the municipalities and households including the extent of participation by WSAs in this tariff setting process.
- Development of a realistic pricing methodology for water services.

3.4 Knowledge management and capacity building

Scope

A review of literature shows that there is a wealth of information on the delivery of water services produced by government departments, research institutions, water boards, metros, municipalities and NGOs. The stakeholders have identified a need for an improvement in access to information for all. The information must be packaged in a manner that suits the needs of different target groups, especially politicians and municipal officials with limited technical capacity. Currently, there are no mechanisms for facilitating two-way communication flow between the decision makers and the end-users of water services. Poor inter-departmental communication is also a problem at all levels of government; this limits opportunities for sharing best practice. Research under this theme must provide practical guidelines for addressing effective information dissemination, improvement of communication and knowledge sharing at all levels of government and devise strategies for improving access to information for politicians, municipalities and other sector stakeholders.

Provision of water and sanitation infrastructure can only lead to sustainable delivery of water services when supported by strong and effective institutional and human capacity which is necessary for the management of the delivery of water services, operation and maintenance of the infrastructure. There is a need to strengthen the institutional and human capacity at the municipal level in order to ensure effective and efficient water services delivery. The following research topics will be addressed:

3.4.1 Improving access to information

- Investigate knowledge/information requirements of municipalities and politicians that will enable them to make informed decisions.
- Development of a communication strategy for improving information sharing among sector departments and guidelines for facilitating two-way communication between government and community structures.
- Development of effective methods for communicating policies and related matters to community structures and the general public.

3.4.2 Capacity building

- Development of cost-effective options for providing management and technical support to municipalities with limited capacity.

- Development of a set of appropriate standard competencies for the water services sector, i.e. learnerships that are required by the water services sector.
- Assessment of the need for a formal support programme to strengthen the capacity of emerging water service providers in order to increase their success rate.

3.5 Water and social development

Scope

The Strategic Framework for Water Services recognizes the importance of making sure that the implementation of basic water and sanitation infrastructure contributes to the support of sustainable livelihood and local economic development. Poverty eradication depends on the creation of sustainable jobs, building skills of local people and promotion of entrepreneurship within the local communities. Productive use of domestic water should be encouraged; this might require an increase in the RDP standard from 25 to 50 litres per capita per day.

It is important to make sure that access to sanitation is not only measured by the number of household toilets built, but by the level of usage of the sanitation facilities by all members of the household including children and improvement in health and hygienic practices.

Women and girls are worst affected by lack of access to water and sanitation because the burden of fetching water from far away sources and caring for the sick falls on them and limits time available for them to participate in self development initiatives and economic activities. It is therefore important to assess the impact of improved access to water and sanitation on the quality of life for women and girls. The following research topics will be addressed:

3.5.1 Productive use of domestic water for sustainable livelihood

Investigate the level of productive use of domestic water by households and assess impact on poverty reduction.

- Document successful case studies that demonstrate the productive use of the 6kl free basic water
- Development of guidelines for planning the use of domestic water supply for income generating activities.

3.5.2 Impact of water services on social development

- Assess the impact of water services on the improvement of health and hygienic practice within households.
- Impact of access to water services infrastructure on the school attendance for girls
- Evaluate time saving benefits for women
- Assessment of the role of local communities in the operation and maintenance of water and sanitation services.

3.6 Water and health

Scope

The primary goal of providing water and sanitation services is to improve health; therefore, it is important to undertake periodic assessment of the impact of water and sanitation infrastructure on the improvement of health. It is also essential to ensure that the most vulnerable members of our society have access to reliable water services, especially the disabled, people and families that are affected and infected with HIV/AIDS. The following research topics will be addressed:

3.6.1 Impact of water and sanitation services on HIV/AIDS infected and affected people

- Investigation of the impact of water and sanitation services on the quality of life for HIV/AIDS patients and their families.
- Assessment of water and sanitation needs of people infected and affected with HIV/AIDS .

3.6.2 Contribution of the improvement in water and sanitation infrastructure to the reduction of waterborne diseases

- Evaluate the impact of improved water and sanitation infrastructure on the reduction in the incidence of diarrhea in children less than five years old.
- Analyze the clinic records in a few selected areas that are most vulnerable to cholera and other waterborne diseases to assess the impact of water and sanitation infrastructure on the reduction of the number of reported cases of cholera and other waterborne diseases.

3.7 Technical aspects of water services delivery

Scope

This research theme addresses the technical aspects of water service delivery that are essential to ensure sustainable management of water services. Research on water supply and treatment technology is addressed under a separate thrust within the Water Use and Waste Management KSA. The following topics will be addressed:

3.7.1 Technical options for improving water demand management

- Assessment of the feasibility of using a dual water reticulation system in South Africa.
- Development of innovative methods for water loss management and documentation of best practice case studies.
- Assessment of domestic water meter losses for different meter ages over a spectrum of consumer flow rates in order to establish the viability of meter replacement programs and investigation of the influence of different types of pressure management systems on water losses.

3.7.2 Sustainable management of water resources

- Investigations of sustainable methods for groundwater recharge with special reference to the Northern Cape aquifers.
- Development of guidelines for the selection of appropriate water supply sources and/or supply systems; this should include O&M costs and implications of the different technical choices on the life cycle costs.
- Development of guidelines for continuous improvement of the O& M of the different water supply systems.

4. CONCLUSION

The research strategy document is a product of a participatory process that has involved all the major water services sector stakeholders representing national sector departments, water boards, SALGA, water services authorities, metros, academic institutions, NGOs, international donor agencies and Local Government Water SETA. The strategy focuses on research required to support the water services sector with the implementation of the Strategic Framework for Water Services and achievement of sector goals and vision. This research strategy is tool developed to assist, as well

as guide potential researchers and the sector professionals on areas where information and knowledge is required. It provides a framework for directing resources to generate solutions to the issues and problems identified. The framework is not exclusive, but dynamic and will be updated on a regular basis as new issues and challenges emerge. Continuous comment and input will be most welcome on improving the scope and content of this strategy.

ANNEXURES

Annexure A: Research needs identified by stakeholder workshops

A. Information dissemination and knowledge management

- Investigate knowledge/information requirements of municipalities and politicians that will enable them to make informed decisions on water services delivery.
- Development of a strategy for packaging and dissemination of available knowledge in user friendly format, e.g. statistical information, MIG funding, alternative technology options and best practice case studies
- Strategies for facilitating two way communication between decision makers and community structures to ensure that strategic decisions are informed by knowledge and experiences of local communities.
- Establishment of a one-stop water services information resource centre
- Need for effective communication of policies and related matters by politicians to the community. Assessment of the role and attitudes of politicians in relation to payment of water services should be linked to the communication strategy. The research must address the problem of poor information flow from the national office to the provincial level and local municipalities.

B. Institutional and management issues

- Develop models for guiding the different categories of municipalities in the allocation of the equitable share.
- Analysis of the financial requirements of the different categories of municipalities in relation to the equitable share. This analysis should address population size, availability of local revenue, institutional capacity, skills base, operational systems etc in order to make sure that allocation of the equitable share is based on the real needs of municipalities.
- Establish what is required to support municipalities to plan their operations properly and development of models for integrating national, provincial and municipal planning processes to ensure proper alignment of IDPs with national and provincial water resource development plans; include planning models for local government.
- Expansion of a skills gap analysis, to assess skills that are needed to implement the Strategic Framework for Water Services at national, provincial and municipal levels.

- Development of a communication strategy for improving communication and cooperation among government departments at all levels
- Innovative models for water service delivery in rural and peri-urban areas as well as incentives for water service providers to provide services to poor communities.
- Investigate the feasibility of using incentives to regulate water services sector
- Evaluation of the compliance with the conditions of MIG by municipalities
- Development of models/scenarios for clearing the sanitation service backlog, these models should address financial investment requirements, implementation capacity, institutional arrangements and other requirements that are essential to ensure access to sanitation for all. Factors that could hinder the clearing of the sanitation service backlog should also be identified.
- Develop partnership models for capacity building (technical, institutional) for smaller municipalities, for example, Umgeni Water is transferring technical skills to municipalities within its supply area.
- Review the state of asset management in municipalities and develop guidelines for improving asset management.
- Evaluations of the appropriateness of RDP standard for access to basic water supply for the achievement of improve health for all. Assessment of the impact of house reticulation and yard taps in the increase of ownership and willingness to pay for services (Lepelle Northern Water has done a research on the issue). This research should address the financial implications of the revised RDP standards and socio-economic aspects of providing higher levels services.
- Sector regulation – Investigate whether the regulation of the water sector is done appropriately and at the appropriate level. Review international models of WS regulation. The cost implication of sector regulation for municipalities.
- Development of indicators for people migration across municipal boundaries that can be measured on an annual basis to help municipalities to base their water services plans on accurate information.
- Investigation of synergies required to improve planning of water services delivery to public institutions; for example, schools built with provincial budget at a local municipality area and the institutional responsibility for operation and maintenance.
- Assessment of the appropriateness of the basic levels of water and sanitation services for disabled persons (this should build on the work already done by DWAF).

C. Financing water services

- Development of models for cost recovery; identify problems experienced in cost recovery such as social and institutional barriers. Identify and document case studies of best practice at municipal levels.
- Analysis of the cost of providing water services by different categories of municipalities in order to ensure appropriate allocation of equitable share the different categories of municipalities based on their needs.
- Assessment of the impact of free basic water services on cost recovery and financial sustainability in order to enable government to respond to perceptions that the free basic water service has led to an increase in the water tariffs for households.
- Establish the water consumption patterns of households that receive free basic water service to determine there is scope for growth for water services with regards to revenue collection. This research should evaluate meter management of free basic water services as a tool for WSA so that they can determine the real costs of providing free basic services.
- Guidelines for allocation of budget to different municipalities in relation to geotechnical conditions of different geographical areas. Evaluation of the one size fits all model and its impact on financing water services.
- Document case studies of how municipalities and politicians have been able to get a buy-in for pre-paid metered water service from the communities they serve (Gasegonyane Municipality, Northern Cape, previously, Kuruman municipality, Lepelle Northern Water and Sekhukhune). Link to meter reading and management.
- Investigation of innovative cost recovery mechanisms that are more cost-effective.
- Investigation of the DWAF procedures for the setting of the raw water tariff for and the impact of the tariff on the costs of water services to municipalities and their customers.
- Investment and financial requirements to meet the MDG goals.

D. Environmental aspects of water services delivery

- Evaluation of compliance of municipalities with the National Environment Management Act with regards to solid waste management.
- Assessment of the use energy efficient technologies in the delivery of water services and development of guidelines for energy saving practices.

E. Water and social development

- Investigate the level of productive uses of water and link this to the equitable share allocation. Guidelines for linking water services delivery to poverty eradication, for example, applying the livelihood approach to water services delivery. Case studies on the use of the 6kl free basic water should also be investigated.
- Identification of factors that influence people's willingness to pay for water services. Establish the social parameters required to implement sustainable water and sanitation services.
- Evaluation of the impact of water and sanitation provision on school attendance by girls.
- Explore opportunities for linking water services delivery to local economic development (sustainable agriculture, entrepreneurship, SMMES).
- Determine the viability of a national water loss awareness campaign to reduce non-payment and establish a positive social perception on willingness to pay.
- Assess the feasibility of using local communities in the operation and maintenance of water and sanitation services.

F. Water and health

- Investigation of the impact of water and sanitation services on the well being of HIV/AIDS patients? Assessment of water and sanitation needs of people infected and affected with HIV/AIDS.
- Assessment of the impact of health and hygiene education on the health and hygiene practices of the beneficiary communities.

G. Capacity building and training

- Identify information on critical learning areas needed to formulate relevant water services sector qualifications.
- Developing a set of standards competencies for the water services sector (learnerships that are required within the water service sectors).
- Evaluation of compliance with the Skills Development Act within the water services sector (look at the relevant responsible body).
- Development of best approaches for delivering technical support from capacitated institutions to provincial and local levels where it is needed; for example, establishment of technical advice teams for the municipalities that are in need of technical support.

- Investigate the need for a formal support programme to develop emerging service providers in the water sector to increase their success rate (consult with the LGW SETA).

H. Technical aspects of water service delivery

- Assessment of the feasibility of using a dual reticulation water supply system in South Africa
- Development of innovative methods for water loss management.
- Guidelines for assisting municipalities to improve asset management
- Sustainable methods for groundwater recharge with special reference to the Northern Cape aquifers.
- Guidelines for district municipalities on the selection of appropriate water sources and/or supply systems; e.g. groundwater –borehole supply or surface water; this should include operation and maintenance cost and implications of the different choices on life cycle costs.
- Operation and Maintenance – Continuous improvement in operation and maintenance of different types of water supply schemes. Capture best practices of O&M. (link to the SAAWU benchmarking study).
- Assessment of domestic water meter losses for different meter ages over spectrum of consumer flow rates in order to establish the viability of meter replacement programs Investigate the influence of different types of pressure management systems on water losses.
- Determine the viability of closed circuit sewer systems (Bio-Bac or similar) for schools.
- Determine the viability of sewer network refurbishment and the introduction of sand traps to reduce grit and root ingress into networks in order to reduce repeated blockages and reduce maintenance costs.
- Documentation of sewer maintenance best practices

Annexure B: Lists of workshop participants

Annexure B1: National stakeholder workshop, 17/6/2004

Name	Organization	E-mail address
Ms Rosetta Simelane	DWAF	obc@dwaf.gov.za
Mr Hugh Sussens	DWAF	sussensh@dwaf.gov.za
Mr Abri Vermuelen	DWAF	vermuelena@dwaf.gov.za
Mr Helgard Muller	DWAF	helgard@dwaf.gov.za
Mr Cyprian Mazubane	DWAF	ven@dwaf.gov.za
Mr Charles Crawford	DWAF	vcc@dwaf.gov.za
Ms Gabi Gumbi-Masilela	DPLG	GabiG@dplg.gov.za
Mr Johan Geldenhuys	Rand Water	jgeldenhuys@randwater.co.za
Mr Carel Posthumus	City of Tshwane	CarelP@tshwane.gov.za
Bolu Onabolu	NCWSTI	Bonabolu2001@yahoo.com
Doris Maumela	NCWSTI	dorismaumela@yahoo.com
Malcolm White	Irish Embassy	MALCOLM.WHITE@IVEAGH.IRLGOV.IE
Mr LE van Rheede van Oudtshoorn	Bloem Water	louis@bloewater.co.za
Mr Hangwani Makwarela	Amatola Water	hmakwarela@amatolawater.co.za
Ms Minnie Venter. Hildebrand	Umgeni Water	Minnie.venter@umgeni.co.za
Mr John Mnisi	Johannesburg Water	jmnisi@jwater.co.za
Dr Gerhard Offringa	WRC	gerhardo@wrc.org.za
Mr Jay Bhagwan	WRC	jayb@wrc.org.za
Nozi Mjoli facilitator	Hlathi Dev Services	nozimjoli@mweb.co.za
Puleng Makhaye (assistant facilitator)	Amahle T&D Consulting	puleng@sn.apc.org

Apologies

Mr Neil McLeod	Ethekwini Water Services
Ms Gugu Moloi	Umgeni Water
Ms Bev Pretorius	SALGA
Dr Charles Reeve	EU
Mr Ian Pearson	DFID
Mr Aussie Austin	CSIR
Mr Dave Ramsay	City of Cape Town
Mr Mike Marler	DBSA
Mr P Camay	SAAWU
Mr John Connelly	SAAWU
Ms Thoko Sigwaza	Masibambane
Mr Kalinga Pelpola	DWAF
Mr Mthobeli Kolisa	PDG

Annexure B2: List of participants: 2nd Workshop, 23/6/2004

Ms Janet Davies	LGWSETA	janetd@lgwseta.co.za
Ms Nonhlanhla Dube	LGWSETA	NonhlanhlaD@lgwseta.co.za
Mr H Cronje	Emalahleni LM	admin@witbank.co.za
Mr Barney van der Merwe	Lepelle Water	kater@lepelle.co.za
Mr Craig Thompson	Amatole DM	CraigT@amatole-dm.co.za
Mr R Le Roux	Magalies Water	Magal001@mweb.co.za
Ms Nino Manus	DWAF	ManusA@dwaf.gov.za
Ms R Britz	Mogale City Local Municipality	rethab@yebo.co.za
Mr Gerhard Fritz	Mangaung LM	gfritz@civic.mangaung.co.za
M P Mpata	Ga-Segonyana LM	kurmun@spg.co.za
Mr G O Lebona	Ga-Segonyana LM	kurmun@spg.co.za
Mr Molawa Lesego	Ga-Segonyana LM	kurmun@spg.co.za
Mr A Mananga	Polokwane LM	edwardn@polokwane.org.za
Dr Gerhard Offringa	WRC	gerhardo@wrc.org.za
Mr Jay Bhagwan	WRC	jayb@wrc.org.za
Ms Nozi Mjoli	Hlathi Dev Services	nozimjoli@mweb.co.za
Ms Puleng Makhaye	Amahle T & D Consultancy	pulengm@sn.apc.org

Apologies

Mr Dries Potgieter	verberg Water
Mr John Connolly	AAWU
Mr Pete Vaz	PLG
Ms Bev Pretorius	ALGA
Ms Thoko Sigwaza	asibambane
Mr Mthobeli Kolisa	DG
Mr W Austin	iddeburg LM
Mr Mjikisile Vulindlu	ape Town Metro

Annexure C: List of sector stakeholder interviewed

Department of Water Affairs &Forestry

Mr Helgard Muller

Mr Kalinga Pelpola

Ms Zandile Mathe

Mr Hugh Sussens

Ms Thoko Sigwaza

Department of Provincial &Local Government

Ms Gabi Gumbi- Masilela

SALGA

Ms Bev Pretorius

Ms Lorraine Mudunungu

Annexure D: List of acronyms

AIDS	Acquired immunodeficiency syndrome
DPLG	Department of Provincial and Local Government
DWAF	Department of Water Affairs & Forestry
HIV	Human Immunodeficiency Virus
IDPs	Integrated Development Plans
KSA	Key Strategic Area
LGWSETA	Local Government Water Sector Training Authority
MIG	Municipal Infrastructure Grant
NGOs	Non-Governmental Organizations
O&M	Operation & Maintenance
RDP	Reconstruction and Development Programme
SAAWU	South African Association of Water Utilities
SALGA	South African Local Government Associations
SFWS	Strategic Framework for Water Services
VIP	Ventilated Improved Pit toilet
WRC	Water Research Commission
WSAs	Water Services Authorities