CHAIRPERSON'S ADDRESS

During my four years as a Board member and my recent appointment as Chairperson, I have witnessed the phenomenal growth of the Water Research Commission (WRC). The successful transformation of the WRC commenced in 2002 and it has progressed along its strategic path and positioned itself as a credible leader of knowledge generation, accounting, application and sharing in the South African water sector. Such an organisation is proving to be an invaluable resource in a water-stressed country such as South Africa, providing knowledge to sustain our water resources and to prevent any undesirable future scenarios.

During the year under review, the WRC strengthened its national, regional and global profile, building strong water-centred knowledge links. The internal and external strategic drives undertaken by the organisation and its achievements during the year under review are indicative of the WRC adhering to its mission of being a dynamic innovative hub for water-centred knowledge. The organisation has devised innovative initiatives regarding knowledge dissemination and public understanding of science, and has made great advancements in the area of capacity building.

A knowledge dissemination survey conducted among WRC stakeholders revealed that there was a generally high level of satisfaction among stakeholders concerning the relevance and effectiveness of most of the WRC's knowledge dissemination activities, which suggests that the WRC is fulfilling its role as a national hub for water-centred knowledge. The WRC is well-known through its communication and information dissemination vehicles: it boasts an interactive website, informative publications (magazines, newsletters and reports), media exposure and publicity, Open Days which are well-organised and informative, exposure at various water-focused exhibitions, symposia and workshops as well as the placements of strategic advertisements. The WRC finalised 91 research projects and published 86 research reports which were distributed widely within the water sector during the year under review. This demonstrates that the WRC is furnishing the water sector with vital knowledge to manage water resources optimally.

Capacity building is high on the WRC agenda and over the past four years many students graduated with the support of the WRC. During the year under review the WRC improved its support to students, with special emphasis on historically disadvantaged students. About 581 students were supported by WRC projects, 69% of whom are from historically disadvantaged backgrounds. This is a significant increase from previous years. The Minister of Water Affairs and Forestry (the then Minister Buyelwa Sonjica) requested that the WRC initiate a capacity-building study aimed at building an overview of capacity needs and 'training' available in the water sector. This study has been initiated and looks at gaps, obstacles and interventions in capacity building.

The WRC was also involved in various schools-related programmes which aimed at building capacity at a rudimentary level so as to encourage learners to explore the prospect of pursuing a career in the vibrant South African water sector.

The ever-popular WRC career guide *Water@Work: A Career Guide* has been distributed widely (about 50 000 copies) at

science festivals. Highlighting the role that women and the youth play in water research is one of the priorities of the WRC. This is evident through the continued sponsorship of the *Women in Research* category of the *Women in Water Awards* as well as the *SA Youth Water Prize*, both being annual events coordinated by the Department of Water Affairs and Forestry (DWAF). WIN-SA, a sector initiative led by the WRC, is a partnership initiative between all bodies concerned with capacity building for local government and information collation and dissemination for instituting water services. WIN-SA has grown in strength by facilitating various initiatives. Their programme, appropriately titled, 'Bringing in the Harvest' reached out to key local government stakeholders and facilitated documentation and dissemination of good practice for the benefit of the entire sector.

An organisation such as the WRC can only function optimally if it develops stable partnerships on an ongoing basis. The WRC has succeeded in securing several partnerships on national, continental and global bases. Such partnerships and networking have proved to be fruitful in soliciting valuable research inputs and, more importantly, generating vital knowledge that may be used on various forums for a plethora of varying uses. Some noteworthy examples include the WRC's involvement with NEPAD (supporting the building of centres of excellence in Africa); the Global Water Research Coalition (GWRC) (a coalition of key lead organisations addressing water research); *Streams of Knowledge* (a global coalition of resource centres with a strong presence in Africa and South Africa, which is focused on improving the level of water sanitation and hygiene through capacity building); the French Government (a research partnership addressing among other items, inter-Government capacity building), to name but a few. The WRC's role in such partnerships reflects its vast intellectual capital as well as its formidable knowledge base that it has amassed since its inception.

The WRC prides itself on the various procedures and policies that are in place to streamline its activities and to ensure improved efficacy, efficiency and governance, especially as far as research funding is concerned. The newly introduced Fund Management System (FMS) is currently operational and will work synergistically with the processes of calls for proposals, reviewing of proposals and the funding process. This is aligned with an efficient financial system coupled with sound management and governance practices.

I wish to welcome our new Minister of Water Affairs and Forestry, Ms Lindiwe Hendricks to the water sector and we look forward to her strategic guidance as we take the water sector challenges forward. I also thank the former Minister of Water Affairs and Forestry, Ms Buyelwa Sonjica, for her interest in and support of WRC initiatives and activities throughout the year. It goes without saying that the other role players in the South African water sector (researchers and practitioners) are also valued partners both to the WRC as well as the sector in its entirety. I must also thank the members of the current Board for their inputs and support and acknowledge the efforts of the previous Board, including the past Chairperson, Prof H Kasan. Congratulations are also due to the WRC Executive and staff members for their diligence and efforts as well as their commitment to the organisational mission and vision.

Dr SJ Khoza

FROM **BLUE** TO **GOLD**
Creating, transferring and disseminating water-centred knowledge in South Africa

The WRC knowledge hub in action

Water quantity and quality are critical to South Africa's long-term sustainability. Many decades of research and development have provided the basis for the development of policies and strategies that allow for the sustainability of our water resources. This emphasises not only the important role that water-centred knowledge has played in the past, but its increasingly important role in providing the country with knowledge which allows it to deal successfully with the many challenges that are facing our limited water resources currently and in future years.

The WRC plays a crucial role in this regard. The WRC leads and coordinates research which, in turn, creates the knowledge that allows us to manage water quantity and quality judiciously and, in so doing, to achieve sustainability. The WRC creates knowledge which will ensure that South Africa avoids any undesirable future scenarios. The WRC provides the country with a knowledge framework that, if well utilised, ensures that the country has safe drinking water and sanitation for all; sufficient quantity of water for various allocated uses; promoting a healthy environment and economic growth; sustainable infrastructure for water and sanitation services; effective water management policies and systems; and adaptive and mitigating strategies to face the challenges of climate change. Knowledge created and disseminated by the WRC supports the development of water professionals, builds capacity to support the national challenges of alleviating poverty and improves the quality of life for all South Africans.

Some of the highlights for the year 2005/06, described below, encapsulate the unique leadership role of the WRC, as the South African hub for water-centred knowledge, with respect to the ***creation, sharing and application of knowledge*** *for the benefit of the water sector, Government and citizens of South Africa. The WRC is also gradually extending its coverage to incorporate the people on the African continent. Besides providing new social, economic, environmental and health-related perspectives on the creation, dissemination and transfer of water-centred knowledge by the WRC, the impact areas provide links to the higher-level objective of improving quality of life for all South Africans by addressing the strategic issues of society, economy, environment and health.*

Water Research Commission

Improving the lives of people

Turning blue water into gold coins for the people

How do you safeguard an important water resource while providing gainful income to a community? This is what is happening in the Eastern Cape where a community-run ecotourism facility has been established by the Sandile community on the Tyolomqa Estuary, near East London. The establishment of this facility is the direct result of interventions made by researchers on the Eastern Cape Estuaries Management Programme, which started several years ago with support from the WRC. It is aimed at establishing a common vision for the estuary between the holiday cottage owners on the East Bank of the estuary and the Sandile community on the West Bank.

The ecotourism facility, which is the culmination of collaboration between the two communities, was officially opened by members of the Eastern Cape government during the year. This is the second community-run ecotourism business established by this programme. The first, which centres on the concession for a catch-and-release fly fishery and includes canoe and pony trails, was established six years ago on the Mtentu Estuary and is run by the aMadiba Community.

A toolbox for improving sanitation, health and hygiene

The implementation of basic sanitation services is necessary for ensuring the health of the nation. However, if these services are not integrated in a systematic way with health education and hygiene awareness, the sanitation facilities may fail to reduce disease or improve livelihoods due to misuse and poor operation and maintenance by recipient communities, a WRC funded study found.

A community-based health and hygiene model including an implementation kit was developed during the study. This model provides structured guidance and tools for all stages of health and hygiene programmes, clarifies roles and responsibilities for optimal utilisation of scarce human and financial resources and optimises socio-economic development through skills transfer and remuneration for work done by community members.

Gaps in present sanitation, health and hygiene programmes were addressed, and possible solutions suggested, for example, the use of village health workers rather than more expensive external consultants to carry out health promotion, thereby ensuring maximum outcome for a limited budget. It is emphasised that livelihood approaches must be implemented to ensure that sanitation, health and hygiene projects have the desired positive impact on community health. This means investigating the dynamics within the community, income levels, and demographics among others. For example, if it is found that women contribute most to domestic labour, an effort to involve the community in the project must be aware of the workload of the women and take this into consideration in a way that ensures their participation without overburdening them.

Ecosan: From grey to green

The WRC has funded research into the potential environmental and health impacts of ecological sanitation, specifically urine diversion (UD), which is increasingly being implemented in South Africa, especially in the eThekwini Metro. Applying the solid UD waste to several types of soil and then planting fruit and vegetables, such as paw-paw trees and spinach, the research indicated that far from being an inert mass, the waste has a marked impact on soil quality, leading to better food production. The growth of the plants was boosted remarkably when growing above the buried waste.

One of the main purposes of any sanitation intervention is to provide a barrier between people and infectious agents present in the waste. However, the study did indicate that microbial contaminants from the waste may move to the soil surface after burial and pose a potential health hazard.

There is also concern with regard to the potential effect of this waste on groundwater quality. Research institutions continue to improve the technique of using such waste in a manner that poses no threat to humans and the environment.

Building tools in supporting the fight against climate change

Crucial assistance to small towns in the Northern Cape having to deal with the onslaught of climate change was provided by research findings supported by the WRC. Most climate projection models suggest a decrease in rainfall over the western part of Southern Africa in future decades. Small towns and subsistence farmers are thought to be most vulnerable in the Northern Cape where water resources are already scarce.

The study investigated the adaptive capacity of these towns to climate variability, specifically drought. It identified a need for proactive strategies at local and national level to deal with the impacts of drought and climate change, with specific emphasis on demand side management.

Other strategies described in the study include the implementation of dry sanitation systems rather than flush toilets; public information and school education programmes; as well as rising block tariffs and water restrictions. Groundwater is likely to be most severely affected, with the groundwater table dropping due to reduced recharge. It is suggested that strict groundwater management systems should be put in place, with early warning mechanisms to report depleted groundwater reserves.

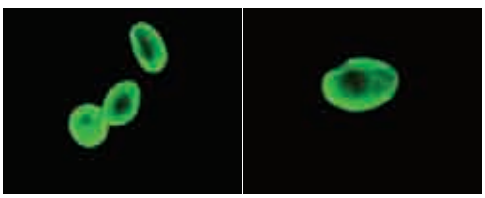
Harvesting the blue

The WRC is actively promoting rainwater harvesting among rural communities to alleviate poverty and drive away hunger. Several research projects aimed at finding new rainwater harvesting techniques have been funded.

One such technique combines the advantages of water harvesting, no-till, basin tillage and mulching on high drought-risk clay soils. The practice reduces total runoff to zero and evaporation from the soil surface considerably, thus increasing crop production in the semi-arid areas with low potential clay soils. It has been shown that, on average, in-field rainwater harvesting technology increases crop yields by about a third when compared to the use of conventional tillage techniques.

The technology has been transferred to farmers in Thaba Nchu, in the Free State, as well as emerging farmers in the Eastern Cape and KwaZulu-Natal. Two rainwater harvesting festivals were also held in the Free State to promote the use of this technology.

Mapping the pathogen highway



Water is an important vehicle for the transmission of pathogens or disease-causing organisms. This is cause for great concern as it can place an entire community at risk. A WRC-funded study successfully assessed the source of some of these pathogens (*Cryptosporidium, Salmonella* and *Vibrio cholerae*), their route through and survival in the environment, thereby forming a basis for the development of appropriate catchment management and intervention strategies to reduce the health risk to water users.

A number of key findings were revealed in the study. It was observed that cryptosporidiosis is mostly spread through person-to-person contact rather than from animals to humans. Research also revealed that *Salmonella*, a leading cause of foodborne infections, was prevalent in the environment, and survived for extended periods of more than six months in sediments at temperatures typically associated with freshwater streams and rivers in South Africa. This means that they could easily be released into the water at high concentrations during rain events.

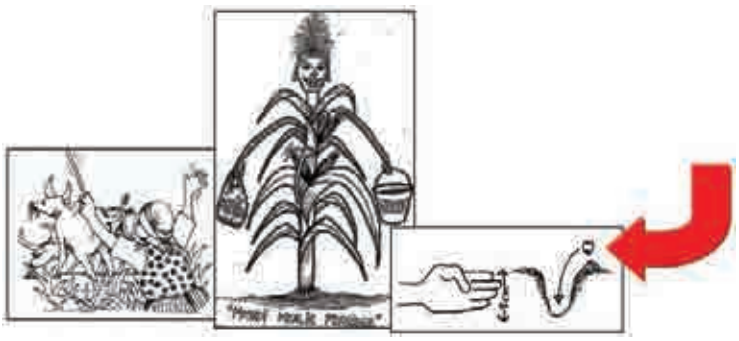
Another interesting result is the discovery of several different strains of *Vibrio cholerae* in the Vaal Barrage, an indication that the bacteria can adapt to its environment, allowing it to survive longer. This may portray the potential of environmental populations of the bacteria to serve as reservoirs for future epidemic strains.

Blue – the tie that binds a community

Communities living in the Kat River Valley, in the Eastern Cape, are proving that water can be the tie that binds. Government, agricultural business, small town and local rural community stakeholders have found common ground in the river on which they all depend, and are now jointly responsible for the availability and quality of the Kat River through various catchment management groups.

The process has been driven by a research group which was supported by WRC funding. Former Minister of Water Affairs & Forestry, Ms Buyelwa Sonjica, officially launched a Stakeholder Driven Catchment Plan for the Kat River Valley on 20 October 2005. She complimented the synergy emanating from the various stakeholders. The Minister's visit was a morale booster, especially for community members, and received widespread media coverage.

From Mrs Mealie to meal ticket



Mosadi Mealie Porridge stands tall and upright. She does not speak and yet she is giving emerging farmers all over the country a new voice and understanding. She is part of a training package created for use by facilitators in the field. She teaches farmers that, like a human lady needs groceries and water to feed her family, she also needs fertilizer and water to form big strong cobs, which can then feed the people.

To make it possible for the lady to feed us properly, she too would require a balanced diet. Her land is her house and, just like other women, Mosadi Mealie does not like living in a dirty house where diseases can breed. She shows us when she is not well, or when she is thirsty and hungry and it is for us to understand her language and give her what she asks for in order for her to give us what we want.

Historically, emerging farmers have had marginal access to vital training on irrigation practices. Training programmes usually necessitate that farmers be away from their homes for lengthy periods of time - an arrangement that is far from practical, especially in the case of women who bear the responsibility for food-insecure households.

The training package created through WRC research consists of four parts: a facilitator's guide on farmer training; training tools (such as transparencies and other aids for training sessions); assessment tools (used for assessment of training); audio-visual reference material (training in the field captured on video for reference purposes). The present training material includes modules on maize production, cotton production, basic scheme management and water management. The training material has been registered with the Primary and Secondary Agriculture Sector Education & Training Authority.

Water Research Commission

Protecting the environment

Striking gold with world first mine-water treatment

A 10 Ml/day full-scale plant to treat toxic mine-water from the Grootvlei Gold Mine using primary sewage sludge has been commissioned at ERWAT's Ancor Wastewater Treatment Works on the Far East Rand.

The plant is treating sulphate-rich acid mine drainage using the Rhodes BioSURE Process, a patented cost-effective biological treatment option developed over nearly a decade with funds from the WRC. This is the first full-scale plant of its kind in the world.

In essence, the BioSURE technology is a biological sulphate reduction process where sulphate-rich water is placed together with primary sewage sludge, which acts as a carbon donor source in a reactor to create conventionally-treatable biosolid waste.

Getting to grapes with salinity

In the Lower Orange River region increasing salinity of irrigation water is potentially threatening the livelihood of grape farmers in the area. The WRC funded a study aimed at unearthing the root of the problem with the focus on possible solutions.

DWAF's Orange River Replanning Study indicated potential water quality problems particularly in the river reach between Boegoeberg and Onseepkans, where high-value export crops, mostly grapes, are being irrigated on 35 000 ha of land. Although the water quality is still acceptable for irrigation, research in the Breede River Valley called for watchfulness since irrigated grapes proved to be sensitive to salinity.

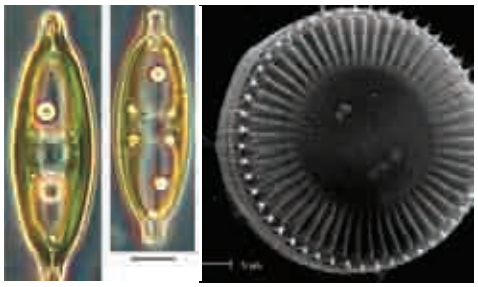
Furthermore, this study indicated that salinity would increase by a whopping 25% by 2030. WRC-funded research evaluated the present situation, identified likely future water quality and soil salinity management trends, while assessing the need for policy development and follow-up research. Specific management actions were recommended to curtail water quality deterioration and so maintain optimum production of grapevines.

The most important management actions proposed for the region include improvement of irrigation efficiency; application of adequate leaching; revision of irrigation practices in severely salinised areas; lining of water delivery and storage structures; maintenance of drainage systems already installed; installation of drainage and basin lands and foothill soils and the basin lands to intercept drainage water, which is to be disposed of in the river. These and other recommendations provide valuable guidance to the Northern Cape Department of Agriculture.

Blue monitoring through cosmopolitan diatoms

Within the past decade diatom-based indices have gained considerable popularity throughout the world as a tool to provide an integrated reflection of water quality and in support of management decisions for rivers and streams. Diatoms are one of the most common types of phytoplankton, and can be found in oceans, freshwater, soils and on damp surfaces.

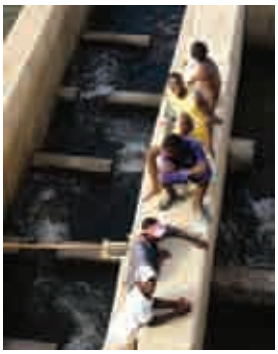
Current WRC-funded research has shown that diatoms are universal versatile organisms, meaning that diatom-based quality indices developed for use in Europe may be applied to the assemblages found in South Africa. Their usefulness is enhanced further by the fact that their silicon frustules (body cases) are extremely resistant, enabling changes over time in water



quality to be assessed.

In 2005, a landmark was reached when diatoms were successfully used as one of the biological indicators for the State of the Rivers Report on the Crocodile West/Marico catchments. Workshops on the use of diatoms in water quality monitoring held in Cape Town and Pretoria were well received and there is demand for further workshops in other parts of the country.

SA fishway design grows in leaps and bounds

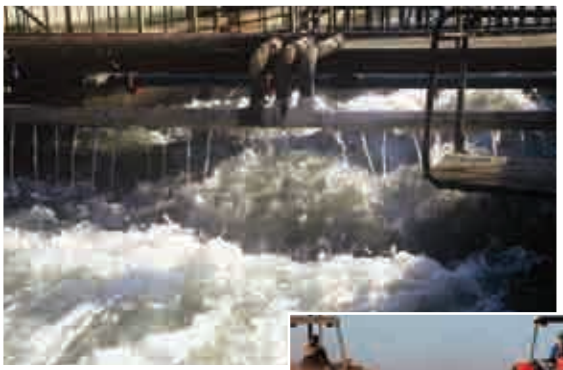


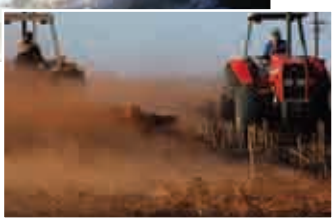
The WRC has funded in-depth research into the country's fishways, which should ultimately lead to the improved design of these life-saving structures. Impassable fabricated barriers to migration, such as dams and weirs, have been cited as one of the main reasons for the threatened status of a number of red data fish species in southern Africa.

Several fishways or fish ladders have been constructed in South Africa since the 1950s. However, monitoring of these structures during the study period has shown that these are often ineffective. This is because most of these structures are based on designs used for Northern Hemisphere salmonids, which show differences in size and swimming abilities to local fish. A critical aspect of fishway design is to understand the response of the fish using the fishway to the hydraulic conditions within the structure.

Two locally designed fishways, the vertical slot and pool and weir types, were tested and refined for application in South Africa. The research also presents a consistent and cost-effective way of presenting monitoring results for the management of fishways.

Safeguarding blue and green by managing sludge



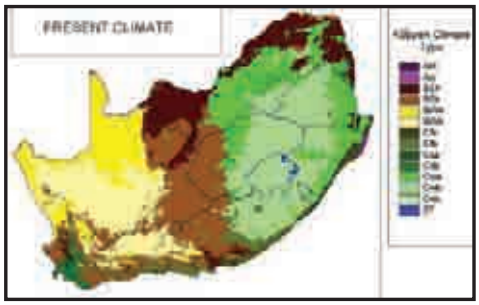


Sludge produced at a wastewater treatment works can be regarded as the pollution removed from the water in a concentrated form. Correct management and disposal of this sludge are thus crucial to avoid potential contamination of the surrounding environment and freshwater rivers and streams. The WRC initiated research to characterise local wastewater sludges and to develop a better understanding of sludge disposal practices that could form the basis for a comprehensive revision of the 1997 Guideline documents pertaining to the use and disposal of sewage sludge. The Guidelines are aligned with international trends and local knowledge gleaned over the past five years.

Brainstorming rainfall over Southern Africa – a model development

This research collaboration succeeded in improving the simulation of water-related variables over South Africa by applying a sophisticated regional-scale atmospheric model. The study also equipped South Africa and African scientists with knowledge and skills to develop, maintain and use atmospheric models. The expertise of model developers at the CSIRO in Australia was applied in this research programme. Many model runs resulted in improved simulation of atmospheric circulation and rainfall over South Africa. It also established a sustainable basis for model development in South Africa.

The achievements of this project translate into



the region having a greatly enhanced capacity and confidence in its ability with regard to atmospheric modelling. As an additional spinoff, the project is temporarily being used under licence by the project team to produce weather predictions that complement those generated by the South African Weather Service.

In Africa, around the globe

WRC chairs SARIA meeting

The Southern African Regional Irrigation Association (SARIA) held its Annual Workshop and Steering Committee meeting from 30 January to 2 February in Pretoria. SARIA was launched during the International Commission on Irrigation and Drainage (ICID) 51st IEC meeting and the 6th International Micro-irrigation Congress in Cape Town on 24-26 October 2000.

Its vision is to enhance communication, research, training and development of appropriate science and technologies in irrigation and drainage for gender-balanced poverty eradication and economic development to improve the livelihoods of the inhabitants of the sub-Saharan region of Africa. It comprises members from 11 SADC countries with additional countries such as Tanzania, Kenya and Madagascar.

The WRC took the initiative to re-activate SARIA. The WRC, chaired the meeting and co-hosted the workshop together with the National Department of Agriculture (DoA) and the Agricultural Research Council (ARC).

SAFe Water – The French connection

The Department of Science and Technology (DST) and a French consortium led by the Ministry of Foreign Affairs (MAE) have together established a network called the South African-French Centre for Water Sciences (SAFeWater). Its main objective is to create a network between South African researchers in the field of water (specifically sanitation, salinity and real-time meteorology), hence enabling the researchers to access other funding sources.

One key output is research capacity building. The DST pledged funds to the WRC to support the network. Furthermore, the WRC hosted the first French SA Workshop on Research Cooperation on 30 May - 1 June 2005. The event consisted of bringing together South African and French researchers to explore commonalities.

Creating a South African island – The WRC and the World Water Forum, Mexico

The 4th World Water Forum was held in Mexico City on 16-22 March 2006. The WRC was part of a WISA (Water Institute of Southern Africa) initiative to create a South African island which showcased projects and initiatives stemming from the vibrant South African water sector. The WRC's eye-catching poster and multimedia presentation formed a part of the visual component of the exhibition. Various WRC staff members attended the conference. Their participation included their involvement as members of panels, lectures and presentations.

Accolades

WRC project wins acclaimed prize

A joint project involving the Department of Water Affairs and Forestry (DWAF), the WRC and the South African Weather Service has won an international prize: The South African National Precipitation Research and Rainfall Enhancement programme was awarded the United Arab Emirates (UAE) International Prize for weather modification by the World Meteorological Organization. The project involved the design and execution of a successful weather modification experiment which gives South Africa the opportunity of enhancing rainfall which could increase river runoff by up to 25% under specific circumstances. The award, which demonstrates that South Africa has utilised minimum resources to yield world-class innovation, includes a financial contribution of US$200 000 which will be used for further research.

WRC goes platinum

The Faculty of Engineering, University of KwaZulu-Natal, awarded its Platinum Award to the WRC for funding research projects. The WRC funded approximately 50 UKZN research projects to the value of R7.7m. over the past ten years.

Strengthening the base in the water sector – capacity building

Career focus

The WRC took part in the SABC Career and Training Faire (Feb-Aug 2005) in 10 centres in South Africa, and in the SciTech Science Festival, Pretoria (Feb-March 2005). Collectively, about 50 000 copies of the booklet *Water@Work: A Career Guide* were distributed. Owing to the popularity of the *Career Guide*, the WRC also generated a further 20 000 copies (15 000 hard copies and 5 000 CDs). These will be distributed at events during the next financial year, especially at the *SABC Career and Training Faire* (Feb-Aug 2006).

The WRC sponsored the first prize for the *SA Youth Water Prize*. The prize consisted of a computer with a printer as well as a video camera per student. The winners from Setjabe Se Maketse Combined School in Bloemfontein won the *International Youth Water Prize* in Stockholm, Sweden.

WIN-SA: Bringing in the harvest

The Water Information Network-South Africa (WIN-SA), a sector initiative, has had an eventful year. This success was rooted in a stronger and branded WIN-SA, embracing a wide array of products and services.

The prominent highlight of 2005/06 was the knowledge documentation and dissemination campaign, known as, 'Bringing in the Harvest'. Through this campaign, WIN-SA reached out to key local government stakeholders and facilitated the documentation and dissemination of good practice for the benefit of the entire sector.

Following this campaign has been the WIN-SA Lessons Series, which is a series of documents that highlights the challenges and experiences of local government in meeting the service delivery targets as set out in the Strategic Framework for Water Services which was published in 2003. It was also through this campaign that WIN-SA introduced the people-to-people learning campaign. This is a series of facilitated engagements between local government officials and councillors from different areas across the country, who meet with the sole purpose of learning from each other and acting to improve their own situations afterwards.

The theme for this year's people-to-people event was 'Moving from Inspiration to Action'. A further highlight for 2005/06 was the WIN Partners Forum (PF) that took place in March 2005. The WIN PF is an annual learning event that brings together stakeholders from the water sector to discuss issues of key importance to their areas of work. WIN-SA received funding commitments from the Swiss Government through its development agency, SDC, for 2005-2008. This was most encouraging in that it allowed WIN-SA to commence longer term planning.

Weaving the golden thread of knowledge in rural areas

How reliable is the water supply? How much does one kilolitre of water supplied cost? How much water is being consumed? These are all questions community water committees need to be able to answer to run their schemes smoothly. A practical, hands-on system has been tested to assist rural water committees in monitoring the effectiveness of their systems.

The system makes use of standard sheets and

charts to record key performance indicators (KPIs) such as number of taps, income, expenditure, water losses and energy bill. It is aimed at overcoming the historic bureaucratic reporting systems that committee members, who often do not have access to sophisticated computers or are computer illiterate, have had to grapple with. The charts and sheets are filled in by hand, thus eliminating the need for a computer.

The WRC-funded study found that community level administrators could understand and work with the system, and it proved to be useful in understanding trends in the water schemes being managed.

Disseminating knowledge

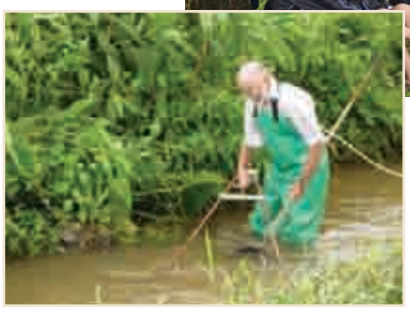
The WRC's Open Days

Two Open Days were held during 2005/06. The first took place at the University of KwaZulu-Natal (UKZN), Durban campus, on 1 September 2005 and the second during early October at the University of Pretoria. The first Open Day coincided with the WRC Board Meeting. The first session involved about 200 learners from local schools who were exposed to displays, models and videos with a distinct career focus. A hydrological model was used to demonstrate the water cycle and the various water users. There was also a demonstration on membrane technology. Invited guests included academia, students, learners, educators, journalists and Government officials (provincial and local Government).

The second WRC Open Day took place at the Senate Hall, University of Pretoria on 3 October 2005. The event showcased WRC projects during the past financial year. The 2004/05 *WRC Knowledge Review* was launched at this event. This was followed by a short symposium dealing with popular topics such as climate change, rainwater harvesting and capacity building in the SA water sector.

Water and Culture: WRC commemorates World Water Day

The theme for World Water Day 2006 (22 March) was 'Water and Culture'. The WRC celebrated this day by hosting and organising two events: one in Pietermaritzburg and one in Pretoria. The programme involved getting learners to conduct a mini-SASS (South African Scoring System) test which determined the 'health' of a river or a stream.



The objective of the exercise was two-fold: to make learners aware of environmental issues, especially river health as well as enlightening learners about the various careers that are possible in the South African water sector, especially as far as biomonitoring is concerned. In Pietermaritzburg learners were guided through the mini-SASS test at a stream in the Botanical Gardens, Pietermaritzburg.

There was also a demonstration as to how fish act as indicators of river health. Learners participated actively and thoroughly enjoyed both the learning experience as well as the social networking involved. There was a healthy merging of both the water and the cultural components. Learners were tasked with compiling a report which was presented to the head of the Botanical Gardens in Pietermaritzburg. The event was publicised in both print and electronic media.

In Pretoria, learners used the mini-SASS scoring system to assess the Moreletaspruit, a highly urbanised stream. The assessment, which concluded the fair to poor state of the stream, demonstrated the challenges faced by urban environmental managers with regard to increased stormwater runoff, sediment, and increased risk of pollution from industrial and domestic sewage as a result of increased development in the city.

A key player at the International Scientific and Technical Cooperation for Sustainable Development Workshop (OECD)

The WRC supported DST in the preparation and facilitation of a workshop addressing International Scientific and Technological Cooperation for Sustainable Development. South Africa hosted the Organisation for Economic Cooperation and Development (OECD) workshop with a focus on Water and Energy as two main issues. DST requested the WRC to support/lead the water stream.

Two staff members were involved in the preparation and one chaired all water sessions during the meeting. The workshop emphasised best practices in international cooperation in science and technology and identified indicators for successful cooperation.

EXECUTIVE REPORT

This report was compiled in accordance with the requirements of the Public Finance Management Act (PFMA) and forms part of the audited financial statements of the Water Research Commission (WRC) for the period 1 April 2005 to 31 March 2006.

The report addresses corporate governance practices and structure, the mandate and core business of the WRC, the WRC's achievements and progress made during the year under review with regard to key performance areas and relevant short- and long-term strategic objectives. The members of the Executive of the WRC submit this report, as approved by the WRC's Board, to the South African Parliament through the Minister of Water Affairs and Forestry.

During the year under review, the WRC progressed well in its strategic journey following the direction set in its core strategy. The WRC, informed by the core strategy and its long-term scenarios, continued in strengthening its support to South Africa. This was done by creating and disseminating water-centred knowledge, building capacity through research and establishing new research competencies, and further identifying medium- to long-term future research needs that will allow sustainability of the resource and related services. The management core of the WRC under the leadership of the WRC's Board developed, using a scenario planning tool, four possible scenarios for the organisation. The outcomes of this strategic exercise called for further improving WRC's support in the creation, dissemination and transfer of water-centred knowledge in South Africa. The outcomes also called for a review of the role of the WRC in corroborating water research in Africa, anticipating a stronger leadership position within the African water sector, and strategic positioning activities within South Africa. Based on these imperatives, the WRC has strengthened its potential role in support of national initiatives such as NEPAD.

The WRC strengthened its national, regional and global profile, building strong water-centred knowledge links and both initiated and undertook key roles in a number of national, African and global initiatives, with many staff members serving in key leadership positions. Building capacity in researchers continued to be an important function of research and in many areas of research supported by the WRC it is evident that

students who had participated in earlier WRC projects are currently leading WRC-funded research projects and are serving as members of reference groups/steering committees as well as reviewers of new proposals.

Another ongoing challenge is the appropriate state-of-the-art dissemination and application of WRC-created knowledge. During 2005/06 the WRC continued to improve on the uptake process of knowledge created via its research activities and maintained its initiatives with regard to public understanding of water science with regular publications such as *Amanzi,* the *Knowledge Review* and *The Water Wheel* which are regarded as highly successful publications. Other successful knowledge dissemination initiatives included Open Days as well as WRC representation at water-related conferences and symposia. In an effort to share knowledge effectively with national policy and decision-makers, a set of briefing notes was generated. A recent survey addressing knowledge dissemination indicated a generally high level of satisfaction among stakeholders concerning the relevance and effectiveness of most of the WRC's knowledge dissemination activities, which suggests that the WRC is fulfilling its role as a national hub for water-centred knowledge.

MANDATE

The **mandate** of the WRC (Water Research Act, Act No 34 of 1971) highlights the following functions to be carried out by the organisation:

- Promoting coordination, cooperation and communication in the area of water research and development
- Establishing water research needs and priorities
- Stimulating and funding water research according to priority
- Promoting effective transfer of information and technology
- Enhancing knowledge and capacity-building within the water sector

Water quantity and quality are critical to South Africa's long-term sustainability. During the year under review the WRC has further built on decades of research and development and science-based knowledge that have collectively provided the basis for the development of policies and strategies that allow for the sustainability of South Africa's water resources. This emphasises not only the important role that water-centred knowledge has played in the past, but its increasing importance in providing the country with knowledge which will allow it to deal successfully with the many emerging challenges that will affect our limited water resources in future years. The WRC plays a crucial role in this regard. During 2005/06, the WRC continued to provide leadership and coordinated research which, in turn, created the knowledge that allowed South Africa to manage water quantity and quality judiciously and, in so doing, to continue to achieve sustainability. As in the past, the broad spectrum (natural and social sciences) of research supported by the WRC during this financial year has created knowledge and supported its transfer to ensure that South Africa avoids any undesirable future scenarios. The WRC continued to provide the country with a knowledge framework that ensures that the country has safe drinking water and sanitation for all; a sufficient quantity of water for various allocated uses, promoting a healthy environment and economic growth; sustainable infrastructure for water and sanitation services; effective water management policies and systems; and adaptive and mitigating strategies to face the challenges of climate change.

Functioning as a 'hub' for water-centred knowledge, the WRC links various players within the water sector by working through local and global partnerships. The WRC provides novel (whilst practical) ways of packaging knowledge and transforming knowledge into knowledge-based products which form the basis for new water resource and water service management practices for the water sector and the community at large, both locally and globally. The WRC is continuously expanding its role as a global leader in water-centred knowledge, a position toward which it has made great progress, playing increasingly key roles in the SADC region, the African continent and within a number of global networks and initiatives.

GOVERNANCE

GOVERNANCE FRAMEWORK

During the year under review the organisation functioned under a clear governance framework and adhered strongly to sound management and control practices. The Board and its various committees provided effective structures for guiding the WRC throughout the year.

The WRC, under the competent direction of its Board, continued to manage its strategic and operational affairs within a sound corporate governance framework. The WRC complied strictly with both the Water Research Act and the Public Finance Management Act (PFMA), Treasury Regulations as well as all other relevant legislation. The corporate governance framework provided the organisation and its leadership with integrity, accountability and transparency.

RISK MANAGEMENT, AUDIT AND FRAUD PREVENTION-RELATED POLICIES

The WRC has further developed its risk management framework and has documented its comprehensive risk policy. Risk management was further integrated and linked into the WRC's short- and long-term strategic plans as well as its day-to-day operations. During the year under review the risk management framework and the relevant strategic and operational interventions developed by the WRC addressed key strategic and operational issues relating to the WRC's macro- and micro-environment. The risk framework that was developed involved the re-assessment of previously identified risks as well as the identification of new risk areas. The revision of risk-severity ratings, taking into consideration the internal and external environment in which the WRC operates, was undertaken. This framework informed many of the objectives set for the organisation and the WRC developed and implemented its strategic and operational plan based on the risk areas identified. The plan that had been approved by the Board of the WRC was used as a basis for a number of key strategic objectives as well as the basis for the internal audit of the organisation.

The risk plan meets the requirements of both the PFMA, which requires all public entities to maintain an effective, efficient and transparent system of financial and risk management and internal control, and of the Treasury Regulations which specify that the accounting authority (the Board) must ensure that risk assessment is conducted regularly to enable emerging risks to be identified and addressed timeously.

The WRC appointed an audit firm to undertake an internal audit of the organisation in terms of an audit plan that had been reviewed and recommended for approval by the Audit and Finance Committee of the Board, and thereafter approved by the Board of the WRC. The audit addressed financial and other strategic risk areas. The outcomes of the audit indicated significant improvements in many of the WRC's financial practices. One of the key performance objectives of the WRC included feedback on the level to which management had addressed the previous year's issues identified by the internal audit. The audit results and the WRC management's response, as well as the level of successful and planned actions intended to bring about further improvements, were reviewed and approved by the Audit and Finance Committee and the Board.

A number of operational policies were further improved by the WRC during the course of the year, supporting its ability to manage risks and enhance corporate governance. The WRC has renewed and updated its fraud prevention policy and plan and its code of ethics was re-visited. The Board of the WRC has developed a clear Board charter including a Board code of ethics. During the year under review, the WRC adhered to its corporate values and integrated these values into all its undertakings, both internal and external.

VALUES

- Service orientation
- Care for people, society and the environment
- Fairness to all
- Dedication to quality
- Integrity and ethical behaviour
- Respect for human and individual rights
- Innovation and learning

GOVERNANCE STRUCTURES

During the year under review the WRC operated under the leadership of its Board. The year reflected a change in Board composition as a new Board was appointed by the Minister of Water Affairs and Forestry on 1 June 2005. During the period March 2005 to May 2005 the Board was composed of a number of Board members appointed by the Minister for a period of three years which ended on 31 May 2005. Board members were as follows:

Prof HC Kasan (Chairperson)
Dr SJ Khoza
Ms MM Matsabu
Dr DJ Merrey
Mr NL Moikangoa
Dr BM Molope
Mr AM Muller (ex officio)
Mr RJC Nay
Mr MG Rall
Mr JS Vilakazi
Dr R Kfir (CEO, ex officio)

Mr Muller, Director-General of the Department of Water Affairs and Forestry and Dr Kfir, Chief Executive Officer of the WRC were ex officio members.

The new Board was appointed by the Minister of Water Affairs and Forestry on 1 June 2005 for a period of three years ending 31 May 2008. The newly composed

Board includes a number of new members as well as a number of re-appointed members. The new Board members are as follows:

Dr SJ Khoza (Chairperson)
Prof F Otieno (Vice-Chairperson)
Prof JB Adams
Ms MM Matsabu
Dr DJ Merrey
Ms VGN Mkaza
Mr D Naidoo (from 12 October 2005)
Mr MG Rall
Mr J Sindane (from 1 September 2005) (ex officio)
Mr M Sirenya
Prof EM Stack
Dr R Kfir (CEO, ex officio)

Mr Sindane, Director-General of the Department of Water Affairs and Forestry and Dr Kfir, Chief Executive Officer of the WRC, are ex officio members.

Mr Sindane replaced Mr Muller from 1 September 2005. Ms Scholtz served as Board and Board Committee Secretary during the period under review.

BOARD MEETINGS HELD DURING 2005/06

19 July 2005	Board meeting
1 September 2005	Board meeting (in KwaZulu-Natal)
6 December 2006	Strategic meeting
2 March 2006	Board meeting

A number of committees were established by the Board to assist in the execution of its various duties, and the composition of these committees is provided, together with the membership, terms of reference and meeting dates of these committees. Upon appointment of the new Board the composition of these committees changed.

The details are as follows:

Executive Committee of the Board (ExCo)

Members (until 31 May 2005)
Prof HC Kasan (Chairperson)
Dr SJ Khoza
Dr BM Molope
Dr R Kfir (CEO)

Ms Z Scholtz (Com. Secretary)

Members (from 1 June 2005)
Dr SJ Khoza (Chairperson)
Prof F Otieno
Mr D Naidoo (from 12 October 2005)
Dr R Kfir (CEO)

Ms Z Scholtz (Com. Secretary)

Meetings
26 May 2005 (joint meeting with the Audit and Finance Committee)

Terms of Reference
The main function of the ExCo is to perform specific tasks, at the request of the Board, which need to be addressed as matters of urgency

Audit and Finance Committee of the Board

Members (until 31 May 2005)
Mr RJC Nay (Chairperson)
Mr JN Campbell (co-opted)
Ms MM Matsabu
Prof EM Stack (co-opted)
Mr JS Vilakazi
Dr R Kfir (CEO)

The following representatives from the organisations (as indicated), attended meetings during 2004/05:
WRC (in attendance)
Mr A Rampershad (Chief Financial Officer)
Ms Z Scholtz (Com. Secretary)

Office of the Auditor-General
Mr J Grobbelaar, Ms SM Taljaard, Ms S Nieft, Ms N Mankungu

PriceWaterhouseCoopers
Mr G de Jager, Ms JL Fuller, Ms G de Risi

Members (from 1 June 2005)
Prof EM Stack (Chairperson)
Mr JN Campbell (co-opted)
Ms MM Matsabu
Mr D Naidoo (from 12 October 2005)
Prof F Otieno
Mr M Sirenya
Dr R Kfir (CEO)

The following representatives from the organisations (as indicated), attended meetings during 2005/06:
WRC (in attendance)
Mr A Rampershad (Chief Financial Officer)
Ms Z Scholtz (Com. Secretary)

Office of the Auditor-General
Mr J Grobbelaar, Ms S Nieft, Ms U Baartman, Mr C de Villiers

PriceWaterhouse Coopers
Mr G de Jager, Mrs G de Risi

Meetings
26 May 2005 (joint meeting with ExCo)
16 August 2005
7 February 2006

Terms of Reference

- Ensure compliance with the PFMA and advise on applications for exemption deemed necessary in the interests of enhancing the WRC's performance
- Monitor and advise on the collection of revenue due to the WRC
- Evaluate short-, medium- and long-term plans and budgets
- Assess requests by management for adjustments in water research rates and charges (levies) and make recommendations to the Board
- Review the external audit process at key stages of planning and execution, in terms of addressing (i) critical risk areas (ii) scope and (iii) effectiveness
- Review external audit results, and make recommendations to the Board on acceptability of financial statements and on addressing significant differences between management and the external auditors
- Review, from time to time, the WRC's financial policies and accounting procedures and controls, *inter alia* in the light of external audit results
- Advise on labour dispute strategies
- Monitor the scope and effectiveness of the internal audit function from the financial perspective
- Monitor the ethical conduct of the WRC, its management and senior officials, from a financial perspective
- Report to the Board on an ongoing basis

Human Resources Committee of the Board (HR Committee)

(no meetings of this committee were held under the leadership of the previous Board)

Members
Under the **current Board**, the Human Resources Committee consists of the following members:
Mr MG Rall (Chairperson)
Ms VGN Mkaza
Prof F Otieno
Prof EM Stack
Dr R Kfir (CEO)

Ms Z Scholtz (Com. Secretary)

Meetings
15 August 2005
7 February 2006

Terms of Reference
- Draft the CEO's performance agreement and assess performance on an annual basis
- Advise on the structure and composition of the Executive
- Review transformation and employment equity plans and assess progress with respect to milestones and targets
- Review career-pathing and personnel development strategies and monitor implementation of skills development programmes
- Review and advise on job level assessment policy and procedures
- Advise on amendments to the conditions of employment and remuneration structure
- Review and monitor the effectiveness of the WRC's performance management system
- Advise on labour dispute strategies
- Monitor the scope and effectiveness of the internal audit function from the human resource perspective
- Report to the Board on an ongoing basis

Remuneration Committee of the Board

Members (until 31 May 2005)
Prof HC Kasan (Chairperson)
Dr SJ Khoza
Ms MM Matsabu
Mr RJC Nay
Dr R Kfir (CEO)

Ms Z Scholtz (Com. Secretary)

Members (from 1 June 2005)
Prof SJ Khoza (Chairperson)
Ms MM Matsabu
Mr MG Rall
Prof EM Stack
Dr R Kfir (CEO)

Ms Z Scholtz (Com. Secretary)

Meetings
26 May 2005
1 September 2005
6 December 2005

Terms of Reference
- Establish a tool for the evaluation of the performance of the organisation and the CEO
- Assess the performance of the organisation and the CEO using the above-mentioned tool
- Determine performance bonuses for the CEO and the organisation based on the outcome of the performance assessment and other criteria

Research Policy and Strategy Committee of the Board (RPS Committee)

(no meetings of this committee were held under the leadership of the previous Board)

Members

Under the **current Board**, the Research Policy and Strategy Committee consists of the following members:
Ms MM Matsabu (Chairperson)
Prof JA Adams
Dr DJ Merrey
Mr MG Rall
Mr M Sirenya
Dr R Kfir (CEO)
Dr GC Green (in attendance, retired November 2005)

Ms Z Scholtz (Com. Secretary)

Meetings

15 August 2005
8 February 2006

Terms of Reference

- Review and advise on the alignment of research goals and plans with national policy and priorities and the mission of the WRC
- Assess and advise on the balance and appropriateness of research strategies (short-, medium- and long-term) in meeting such goals
- Ensure that research plans and strategies are aligned with the WRC's policy for capacity-building and are appropriately designed to meet capacity-building objectives
- Advise on the partitioning of research funds among primary application areas
- Review and make recommendations regarding the acceptability of proposed research programmes
- Monitor progress at the level of research programmes and primary application areas and evaluate outcomes with regard to stated goals, including those concerned with capacity-building, technology transfer and knowledge management
- Review policies and procedures for ensuring beneficial exploitation of research products
- Monitor the scope and effectiveness of the internal audit function from the research perspective
- Report to the Board on an ongoing basis

ACHIEVEMENTS

During 2005/06 the WRC has enhanced and strengthened its role as a water-centred knowledge hub, through provision of leadership, strategic direction, investment in the creation of new knowledge and the sharing, application and dissemination of water-centred knowledge.

LEADING WATER-CENTRED KNOWLEDGE

During 2005/06, the WRC and its staff strategically led, directed and managed water-centred knowledge in South Africa, strengthening the water sector through strategic initiatives and by undertaking various key leadership positions nationally, in Africa and globally. This was done in line with national priorities and the objectives of South Africa's water sector as well as the science and technology sector. The WRC strategically initiated and/or supported initiatives that are critical to South Africa. Many of these initiatives have already contributed substantially towards the enhancement of water research and the application of research results. Through these strategic initiatives and leadership positions, the WRC has clearly illustrated the relevance of the organisation. This involvement has also allowed the organisation to improve its ability to identify research needs as well as the channels required for better dissemination of research results. The WRC has successfully enhanced the standing of South Africa's water research globally through building a strong basis of partnerships between South African and international researchers.

In South Africa, the WRC has continued its involvement in a number of existing national initiatives and has spearheaded new initiatives where the WRC plays key roles. In addition, staff members occupy several key national leadership positions (often by invitation or through an election process).

Examples of key national initiatives are:

- The Water Sector Colloquium is organised jointly with DWAF, WRC, CSIR and WISA to create a forum in which issues of strategic importance relating to the ongoing transformation of the water sector are debated. The intent is to facilitate free flow of knowledge and information within and between organisations.
- The WRC continues to play a leading role in the activities of the South African National Committee on Irrigation and Drainage (SANCID), of which the WRC is a founding member.
- National Freshwater Biodiversity Collaboration (NFBC) – Conservation of freshwater biodiversity is an issue that evolved from research, policy and implementation of a number of funding and research institutions, a wide range of government departments as well as international agencies. The WRC aims to build national synergy regarding research in this strategic area. The WRC provided seed funding in the form of a consultancy with the aim of designing and initiating a formal collaboration. The NFBC provides a national framework for funding bodies and researchers and links them with the relevant implementing entities. The aim is for all organisations to work together to achieve synergy. Current lead partners are the WRC, WWF-SA and SANBI. During the relatively short history of the NFBC, there have been two large national workshops that were attended by stakeholders from various tiers of government, NGOs, researchers and other interested parties. During the second workshop, great progress was achieved towards putting the NFBC into a formal national structure. During this meeting, all partners decided that the NFBC should be housed with SANBI and that the secretariat be funded through DEAT.
- The WRC is leading the Water Information Network (WIN-SA) on behalf of the water sector. WIN-SA is a partnership initiative between all bodies concerned with capacity building for local government and information required for instituting water services. WIN-SA is a knowledge dissemination and capacity-building initiative. During the current financial year, WIN-SA has secured funding of approximately R2,6m. The funds will be utilised to support the water sector in terms of lesson learning, reviewing current collaboration within the sector, and strengthening partnerships. WIN-SA also launched its web-portal at the end of July. In addition, six more programmes are planned for the near future, based on funding from Switzerland. The role of WIN-SA in cultivating a knowledge management culture within the water sector continues to be highly influential.
- The WRC led and organised a capacity-building initiative on planning and management of sanitation. The WRC presented courses on sanitation planning and management.
- The WRC developed and presented the concept of 'Working for Sanitation' and a proposal was submitted to the Minister of Water Affairs and Forestry and DWAF.
- The WRC participated in the South

African Sector Tsunami Relief Programme Committee. At a preliminary stage, the committee was instrumental in setting up a volunteer database and undertook a review of the various international agency reports on the impact of the Tsunami. During April 2005, the WRC was requested to be part of the South African reconnaissance team that was sent to the Maldives.

- The WRC led and supported a new initiative aimed at developing a database for water-related research projects for agriculture in South Africa.
- The WRC has been involved in guiding the WISA initiative of using WISA Senior Fellows for building capacity. The objective is to develop a strategy and a plan to utilise this knowledge base to the benefit of the water sector.
- The WRC is co-leading the activities of the Framework for Education and Training in Water (FETWater), a joint UNESCO, Belgian and South African programme aimed at building more capacity in integrated water resource management. The WRC is managing the FETWater funds and the proposal for funding for Phase 2 has been submitted to UNESCO for consideration.
- The Benchmarking of Water Services, which was fast-tracked and upgraded into a national initiative in cooperation with DWAF and the South African Local Government Association (SALGA) was launched by the Minister of Water Affairs and Forestry during November 2005.

During 2005/06 WRC staff held the following leadership positions: Chairperson of the South African National Commission for Irrigation and Drainage (SANCID); Secretary and immediate past President of the Groundwater Division: Geological Society of South Africa (GSSA); Vice-President: Transformation, Education and Conservation: Geological Society of South Africa (GSSA); Co-Chairperson FETwater; member of the Executive and immediate past President of the Water Institute of Southern Africa (WISA); Chairperson of the National Water Advisory Council; Chairperson of the Board of the National Community Water and Sanitation Institute (NCWSI) (University of Limpopo); board member of the Institute for Environmental and Coastal Management (Nelson Mandela Metropolitan University) and of the Institute of Water Research (IWR) (Rhodes University); treasurer of SANCID; member of South African Committee for the International Association of Hydrological Sciences; member of the National Water Resources Planning Systems User Forum; member of the technical Steering Committee of the Working for Water Hydrology Review Panel; member of the Committee of the South African Environmental Observation Network (SAEON); member of the Executive of IWA-South Africa; appointed member on the technical committee of the Council for Geosciences; member of DEAT-Cleaner technologies Steering Committee-Waste Minimisation; and of WISA's Mine Water Group. Staff members were also involved in review processes, e.g. one staff member was invited to be a member of an international review panel of CSIR's environmental sciences.

At organisational level, the WRC has become a patron member of WISA. In addition, the WRC is a member of the National Science and Technology Forum (NSTF) and one WRC staff member serves on the Executive of the NSTF as the representative of all Science Councils, the Committee of Heads of Organizations of Research and Technology (COHORT). A staff member of the WRC

serves on the Executive Committee of COHORT.

In Africa, the WRC is playing an active part in activities aimed at building water-centred knowledge. Key initiatives include:

- A network of Centres of Excellence in Africa – The WRC was closely involved in NEPAD activities regarding the development of the Centre of Excellence for Water Research in Africa. The WRC was invited to represent the Department of Science and Technology (DST) during the initial meeting in Nairobi (in addition, NEPAD extended another invitation directly). During the initial meeting, where 60 experts from 20 African countries participated, a model for a network of centres of excellence for water and criteria for selection of centres and 'hubs' were discussed. As a follow-up of this meeting, the WRC had further discussions with the NEPAD Science & Technology team and supported NEPAD in establishing a task team for the selection and establishment of the centres.
- The WRC has been actively involved with the Water Research Fund of Southern Africa (WARFSA) for a number of years. Currently one staff member serves as a Board Member of WARFSA. WARFSA was established with the purpose of building research capacity among regional institutions and individuals as well as promoting the utilisation of research results in the planning and management of water resources in the sub-region.
- A WRC staff member serves on the NEPAD Gender Task Group.
- A WRC staff member is serving as an Executive Member of the Limpopo Challenge Programme (WaterNet) – WaterNet is the coordinator of a research initiative under the Challenge Programme on Water and Food (CP&WF) on the advancement of IWRM for the improvement of rural livelihoods in the Limpopo Basin. The research project, which involves 17 partners in three countries (Mozambique, South Africa and Zimbabwe), is entitled: 'The Challenge of Integrated Water Resource Management for Improved Rural Livelihoods: Managing Risk, Mitigating Drought and Improving Water Productivity in the Water Scarce Limpopo Basin'.
- A WRC staff member serves as the chair of the steering committee of the GEF funded SADC-wide IWMI Wetlands project entitled: 'Sustainable Management of Inland Wetlands in Southern Africa: A Livelihoods and Ecosystems Approach' for 2006.
- The WRC played a leading role in the preparation of the Freshwater Chapter of the African Environment Outlook 2 (AEO-2). The AEO-2 process and report is used as a tool for monitoring sustainable environmental management in Africa (including monitoring the implementation in NEPAD).
- The WRC is the Coordinator for a UNEP Project on 'Vulnerability of Africa's Water Resources to Environmental Change'. The WRC's role is one of project coordination, administration and liaison with project management and other sub-regional teams; and rapid assessments of the following basins: River basins (2): Okavango and Limpopo; Groundwater basins (3): Karoo, Basement and Coastal areas; Islands: Western Indian Ocean Islands.
- A WRC staff member arranged and facilitated a workshop on future research cooperation between the WRC and the City of Windhoek, Namibian Dept. of Water Affairs, NAMWATER, WINGOC

and the University of Namibia, which was held at the City of Windhoek offices, Windhoek.

- The WRC visited a number of institutions in Mozambique, with the aim of forging partnerships and research collaborations. First discussions with the Mozambican Department of Rural Water and the University of Eduardo Mondlane were held in Maputo.
- During 2005 discussions were held with Prof N Hatibu and Prof B Mati of the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) and the Soil and Water Management Research Network (SWMNET) on establishing collaborative links on various projects. Initial discussions focused on spearheading joint projects in agro-forestry and rainwater harvesting. Further negotiations were held during the Southern African Regional Irrigation Association (SARIA) event, on commencing cooperative projects in Kenya, Tanzania and South Africa on rainwater harvesting.
- The Southern African Regional Irrigation Association (SARIA) under WRC leadership and support arranged a workshop and steering committee meeting at the Roodevallei Country Lodge in Pretoria between 30 January and 1 February 2006. The association comprises representatives from 10 SADC countries and additional members from Kenya and Tanzania. The three-day event consisted of a technical tour to the Hartbeespoort Irrigation Scheme in the North-West Province, a one-day workshop and a steering committee meeting. The WRC chaired the meeting and co-hosted and co-organised the entire event together with the National Department of Agriculture (NDA) and the Agricultural Research Council (ARC). The 12 participating countries adopted a Memorandum of Understanding (MoU) to guide future cooperation.
- As one of only a few active members, South Africa was represented by the Department of Agriculture and the WRC on the Africa Regional Working Group of the International Commission on Irrigation and Drainage (ICID) held on 11 September 2005 in Beijing, China. Different options are under consideration to encourage participation by African countries on issues of irrigation, drainage and flood control. In this regard, a start has been made by activating SARIA members, under the leadership of the WRC.

Globally, the WRC participated in various initiatives, with staff members serving as chairpersons and board members of key international organisations and networks including the Water Supply and Sanitation Collaborative Council (WSSCC) (member of the steering committee); the Global Water Research Coalition (GWRC) (board member); Streams of Knowledge Global Coalition of Resource Centres (chairperson); RAMSAR scientific and review panel (member); the International Water Management Institute (IWMI) (board member, chair of the programme committee); and the Comprehensive Assessment of the CGIAR (member of steering committee).

Other initiatives included:

- The WRC represented the South African Academy of Sciences in the initial discussions addressing the development of capacity for managing water resources by the Inter Academy Programme for Water (IAP). The IAP aims to develop a global project, focused on the regional

improvement of existing programmes of water conservation, wastewater treatment, control of eutrophication and contamination, as well as the development of a strong scientific and technical capability. As part of this initiative, the WRC in cooperation with the South African Academy of Sciences plans a workshop to address capacity building for water resource management in Africa during June 2006/07.

- The WRC supported DST in the preparation and facilitation of a workshop addressing International Scientific and Technological Cooperation for Sustainable Development. South Africa hosted the Organisation for Economic Cooperation and Development (OECD) workshop with a focus on **water** and **energy** as two main issues. DST has asked the WRC to support/lead the water stream. Two staff members were involved in the preparation and one chaired all water sessions during the meeting. The workshop emphasised best practices in international cooperation in science and technology and identified indicators for successful cooperation. The WRC has signed a MoU with the Water Environment Development Centre (WEDC), UK.
- The WRC continued its involvement in the GWRC. The WRC presented the South African and Namibian situation report on water reuse research in Southern Africa at a GWRC workshop in Utrecht, the Netherlands, to formulate an international research strategy for water reuse (April 2005). The WRC also presented a paper on the Status of Asset Management in South Africa at a GWRC research planning meeting in Washington DC (May 2005). In addition, a number of South African researchers were involved in a number of GWRC workshops. The WRC is currently involved in a number of global research initiatives via the GWRC, including, for example, research on algal toxins and endocrine disruptive compounds (EDCs). The WRC is a member of the GWRC taskforce aiming to develop a global research agenda for drinking water and water reuse.
- The WRC is a partner in a large European Union (EU)-funded project entitled Techneau – Technology enabled universal access to safe water. This EU project aims to understand trends and to build future research agendas and adaptive strategies for drinking water. The international research strategy emanating from this process will guide and coordinate partner research activities and funding opportunities.
- The WRC was invited on a World Health Organization (WHO) task team to set up an international collaborative network for small community water management. This was established and the WRC is now a member of the WHO international group for small community water supply management.
- The WRC, DST and the IRD (France) have together established a network called the South African-French Centre for Water Sciences (SAFeWater). Its main objectives are to create a network between South African and French researchers in the field of water (specifically sanitation, salinity and real-time meteorology), hence enabling the researchers to access other funding sources. One key output is research capacity building. Already the DST has committed an amount of R600 000, spread over four years, to the WRC, to support the network. In addition, the WRC hosted the first French-South Africa Workshop on Research

Cooperation, at the Airport Hotel, 30 May - 1 June 2005. This event focused on bringing together South African and French researchers to explore commonalities. The outcome of this support has been very useful and is having positive spin-offs.

- The WRC played a role in the organising of international conferences in South Africa, e.g. WISA-IWA 2005; Ecosan Conference – Durban 2005.
- The WRC was involved in the revitalisation of the International Hydrological Programme (IHP) National Committee. The IHP is a programme under the auspices of UNESCO to address water resource management issues. As a result a South African bid for symposium 2007 was prepared with the title 'Hydrology for the Environment, Life and Policy (HELP) in Action: Local Solutions to Global Water Problems; Lessons for the South'.
- The WRC participated in the ICID Working Group on Irrigated Agriculture under Drought and Water Scarcity (WRC staff member was Vice-Chairperson).
- A number of WRC staff members participated, upon invitation, in a number of sessions during the 4th World Water Forum, Mexico City, 21 – 23 March 2006.
  - o A staff member served on a high-level expert panel in a session organised by the European Commission addressing 'Knowledge Generation and Innovative Technologies for Sustainable Water Management'
  - o A staff member served on an expert panel in a session addressing 'Capacity Development Strategies and Social Learning among Stakeholders for a Sustainable Irrigation and Drainage Sector' organised by UNESCO-IHE, IPTRID and ICID
  - o A staff member delivered a presentation on 'IWRM Institutional Arrangements for Effective Public Participation' during the International Network of Basin Organisations INBO session entitled 'Users' and Public Participation and Common Cause in Basin Management' which was organised jointly with UNESCO, Green Cross International, the International Water Secretariat, the Water Academy, the Japan Water Forum, the Walloon Region, the City of Montreal, the Mekong Commission in particular, and with IW-Learn and several universities or famous research centres, such as Wageningen or Osnabrück, and with the support of the French Water partnership.
- The WRC participated as a local partner in a session on 'Capacity Development Strategies and Social Learning Among Stakeholders for a Sustainable Irrigation and Drainage Sector', organised by UNESCO-IHE, IPTRID and ICID. A presentation was made on 'Revitalisation of smallholder rain-fed and irrigated agriculture in South Africa', which is based on the WRC research project on guidelines for farmer trainers and facilitators.

BUILDING THE WATER-CENTRED KNOWLEDGE BASE – CAPACITY BUILDING

The building, maintenance and renewal of appropriate capacity for the South African water sector continued to be a key challenge during 2005/06. This included both research and other professional capacities. As a knowledge hub, the WRC directed research and assumed overall responsibility for the processes of both creating and disseminating knowledge. Dissemination of knowledge requires an appropriate, sustainable knowledge base (human capital) that is effective in its ability to absorb and manage new knowledge. During the past year, the WRC continued to aim at progressively transforming and reinvigorating South Africa's water-related knowledge base (i.e. the corps of water-related experts and practitioners in academia, science councils, other research organisations, government (central, provincial and local) and the water industry) into one that is appropriate and sustainable, taking race, gender and age into consideration. However, the challenge is immense and requires long-term interventions.

During the year under review, building capacity in researchers continued to be an important function of research. In many areas of research supported by the WRC, it is evident that students that had participated in earlier WRC projects are currently leading WRC-funded research projects and are serving as members of steering committees as well as reviewers of new proposals.

During 2005/06 the WRC has further improved its support to students, with special emphasis on historically disadvantaged students. About 581 students were supported by WRC projects, of whom about 69% are from historically disadvantaged backgrounds. This is a significant increase from last year (2004/05 – approximately 116 more students). This increase is mainly due to an increase in the numbers of disadvantaged students which grew by 126 students (400 in comparison to 274). This clearly indicates that the WRC strategy to improve capacity building through its research projects is bearing fruit. It is to be noted that science councils are continuing their effort to build new research capacity through WRC projects, as indicated below. There is also a clear increase in the number of disadvantaged students trained by science councils. Another key observation is the increased number of students supported by consultancy firms via WRC projects. Many consultant firms and other non-academic institutions also show a significant increase in student numbers, mostly students from historically disadvantaged backgrounds. An increase in the number of students in non-academic institutions may be a result of the WRC strategy of building research networks and research consortia.

In addition to its contribution to the number of students, the WRC was involved in a number of capacity building-related activities at national level. The WRC sponsored the 1st prize for the *SA Youth Water Prize*. The prize consisted of a computer with a printer as well as a video camera per student. The winners from Setjabe Se Maketse Combined School in Bloemfontein won the *International Youth Water Prize* in Stockholm, Sweden.

The WRC took part in the *SABC Career and Training Faire* (Feb-Aug 2005) in 10 centres in South Africa, and in the *SciTech Science*

Organisation	No of historically disadvantaged students	Total number of students
ARC	3	6
Arcus Gibb (Pty) Ltd	4	4
AWI	1	1
BKS (Pty) Ltd	1	1
C Swartz Engineering	10	10
Cape Peninsula University of Technology	4	4
Coaltech 2002	4	5
Conningarth Economists	1	1
Council for Geoscience	2	3
CPH Water	2	5
CSIR	27	32
Digby Wells and Associates	2	4
Durban Institute of Technology	2	2
Emanti Management (Pty) Ltd	2	3
ERWAT	3	3
Free State Technikon	1	1
Golder Associates Africa (Pty) Ltd	4	6
Human Sciences Research Council	1	1
Mvula Trust	2	2
Nelson Mandela Metropolitan University	4	7
Nemai Consulting	3	3
Partners in Development	2	2
PICWAT	2	2
Proxa (Pty) Ltd	1	2
Pulles, Howard & de Lange	12	18
Rand Water	12	19
Rhodes University	29	41
Rural Integrated Engineering (Pty) Ltd	10	10
SA Institute for Aquatic Biodiversity	2	7
SASRI	2	2
Sigma Beta	1	4
Source Strategic Focus (Pty) Ltd	2	2
SRK (South Africa) (Pty) Ltd	1	1
Sustainable Environmental Technologies	1	1
TBR Project	1	1
Tshwane University of Technology	14	14
Umgeni Water	12	14
University of Cape Town	15	33
University of Fort Hare	17	17
University of the Free State	5	17
University of Johannesburg	6	7
University of KwaZulu-Natal	32	51
University of Pretoria	46	65
University of Stellenbosch	26	50
University of the North-West	3	6
University of the Western Cape	28	38
University of the Witwatersrand	10	26
University of Venda	13	14
University of Zululand	6	7
WRP Consulting Engineers	2	2
Zakhe Training College	3	3
Zitholele Consulting (Pty) Ltd	1	1
	400	581

Faire, Pretoria Feb-March 2005. Collectively, about 50 000 copies of the booklet *Water@Work: A Career Guide* were distributed. Owing to the popularity of the *Career Guide*, the WRC also generated a further 20 000 copies (15 000 hard copies and 5 000 CDs). These will be distributed at events during the next financial year, especially at the *SABC Career and Training Faire* (Feb-Aug 2006).

In another initiative, the WRC supported student attendance at international water conferences (e.g. Ecosan, May 2005).

The theme for World Water Day 2006 (22 March) was 'Water and Culture'. The WRC celebrated this day by hosting and organising two events: one in Pietermaritzburg and one in Pretoria. The programme involved getting learners to conduct a mini-SASS (South African Scoring System) test which determines the 'health' of a river or a stream. The objective of the exercise was twofold: to make learners aware of environmental issues, especially river health as well as enlightening learners about the various careers that are possible in the South African water sector, especially as far as biomonitoring is concerned. In Pietermaritzburg learners were guided through the mini-SASS test at a stream in the Botanical Gardens, Pietermaritzburg. There was also a demonstration as to how fish act as indicators of river health. Learners participated actively and thoroughly enjoyed both the learning experience as well as the social networking involved. There was a healthy merging of both the water and the cultural components. Learners were tasked with compiling a report which was presented to the head of the Botanical Gardens in Pietermaritzburg, Mr Brian Tarr. The event was publicised in *The Witness* and broadcast on SABC radio. In Pretoria, learners used the mini-SASS scoring system to assess the Moreletaspruit, a highly urbanised stream. This assessment, which concluded the fair to poor state of the stream, demonstrated the challenges faced by urban environmental managers with regard to increased stormwater runoff, sediment, and increased risk of pollution from industrial and domestic sewage as a result of increased development in the city. Both events were tested on a pilot scale and will be expanded to other provinces owing to their resounding success.

The WRC hosted its first *Youth and Water Short Story Prize* during 2005/06. High-school learners between Grades 10 and 12 were eligible to enter. The competition, launched ahead of *National Water Week* 2006, was aimed at enhancing learners' awareness of water and sanitation issues within South African society, while allowing them to express creatively how these issues affect them. The joint winners of the competition were each awarded a cash prize of R3 000. The top ten short stories were published in a special WRC publication entitled *A Little Gift and Other Short Stories.*

The WRC's capacity-building activities were widened to provide support for African and global initiatives aimed at building capacity in Africa, examples being the involvement of the WRC in building a network of centres of excellence for water research in Africa (a NEPAD initiative) and the role the organisation plays in WARFSA and FETWater (see above). Another example is the WRC's role in *Streams of Knowledge*, a network of capacity-building organisations, focused on water and sanitation, with most members

being from various parts of Africa, including two institutions from South Africa (Mvula Trust and NSCWSTI).

Responding to a direct request for support from the Minister of Water Affairs and Forestry, the WRC initiated a capacity-building study aimed at building an overview of capacity needs and 'training' available in the water sector. The study will look at gaps, obstacles and interventions. The first phase of the study was aimed at local government and the management of water services while the full study will focus on needs regarding water resource management, other industry and government needs as well as research needs. Recently this initiative has grown and has been linked with the DWAF initiative addressing capacity building. Through such integration the WRC will achieve great involvement of various partners that are key players for future interventions. The new integrative approach will also allow for a more holistic scope and increased levels of resources.

One of the important areas requiring the building of competence is that of the provision of sanitation services. The WRC (WIN-SA initiative) has successfully developed and led a special course on Sanitation Planning and Management (in partnership with DWAF and the Water Sector Leadership Group). The course, which featured Prof Duncan Mara (Leeds University), an international expert on the subject, took place during January-February 2006 in four different locations in the country. To date, the course received an overwhelming response (350 registered) and all courses in all locations were fully booked and there have been many requests for a repeat course.

INVESTING IN THE CREATION OF WATER-CENTRED KNOWLEDGE – THE WRC'S RESEARCH PORTFOLIO AND KEY STRATEGIC AREAS

INVESTING IN THE CREATION AND SHARING OF KNOWLEDGE

The research portfolio of the WRC for 2005/06 was developed based on a needs analysis including medium- to short-term as well as explicit and implicit needs. South Africa's water problems/issues are reflected in this portfolio with the aim to scientifically build the required solution and, where possible, the capacity for its use. The process of setting the research portfolio was a result of many interactions at various levels with both the local and the global water sectors. The portfolio was also informed by the latest scientific developments which can be applied to water research so as to provide beneficial solutions.

The WRC continued to invest in the creation of knowledge via its four main key strategic areas (KSAs). These areas include **Water Resource Management, Water-Linked Ecosystems, Water Use and Waste Management**, and **Water Utilisation in Agriculture**. In general, the portfolio as planned for the year under review was well received by the various stakeholders. The KSA-based structure, with its four water-centred KSAs (as mentioned above), supported by the knowledge-centred KSA, continued to form the core operating framework for WRC-funded R&D, was further consolidated during the year and became accepted generally.

During the year under review, the WRC supported 336 research projects, of which about 73% (245 projects) were active projects (ongoing and new) and about 27% (91 projects) were finalised. The active projects comprised 175 ongoing projects and 70 newly initiated projects that commenced during 2005/06. The various mechanisms of funding included both non-solicited projects, accommodating projects within the broad research strategy of each KSA, and solicited projects, where research projects are developed in accordance with clear terms of reference, aimed at solving specific problems. The WRC supported 74 solicited projects, which translates to about 30% of active projects. While 44 solicited projects were ongoing, 30 newly solicited projects commenced during the year under review.

In comparison with the previous year, the year under review shows a 26% decrease in the number of projects, i.e. 336 projects in 2005/06 vs. 454 in the previous year. The number of active projects was reduced by about 30% (from 356 in the previous year to 245 projects during the year under review). This trend of reducing the total number of projects is the result of a drive to improve management of research projects, by emphasising the prompt finalisation of projects, culminating in the high number of projects finalised in the past three years (311 projects). While there is a clear trend of reduction in the total number of projects, the WRC also aims to maintain or even increase the number of new projects as a percentage of the total number of projects. During the year under review new projects formed almost 29% of all active projects and 21% of the total number of projects. This represents a 5% and a 3% increase respectively for similar ratios obtained during the previous year (2004/05). The finalisation of 311 projects and the initiation of 206 new projects during the past three years also illustrate the strong commitment and the emphasis placed on improved management of research projects and the need for the renewal of the research portfolio. The WRC, taking into consideration feedback from its stakeholders and the needs of the water sector, placed emphasis on multidisciplinary projects. Such projects often call for an increased level of investment per project. This means that although the overall number of projects has been reduced, the investment per research project has been increased. The reduction in project numbers is also a result of an increased number of solicited projects. Solicited projects are often large multi-year, multi-provider (consortia-based) projects, frequently with annual budgets in excess of R1m. per annum. During the year under review the WRC supported 74 solicited projects with 40% being newly initiated projects. By using the mechanism of solicited research, the WRC has effectively managed the renewal and relevance of its research portfolio and provided leadership with regard to the creation of new water-centred knowledge. The WRC almost doubled the number of solicited projects (from 41 to 74) from the previous year and tripled the number of solicited projects from 2003/04 (from 24 to 74 projects). From 6% of active projects in 2003/04 to about 12% of active projects in 2004/05, the percentage of solicited projects was significantly increased to 30% of active projects during the year under review.

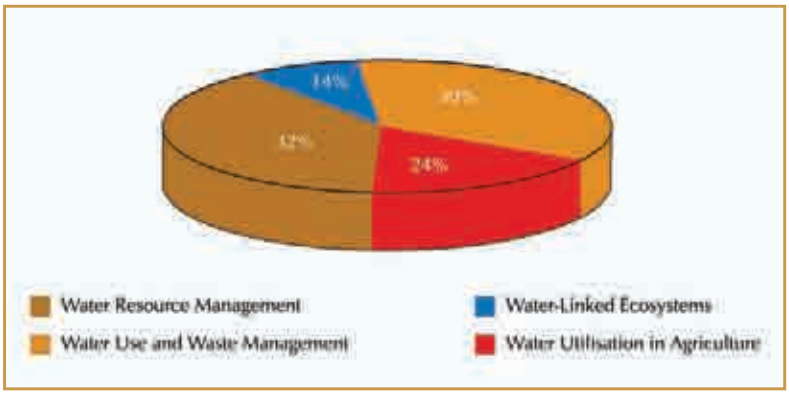
Number of projects and their distribution (finalised, ongoing and new)

Financial year	2005/06	2004/05	2003/04
Total No. of projects	336	454	517
No. of active projects	245	356	395
No. of new projects	70	82	54
No. of finalised projects	91	98	122
No. of active solicited projects	74	41	24

UTILISATION OF FUNDS BY THE VARIOUS KSAS

The percentage utilisation of research project funds (based on amounts actually paid out) by the KSAs during 2005/06 indicates that about 46% in comparison to about 54.5% (2004/05) was invested in projects that focused on water resources (including water-linked ecosystems) and about 54% compared to 46% (2004/05) in projects that focused on water utilisation (including effluent treatment and management, as well as agriculture). This is based on the actual amount paid out to projects during the current financial year. The allocation of about 50% of the fund to issues related to resource management and 50% to water utilisation is ongoing.

Distribution of research project funds among KSAs – planned vs. utilised (cash paid out) funds



KSA	Planned % allocation of funds (revised budget including funds from previous years)	Planned % allocation of funds (excluding unpaid committed funds)	% of fund utilised for research projects
Water Resource Management	30 (32)	33 (31)	32 (37)
Water-Linked Ecosystems	13 (13)	13 (15)	14 (17)
Water Use and Waste Management	36 (39)	31 (34)	30 (31)
Water Utilisation in Agriculture	21 (16)	23 (20)	24 (15)

Although the actual utilisation of funds by the KSAs did not correspond fully with the planned allocation, the deviations were less than 10%. As shown above, unpaid committed funds from previous years affected the planned allocation. Unpaid committed funds resulted either from amounts being withheld from research providers because of delayed delivery or from amounts still to be credited to research providers upon finalisation of projects.

Based on cash paid out, the overall investment in research projects (knowledge creation) was about R63.9m. This amount (paid out for research projects) is 19% higher than that paid out in the previous financial year (R53.7m. during 2004/05). This significant increase is due to the application of effective and rigorous fund management procedures and the improved usage of the deliverables system which has been applied to research projects in recent years.

Investment in the total support of knowledge creation, sharing and dissemination amounted to R80m. (including about R3m. for WIN-SA). Both the investments in research projects and in research support, expressed as a percentage of total expenditure, were close to the set budgeted ratios. The ratio addressing funding of the creation of new knowledge (research projects only) is almost (1% difference) identical to that of the previous year. The increase in the ratio for research support (from 72% in 2004/05 to 77% in 2005/06) is mainly due to investment in WIN-SA.

Business efficiency indicators (budgeted and cash paid out)

	05/06 (budgeted*)	05/06 (cash paid out)	04/05 (cash paid out)
Research project funding as % of total expenditure**	62%	63%	62%
Research support (research projects and support and technology transfer) as % of total expenditure	73%	77%	72%

** Not including transfer of unutilised research funds; ** Expenditure does not include provisions for bad debts and leave, bad debt write-offs, pension payouts and non-cash amounts.*

THE RESEARCH PORTFOLIO – KEY STRATEGIC AREAS (KSAS)

During 2005/06 the KSAs funded research and other related knowledge-sharing, dissemination and application activities using their business plans and more specifically, their revised strategic research portfolios, as the basis for their operational frameworks. The KSAs continued to provide South Africa with leadership and strategic links with the African continent and globally. The KSAs have applied the various funding mechanisms to allow an appropriate balance between solicited and non-solicited research. The balance between solicited and non-solicited research varied for each KSA as a whole or for various research thrusts within each KSA research portfolio. By using solicited research the KSAs directed research into areas of need and either built new capacity and competence or redirected available research capacity into new emerging areas of research. The 2005/06 financial year marks the 4th year of the KSAs operating as the strategic building blocks of the WRC. During the past year the KSAs interacted with both the research providers and the wider sectors and fine-tuned their research portfolio accordingly on a continuous basis.

WATER RESOURCE MANAGEMENT

SCOPE

No major changes were introduced to the strategic focus of the scope of the research covered by this KSA during the year under review. The focus continued to be guided by the principles and objectives of the National Water Act (NWA) of 1998. The primary principle of the Act is that water resources should be managed to achieve optimum long-term social and economic benefits for all. This implies maintaining an optimum balance between protection of the environment and efficient utilisation. This KSA supports the implementation of the NWA by developing tools and technologies for water resource assessment, and guidelines and decision-support systems to support decision-makers in achieving equitable and efficient allocation of water resources among competing needs. The research has placed emphasis on multidisciplinary approaches that provide decision-makers and planners with appropriate tools that enable them to take cognizance of social, environmental and economic factors in the planning of water resource development.

The research focus continued to shift from supporting policy-making to providing guidance for policy implementation and development of policy instruments. The challenge for research in this KSA during the past year was to provide the necessary information systems, guidelines, decision-support systems, prediction tools and technologies/methodologies that support protection of water resources and equitable allocation of water to meet the needs of the environment, social and economic development. The NWA places emphasis on stakeholder participation in water resource management. This requires effective participatory tools and approaches that can support multi-stakeholder participation in water resource management at catchment level. The potential negative impact of global climate change on water resource management has been extensively addressed through research within this KSA.

During 2005/06 the research portfolio included new initiatives and current projects addressing the scope described above. Overall, about R20.5m. was invested (paid out) in 105 projects. Of these, 18 projects were initiated while 58 were ongoing. Of the active ongoing and new projects (76 projects) about 43% (33 projects) were solicited projects. During the year 29 projects were finalised and 22 reports published.

THRUSTS AND PROGRAMMES

The research portfolio (including new initiatives and ongoing projects) was grouped into strategic thrusts and programmes that directly address the above-mentioned scope and are summarised as follows:

Water Resource Assessment

This thrust focused on developing a scientific understanding of the hydrological cycle (and inter-linkages) in order to promote a systematic assessment and variability of the quantity and quality of water available for development in South Africa. It included the following programmes:

- Groundwater occurrence in fractured-rock aquifers
- Catchment hydrology
- Understanding and predicting hydro-climatic variability
- Development of appropriate techniques for evaporation monitoring

- Water quality assessment studies and information systems
- Real-time mapping of daily rainfall over South Africa

Integrated Water Resource Development

Research in this thrust continued to focus on providing information to support integrated water resource development. Integration of social, economic and environmental considerations is crucial for sustainable water resource development and management. These aspects are reflected in the outcomes of research within this thrust. The integration of groundwater into the planning process has been facilitated through providing better information to planners about the linkages between groundwater and surface water and attributes of this resource were highlighted. The following programmes were focused on:

- Integrated catchment management
- Low flows and streamflow reduction activities
- Urban water resource management enforcement

Management of natural and human-induced impacts

Research in this thrust focused on developing appropriate quantitative understanding, tools and strategies for managing the impacts of climate variability and change as well as human interventions on the hydrological cycle and related water resources, with the aim of supporting the development of policy responses, at regional, national or catchment scale, to existing and emerging problems. This included the development of systems (e.g. river flow and inundation forecast models, drought impact monitoring systems) for managing floods, droughts and pollution. It also included developing the ability to recognise and address, in an integrated way, human-induced impacts on inter-related components of the hydrological cycle, e.g. river systems and underlying aquifers over a range of relevant space and time scales. Research also supported the generation of information and understanding in order to improve water quality management, with reference to point sources as well as diffuse sources, and addressing chemical, microbial, and biological pollution impacts on surface water and groundwater. The following programmes were focused on:

- Predicting the impact of global climate change
- Groundwater protection
- Protection and management of surface water quality
- Human-induced impacts
- Integrated flood and drought management

Policy development and institutional water resource management

This thrust focused on instruments supporting effective water resource management, ranging from support for the development of appropriate policies and their implementation to research concerning the establishment of governing bodies and institutional arrangements (at catchment, national and transboundary levels). The thrust supports research on tools and methodologies for Integrated Water Resource Management (IWRM) decision support, aims to provide strategic support for new policy development and to improve the understanding regarding the effective functioning of institutional structures for implementing IWRM. Programmes included:

- Decision support for IWRM at catchment and water management agency (WMA) levels
- Water policy development and strategic policy support
- Institutional arrangements and processes for IWRM at catchment, WMA and national levels
- Transboundary water resource management
- Governance, law and regulation
- Institutional development and collaboration in the Eastern Cape

WATER-LINKED ECOSYSTEMS

SCOPE

Research undertaken within this KSA during 2005/06 continued to address the conservation of aquatic ecosystems in order to provide the knowledge for their sustainable functioning in terms of the national commitment to international conventions and the ongoing provision of goods and services which ecosystems deliver. In addition, the National Water Resource Strategy (NWRS) focuses on resource protection as one of its components. The research undertaken in this KSA provides knowledge for protection of the resource, and is therefore central to this aspect of the NWRS. No major changes in strategic direction were envisaged and the research portfolio was found to be sound and applicable. Deviations in programme focus or structure are highlighted below. Water-linked ecosystems are defined as in-stream (fully aquatic), riparian (dependent on water stored in the river banks and linked to the river) and water table-dependent (dependent on a water table, but not on surface water). This KSA focused on the protection and sustainable utilisation of the aquatic environment and biota (in-stream, riparian and groundwater). This included the research needs around the international conventions on environmental management (e.g. biodiversity) as well as human needs from the aquatic environment (e.g. sustainable management for equitable ecosystem resource utilisation, recreation and ecotourism).

The above was achieved by developing technologies and methodologies, adaptive management processes and capacity to protect the resource and to sustain the flow of goods and services in a time of both demographic and climatic change in the Southern African context. Technologies and methodologies were developed within this KSA to support the implementation of the national water policy to ensure sustainable resource use.

During 2005/06 the research portfolio included new initiatives and current projects addressing the scope described above. Overall, about R8.9m. was invested (paid out) in 37 projects. Of these, 8 projects were initiated while 18 were ongoing. Of the active ongoing and new projects (26 projects) about 11% (3 projects) were solicited projects. During the year 11 projects were finalised and 19 reports published.

THRUSTS AND PROGRAMMES

The research portfolio (including new initiatives and ongoing projects) has been grouped into strategic thrusts and programmes that directly addressed the above-mentioned scope and are summarised as follows:

Ecosystem processes

This thrust included research addressing the biophysical processes, form and function of ecosystems. The aim was to generate knowledge to inform policy and management. Programmes addressed:

- Estuarine processes
- Riverine processes
- Wetland processes
- Groundwater-dependent ecosystems
- Impoundments

Ecosystem management and utilisation

This thrust included research which specifically addressed the management of ecosystems for sustainable utilisation. Central to this was the need to manage the social and economic requirements of society from ecosystems and the implementation of policy and legislation. Capacity was built to implement the research findings. The following programmes were addressed:

- Ecological Reserve
- Estuary management
- Ecosystem health
- Environmental water quality
- Endocrine disrupting compounds (EDCs)

Ecosystem rehabilitation

This thrust addressed the rehabilitation of the aquatic environment (including both the abiotic and the biotic components) which has been degraded through anthropogenic activities with the view to restoring process, form and function. This has been done in terms of both relevant international conventions and national legislation, and seeks to restore biodiversity where possible. Capacity has been built to implement the research findings. This thrust included research addressing the processes and functioning of ecosystems, dealing more specifically with the biophysical processes and form of ecosystems as well as the rehabilitation of these in ecosystems. Knowledge generated by research within this thrust has been used to increase the national capability to sustainably manage ecosystems and the impact of people on it. Programmes included:

* Wetland rehabilitation
* River rehabilitation
* Influence of instream-constructed barriers

WATER USE AND WASTE MANAGEMENT

SCOPE

The KSA continued to focus mainly on the domestic, industrial and mining water sectors during 2005/06. The aim was to proactively and effectively lead and support the advancement of technology, science, management and policies relevant to water supply, waste and effluent management, for these sectors. This KSA also supported studies on institutional and management issues, with special emphasis on the efficient functioning of water service institutions and their viability. Research on infrastructure for both water

supply and sanitation was included. A further focus was on water supply and treatment technology serving the domestic (urban, rural, large and small systems) as well as the industrial/commercial and mining sectors of our economy. This KSA also focused on waste and effluent as well as reuse technologies that can support the municipal, mining and industrial sectors and improve management in these sectors with the aim of improving productivity and supporting economic growth while minimising the negative effect on human and environmental health.

No major changes were introduced to the general scope of the KSA during the year under review. The primary and secondary objectives of the KSA remained the same. However, the KSA portfolio has undergone some change to accommodate emerging needs and technological trends. A new programme on water services regulation was introduced into the thrust addressing **Water Services: Institutional and Management Issues.** In addition, two new programmes that address technical sustainability of sanitation services and issues related to financial sustainability were added to the thrust: **Sanitation, Health and Hygiene Education.** The focus was on generating in-depth knowledge of the problem and testing new approaches.

During 2005/06 the research portfolio included new initiatives and current projects addressing the scope described above. Overall, about R18.8m. was invested (paid out) in 156 projects. Of these, 36 projects were initiated while 79 were ongoing. Of the active ongoing and new projects (115 projects) about 19% (22 projects) were solicited projects. During the year 41 projects were finalised and 37 reports published.

THRUSTS AND PROGRAMMES

The research portfolio (including new initiatives and ongoing projects) was grouped into strategic thrusts and programmes that directly addressed the above-mentioned scope and are summarised as follows:

Water services – institutional and management issues

The efficient functioning of water service institutions and their viability is crucial to sustaining water services in rural and urban areas. The focus of this thrust was to address strategic research aspects related to policy issues, institutional reform, regulation, infrastructure management, water-related competencies and capacity required for the strengthening of water institutions (water service providers, water service authorities, water boards, national departments) in providing sustainable water services. The following programmes were addressed:

- Cost-recovery in water services
- Institutional and management issues – Water services
- Innovative management arrangements – Rural water supply
- Regulation of water services

Water supply and treatment technology

The provision and supply of affordable and reliable water of quality and quantity for drinking (domestic) and economic (industrial/commercial and mining) activities remain continuous challenges. Research support for these activities was the focus of this thrust with the objective of developing innovative technologies and processes that address aspects related to bulk water supply, water treatment technology, distribution and water quality. New initiatives that commenced during the year and ongoing projects have been grouped into programmes

which directly address the above-mentioned objective and are summarised as follows:

- Drinking water treatment technology
- Water treatment for rural communities
- Drinking water quality
- Water distribution and distribution systems

Wastewater and effluent treatment and reuse technology

The ongoing provision of sanitation services and expansion of industrial development, both of which are national developmental priorities, continually increase the need to better manage and treat the resultant wastewater and effluent flows, mitigated as far as possible by reduction-at-source measures, so that the effluent produced not only meets discharge requirements, but can also be considered to be a resource. Research in this thrust aimed at developing technologies and systems that optimise the wastewater and waste management chain in the municipal (domestic), mining and industrial sectors, including also the institutional and infrastructural arrangements operative in these sectors. The scope, definition and priorities of some of the programmes within this thrust were altered during 2005/06 which involved both the establishment of new programmes and the consolidation of some of the existing programmes. The following programmes were addressed:

- Biological sewage treatment processes
- Sludge characterisation, treatment, utilisation and disposal
- Treatment and recovery of organics from agro-industrial processing
- Treatment and recovery of inorganics (including sulphate, metals) in industrial and mining effluents
- Training in wastewater treatment plant operation
- Biotechnological co-treatment of industrial/mining effluents with sewage wastewaters
- Sewerage reticulation
- Stormwater management

Industrial and mine-water management

The usage of water in the mining and industrial sectors produces high concentrations of wastes and effluents. Some mining activities produce wastes that act as non-point sources of water quality degradation and acid mine drainage. This thrust continued to provide appropriate, innovative and integrated solutions to water use and waste management in the industrial and mining sectors. The following programmes were addressed:

- Quantification of water use and waste production
- Regulatory mechanisms to improve industrial and mine-water management
- Minimising the impact of waste on the water environment
- Minimising waste production
- Improved ability to predict and quantify effects

Sanitation, health and hygiene education

This thrust addresses the research required to assist the National Government to achieve its goal of clearing the sanitation service backlog by 2010. It also provides the research that is essential to support planning

for basic sanitation service delivery beyond 2010. The focus is on low-cost and affordable sanitation technologies. New initiatives including ongoing projects have been grouped into programmes which directly address the above-mentioned focus areas and are summarised as follows:

- Health and hygiene education
- Peri-urban sanitation research
- Knowledge/information management and advocacy
- Institutional and management aspects of sanitation service delivery
- Social development aspects
- Institutional and management aspects of sanitation service delivery
- Technical sustainability of sanitation services
- Financial sustainability

WATER UTILISATION IN AGRICULTURE

SCOPE

The strategic focus is on increasing the efficient use of water for the production of food, fibre, fuel-wood and timber; ensuring sustainable water resource use; reducing poverty and increasing wealth of people dependent on water-based agriculture. The needs and requirements of present and future generations of subsistence, emergent and commercial farmers continued to be addressed through the creation and application of water-efficient production technologies, models and information systems within the following inter-related sub-sectors of agriculture, namely:

- Irrigated agriculture
- Dry-land agriculture
- Woodlands and forestry
- Grasslands and livestock watering
- Aquaculture

The challenge for applied research and knowledge dissemination is to provide solutions to practical problems which are experienced in the process of utilisation, development and protection of water resources, thereby contributing to productivity growth in agriculture.

During 2005/06 the research portfolio included new initiatives and current projects addressing the scope described above. Overall, about R15.6m. was invested (paid out) in 38 projects. Of these, 8 projects were initiated while 20 were ongoing. Of the active ongoing and new projects (28 projects) about 57% (16 projects) were solicited projects. During the year 10 projects were finalised and 8 reports published.

THRUSTS AND PROGRAMMES

The research portfolio (including new initiatives and ongoing projects) was grouped into strategic thrusts and programmes that directly address the above-mentioned scope and are summarised as follows:

Water utilisation for food and fibre production

The direction and driving force for research activities and outputs were determined by the strategic focus to improve the knowledge of the processes of production of field, horticultural and industrial crops.
Programmes included:

- Water-efficient production methods in relation to soils, crops and technology in rain-fed and irrigated agriculture
- Fitness-for-use of water for crop production, livestock watering and aquaculture

Water utilisation for fuel-wood and timber production

The direction and driving force for research activities and outputs were determined by the strategic focus to improve the knowledge of the processes of production of trees in woodlands, plantation forestry and trees planted in combination with food and forage crops. The following programme was included:

- Water-efficient production methods and systems in agro-forestry, woodlands and forestry plantations

Water utilisation for poverty reduction and wealth creation in agriculture

The direction and driving force for research activities and outputs were determined by the strategic focus to improve the knowledge of the management processes undertaken by people who are using water. The current research portfolio includes the following programmes:

- Sustainable water-based agricultural activities in rural communities
- Integrated water management for profitable farming systems

Resource protection and reclamation in agriculture

The direction and driving force for research activities and outputs were determined by the strategic focus to improve the knowledge of the natural processes and man-induced impacts of resource use. This thrust included the following programmes:

- Sustainable water resource use on irrigation schemes and within river catchments
- Impact assessment and environmental management of agricultural production

LEVERAGING INCOME FOR THE CREATION, SHARING AND DISSEMINATION OF WATER-CENTRED KNOWLEDGE

During recent years the WRC placed emphasis on leveraging levy income by striving to obtain funds for support of water research from sources other than the levy. This drive has been highly successful. The WRC income originating from sources other than the levy has increased by an amount of about R5.7m. from about R4.3m. in 2004/05 to R10m. during 2005/06, reflecting an increase of roughly 132% over the previous year. The budget was set higher in expectation of increased leverage income and this has been met. Income from interest received amounted to R3.5m. Leveraged income included funds allocated to a number of KSAs for direct support to research projects and funds provided for knowledge sharing and dissemination (e.g. the Water Information Network, WIN-SA). Leveraged income was obtained from both local and international sources, where the main source of income was due to support by various government departments for specific research and other knowledge-sharing projects.

INCOME INDICATORS

Indicator	Budget	05/06 Year end (actual received)
Levies as percentage of total income	87%	87%
Other sources of income as percentage of total income	13%	13%
Leveraged income as a percentage of other income *	73%	72%

** Leveraged income includes all other income with the exception of interest received*

ENHANCING KNOWLEDGE DISSEMINATION AND PUBLIC UNDERSTANDING OF WATER-CENTRED KNOWLEDGE

The WRC continued to improve the uptake process of knowledge created via its research activities. While regular publications such as *Amanzi*, the *Knowledge Review* and *The Water Wheel* have proved to be highly successful publications, interventions such as the WRC Open Days as well as WRC representation at water-related conferences and symposia also presented further opportunity for knowledge dissemination. Two Open Days were held during 2005/06. The first took place at the University of KwaZulu-Natal (UKZN), Durban campus, on 1 September 2005 and the second during early October at the University of Pretoria. The first Open Day coincided with the WRC Board Meeting and the first session involved about 200 learners from local schools who were exposed to displays, models and videos with a distinct career focus. A hydrological model was used to demonstrate the water cycle and the various water users. There was also a demonstration on membrane technology. Invited guests included academia, students, learners, educators, journalists and Government officials (Provincial and Local Government).

The second WRC Open Day was held at the Senate Hall, University of Pretoria on 3 October 2005. The event showcased WRC projects during the past financial year. The *2004/05 WRC Knowledge Review* was launched during this event. This was followed by a short symposium dealing with popular topics such as climate change, rainwater harvesting and capacity building in the SA water sector. The winners of the *SA Youth Water Prize* from Setjabe Se Maketse Combined School in Bloemfontein were also present to discuss their project that won them the *International Youth Water Prize* in Stockholm, Sweden.

The WRC provided the Minister of Water Affairs and Forestry with a number of Ministerial briefs addressing key issues in water resource management such as climate change. The briefs provided the Minister with background information and advice based on new knowledge created with the support of the WRC.

PUBLIC UNDERSTANDING OF WATER RESEARCH

A number of presentations were made in order to improve public understanding of science. Examples included a presentation made on 'Supporting people-centred development through research on water utilisation in agriculture' during a workshop with the theme: *Perspectives and Future Directions in Community-Based Natural Resource Management or People-Centred Policy, Practice and Research*, organised by

the University of the Western Cape together with the University of Zimbabwe from 27 – 28 February 2006 in Johannesburg. Another example is a presentation made to Tshwane Municipality on concepts and piloting shallow sewers.

WRC staff and research providers featured in media (print and electronic). Some examples are:

- Print media: Articles relating to WRC-funded research appeared in publications such as *Engineering News, Pretoria News, Cape Times, Sunday Times, Farmer's Weekly, Landbou Weekblad, Water Sewage and Effluent* and *Business Day.*
- Electronic media:
  - Radio: Radio interviews were conducted on various SABC radio stations. Some noteworthy examples include topics such as *The UAE Weather Prize*, shallow sewers, the launch of the Kat River project, the state of municipal sewer systems, fish-ways and World Water Day.
  - Television: Television interviews covered various WRC-funded projects. The most significant examples include: a comprehensive feature on groundwater and the Rhodes Biosure Project on *Morninglive* (SABC 2); a Farmers' Day in the Drakensberg; a feature on rainwater harvesting; the launch of the Kat River Project; and a feature of the Okhombe Community Project on *50/50*

Specific examples of such articles and interviews are:

- Water prize, *Pretoria News*, Staff Reporter, 17 June, 2005
- SA 'rainmakers' win top award, *Sunday Times*, 26 June 2005
- Artificial groundwater recharge, *IMIESA* Vol. **30** (No 7) July 2005
- Groundwater comes of age, *Engineering News*, 22 July 2005
- *PM Live* radio interview (*AM Live* inserts for the water debate)

The WRC has published numerous popular articles during 2005/06. Eight popular articles have been published on research outputs related to the KSA **Water Use and Waste Management i**ncluding articles on membranes, water losses, wastewater treatment, shallow sewers, stormwater, sewerage and sludge guidelines. Many other articles were published by other KSAs. Examples of popular articles published by the WRC (*The Water Wheel*) addressing **Water Resource Management** included:

- Groundwater pollution – 'When Water Turns Deadly – Investigating Nitrate in SA Groundwater'
- Meteorology – 'Project Provides New Tools for Weather Man's Box'
- Climate change – 'Climate Change: The Last Straw for Communities at Risk'
- Catchment management – 'Water the Tie that Binds Eastern Cape Community'
- Bio-fuel – 'Investigations on Track into Impacts of Bio-Diesel Tree'
- Hydropolitics – 'SA's Rich Water History Unearthed'
- Water Kidz – 'Groundwater - More Valuable than Gold'
- Upfront – 'Three Year Water Resources Study Underway'
- Land management - 'Projects Restoring Land and Water'

In addition, at an international level, the

WRC article headlined: 'Small is Beautiful – and it Works!', addressing the small-scale solar distillation system, appeared in the *Arab News*, Saudi Arabia's largest selling English newspaper on 12 November 2005.

MAKING KNOWLEDGE APPLICATION A REALITY – COMMERCIALISATION

The application of various technologies, processes and/or products developed with the support of the WRC formed another challenge during the year under review. It required the understanding of issues of intellectual property and commercialisation. Although in recent years the understanding of these issues among research providers has been greatly improved, there is a need to actively manage and promote potential applications. By translating needs into research ideas and, in turn, transferring research results, disseminating knowledge, new technology-based products, and processes to the end-users, the WRC is continuing in its drive to provide the country with applied knowledge and water-related **innovation.** In addition, the WRC is supporting water-related innovation and its **commercialisation** where applicable. Often, these technologies, processes and products require commercial involvement in order to make them available for use.

About 88% of the WRC's patent portfolio is licensed out. A number of licensing agreements have been reviewed and some are being re-negotiated with new contracts. In addition, new patents have been through the process of being registered. The licensed WRC patent portfolio includes the Secondary Metabolites, a cluster of 13 patents, currently licensed to Synexa and the product is already being marketed, with the first payment of royalties due shortly. The overall patent portfolio includes the Petro® Process which was licensed to Presario, but since the licence has expired, the WRC has been exploring alternative commercialisation strategies and partners. The Petro® Process is a cluster of eight patents. Capillary Ultra Filtration (CUF) Technology comprises a cluster of five patents and products which are still at various development and piloting stages. This cluster of patents is licensed to FiltRSA and an extension of the licence agreement is currently under negotiation. BioSURE® is a cluster of 36 patents. The products arising from this cluster are under final development and piloting and 27 of the patents are licensed to ERWAT. Possible involvement of the Innovation Fund/IDC in funding commercialisation is being investigated. Acid Mine Drainage (ferrite process) is currently licensed to the Environmental Technologies Agency and the product is still under development. Detection of Fouling of Membranes is a patent registered only in South Africa and the product is still under development. It is licensed to IFU, a German company.

In addition to the above, the WRC has a widely accepted Intellectual Property (IP) Policy and a Benefit-Sharing Policy which clarify its contractual requirements for future research projects and improve the level of understanding/knowledge regarding the protection of IP within the water research community. The WRC continues to play an active part in the activities of the South African Research and Innovation Association (SARIMA), and engages with other institutions, such as the Innovation Fund and the Department of Science and Technology on the developments in the IP rights arena.

SHARING WATER-CENTRED KNOWLEDGE

During the year under review the WRC was engaged in many activities and initiatives aimed directly at sharing water-centred knowledge. These included specific events such as Open Days, verbal, visual and audio-based communication including various media channels such as radio and television.

During 2005/06 the WRC finalised 91 research projects and published 86 research reports which were distributed widely within the water sector.

As a result of its research funding endeavours, the WRC has amassed significant knowledge regarding many water- and sanitation-related concerns in South Africa. In an effort to share this knowledge with national policy and decision-makers, a series of briefing notes was created. These briefing notes, including topics such as climate change, mine-water pollution and rainwater harvesting, not only provide valuable information and advice on these issues, but also include possible solutions, many of which have been tried and tested in WRC-funded research projects.

The WRC Executive and Research Managers met with the Parliamentary Portfolio Committee on Water Affairs & Forestry (7 March 2006). The programme included presentations on the impacts of research in four key impact areas as well as on the dissemination of knowledge generated through research. The meeting discussed the highlights published in the *WRC 2004/05 Annual Report* and then addressed some needs expressed by this Committee regarding water-centred knowledge.
The various KSAs have led many workshops aimed at knowledge sharing and a number of additional workshops are planned for later during this financial year.

Examples are:

- Water laws
- Public policy in the water sector
- Water quality modelling (x2)
- Water licensing (esp. integrated water use licences)
- Climate change (x2)
- Groundwater remediation
- Groundwater protection
- Key effects of climate change on biota
- Workshop on nitrate removal
- WQ2000 training workshop
- Integrated Water Use Licence (IWUL) Workshop
- Training resource managers in procedures for human health risk assessment associated with consumption of freshwater fish and in the application of fish health assessment index
- Hydrological decision support framework workshop
- Water use – streamflow reduction activities workshop
- Research strategy to support the acceleration of basic sanitation provision in South Africa
- Research strategy of the health domain – Framework for human health-related research
- The University of Venda research collaboration workshop
- HIV and water quality
- Utilising waste as a resource – The use of drainage and other poor quality waters for irrigation
- Development of training material for extension in integrated water management
- Assessment of the social and economic acceptability and institutional

arrangements for rainwater harvesting and conservation in rural communities
- Water use of pastures
- Rainfall projections for land-use planning
- Development of sanitation research strategy (two workshops)
- Research needs addressing stormwater and sewerage (five workshops)
- Inventory of water use in industry, mining and energy sectors
- Innovative approaches for brine handling
- Endocrine disruptive compound (EDC) strategic workshop
- National benchmarking workshop
- Fish response assessment index – workshop to train users
- Effect of changing of water temperature on aquatic ecosystems
- Riparian-zone delineation
- Wise use of wetlands
- Wetland classification and inventory in South Africa for use in the national programme.
- A series of five 1-day workshops was held at centres around the country that are easily accessible to DWAF staff (during April and May 2005) to give training in the Assessment of the Ecostatus of Rivers, a measure now being used in the DWAF Reserve determination
- The use of diatom-based water quality indices

TECHNICAL/SCIENTIFIC LEADERSHIP – PRESENTATION OF PAPERS AT CONFERENCES AND PUBLICATION OF SCIENTIFIC ARTICLES AND BOOKS

WRC staff members have attended and presented papers at various local, regional (Africa) and international conferences. Some examples are given below:

- Delivered a paper entitled 'Heavy metal displacement in EDTA-assisted phytoremediation of biosolids soil'. IWA-WISA conference, 10 – 12 August 2005
- Delivered a paper entitled 'The role of research in informing the governance process' at the International Symposium on Ecosystem Governance; 10 – 13 October 2005
- Delivered a paper entitled 'The legislative framework to protect the water environment in South Africa: Moving from policy to implementation' to the *First Jiuzhai Paradise International Environment Forum*, All China Environment Federation; 27 – 31 October 2005
- Delivered a paper entitled 'South and East African experience of managing for water and ecosystems'. RAMSAR COP 9, Kampala, 7 – 15 November 2005
- Delivered a poster entitled 'Keeping up with clean water demand while maintaining ecological integrity: A challenge in South Africa' to the Ecological Society of America, January 2006
- Presented the 'South African and Namibian Situation Report on Water Reuse Research in Southern Africa' at a GWRC workshop in Utrecht, the Netherlands
- 'Research on the development of regional mine closure strategies for gold mines'. Presented at the WISA Conference
- 'Developments in mine-water research'. Presented at the Mine Water Division Conference on Mine Closure. Randfontein Estates Gold Mine on 6 – 7 April 2005
- 'Benchmarking, lessons and experiences from the WRC study.' National Bench-marking Workshop, Durban 7 June 2005
- 'Quality of water resources – Issues and trends'. Presentation to post-graduate students in Environmental Water

Management. University of Pretoria 12 July 2004.

- 'Small community water supply in South Africa'. Presented at the WHO Workshop on Small Community Water Management. Alice Springs, 19 – 22 July
- 'WRC activities on multiple use.' – IWMI Workshop
- 'Water challenges'. Paper presented at the WITS Water Colloquium – 26 Aug
- A paper was presented on 'Reform of user charges, market pricing and management of water: Problem or opportunity for irrigated agriculture' during the ICID 21st European Regional Conference on 'Integrated Land and Water Resources Management: Towards Sustainable Rural Development', which was held in Frankfurt (Oder), Germany, 19 May 2005
- A paper was delivered during a Special Session on 'Driving Research for Change in Irrigation and Drainage Practices' held on 12 September 2005 during the 19th ICID Congress in Beijing, China. The paper was entitled 'The research and development strategy for water utilisation in agriculture – responding to diverse needs of farmers in South Africa'
- A paper was presented during SALGA Benchmarking Workshop addressing the WRC guidelines and software to support BM
- The WRC has been a major role-player in the preparation of the 'Freshwater Chapter of the Global Environment Outlook 4 (GEO-4)'. The GEO process is a tool for the implementation of UNEP's mandate to mobilise scientific expertise to keep the global environment under review. GEO-4 aims to provide an up-to-date, comprehensive, reliable, scientifically credible, policy-relevant and legitimate global assessment and outlook of the interaction between environment and the society. Two expert meetings in Kenya and Switzerland were attended during 2005. The final report will be considered by an inter-governmental and multi-stakeholder consultation in September 2007, before being presented to UNEP's Governing Council/Global Ministerial Environment Forum in early 2008.

As described above, WIN-SA is another key knowledge disseminating initiative. WIN-SA was created to support water sector knowledge management and best practice promotion by the Water Sector Services Leadership Group (WSSLG) during 2002. To date, WIN-SA has made significant inroads into articulating its products and services since its inception and has a particular focus on information and knowledge dissemination to local government. WIN-SA's main focus is improved local government service delivery and its key products include the WIN-SA portal which is easy to use and aims to build a gateway to other sector websites; WIN-SA Knowledge Dissemination Facility which includes the portal and an intelligent mailing list; WIN-SA Lessons, i.e. documented lessons appropriately packaged for the benefit of local government users (first issue already available); WIN-SA reviews on key sector processes will be available annually and will be appropriately packaged to suit different users. People-to-people learning focuses on efforts around an active knowledge dissemination process and supporting people to learn from each other, e.g. learning journeys, exchange visits and forums of reflection.

Water Research Commission

DISTINGUISHED SCIENTIFIC ACHIEVEMENTS

International recognition for SA research – Dr George Green coordinated the successful nomination of the South African National Precipitation Research and Rainfall Enhancement Programme for the UAE International Prize for Weather Modification. This included writing up the scientific advances and impacts resulting from more than a decade of research, mostly done under WRC research contracts and co-funded by the WRC, the South African Weather Service (SAWS) and DWAF. The World Meteorological Organisation evaluation panel, in its citation, described the South African programme as the world's showpiece because of its technological innovations and advances, and its successful conclusion. The prize of US$ 200 000, to be used for further research, was specifically awarded for the design and execution of a successful weather modification experiment involving the revolutionising concept of injection of hygroscopic nuclei and superb radar-based storm-tracking software.

EXHIBITIONS

The WRC engaged with professionals in the South African water sector via many channels, one important channel being water-related exhibitions. This important activity saw the WRC, true to its role as a water knowledge hub, disseminating knowledge in the form of reports and publications to its key stakeholders. At conferences, where delegates from African and overseas countries were present, the WRC widened its net of partners and stakeholders to constantly refine and update its knowledge archive. Exhibitions provided an important platform to expand the WRC's knowledge base. Some examples include:

- EcoSan Conference, Durban, 23 – 26 May 2005
- Johannesburg Water Festival, Johannesburg, 21 – 27 April 2005
- IWA-WISA Conference, Sandton, 10 – 12 August 2005
- International Symposium on Ecosystem Governance (ISEG), Pilansberg, 10 – 13 October 2005
- DST-OECD Conference, Pilansberg, 21 – 22 November 2005
- RAMSAR COP9 Conference, Uganda, Kampala, 8 – 15 November 2005
- SARIA Workshop, Pretoria, 31 Jan – 1 Feb 2006

PERFORMANCE

During 2005/06 the WRC undertook a number of initiatives aimed at getting feedback from its stakeholders with regard to its performance. These initiatives were in addition to both internal and external audits and a number of these initiatives formed part of the organisational objectives. The initiatives addressed the relevance and efficacy of the WRC. These initiatives included a survey addressing knowledge dissemination, a survey assessing the management and relevance of research projects under finalisation and visits to research organisations and academia by the CEO and the Deputy CEO, discussing the WRC's undertaking and specific issues related to fund allocation and management of research funds. Feedback in the form of direct and indirect communications reflecting on the doings of the WRC, i.e. citations, was also collected.

KNOWLEDGE DISSEMINATION SURVEY

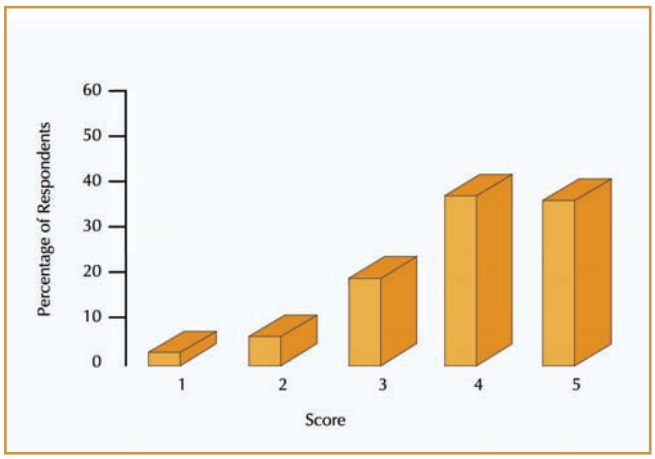
The WRC requested feedback from its stakeholders in terms of how well the

knowledge dissemination service of the WRC is being rendered and how this service could be improved for the benefit of stakeholders. Respondents were requested to anonymously indicate the level of agreement or disagreement with the following 10 statements and score them from 0 (no knowledge) to 5 (strongly agree).

1. I have received and read some of the reports and/or publications of the WRC.
2. The WRC's knowledge dissemination initiatives have made WRC research products widely known and appreciated.
3. Obtaining information and publications from the WRC is easy and fast.
4. I find the WRC technical publications (project final reports, manuals, guidelines, etc.) to be useful and of high quality.
5. The WRC's scientific journal, *Water SA*, is an important means of exposing the work of South African water researchers to peers (national and international) and maintaining research standards.
6. I find the WRC popular-science publication, *The Water Wheel*, to be relevant, informative and to heighten awareness of water issues.
7. The WRC's annual *Knowledge Review* is a useful overview of the WRC's research portfolio, drawing the attention of the reader to projects of particular interest.
8. Electronic access to reports, on CD, or as downloads from the WRC webpage, is easy and adequate.
9. I find the WRC webpage to be user-friendly, allowing me easy access to the information/knowledge I require.
10. The water sector derives benefit from WRC publications, collectively.

The following histogram sums up the combined responses (in terms of scores) to the positive statements listed, indicating that, by-and-large, respondents agree, most strongly, with the statements made.

Summary of responses to all statements



The most striking result is the generally high level of satisfaction among stakeholders concerning the relevance and effectiveness of most of the WRC's knowledge dissemination activities, which suggests that the WRC is fulfilling its role as a national hub for water-centred knowledge. There seems to be a clear need, however, to increase the web-based accessibility of WRC reports and publications. Perceived deficiencies in this regard seem also to have affected the general level of stakeholder satisfaction with and attitude to the WRC website. The results serve to indicate other areas where there might be room for improvement. The actual need for improvement should, however, first be confirmed through consultation with appropriate target groups.

IMPACT ASSESSMENT OF RESEARCH PROJECTS

At the final stage of each research project the WRC has introduced an impact assessment which rated the project by the members of its steering committee regarding a number of topics including

- Innovative findings – (*Creativity, invention and exploitation of products, processes or services)*
- Scientific content – *(Problem statement, objectives, method, results and conclusion)*
- Readability of report – *(Structure of report, language use and technical presentation)*
- Practical application – *(Useful to improve real-life water management)*
- Total rating – *(Overall impact assessment - what difference will this project make?)*

The above were rated from 1 to 5, where a rating of 1 equals poor and 5 indicates an excellent rating. This assessment tool was applied to all projects finalised by the KSAs during the year under review. The rate of reply i.e. feedback was varied from one research project to another; but from the assessment replies received it seems that, on average, a rating of 4 out of 5 was given for 80% of the projects assessed.

CITATIONS

In addition to the above surveys, citations also serve as an important feedback tool.

Citations referring to the WRC and its activities are used as an indication of public appreciation. The following are a number of such citations:

Citations indicating the relevance of the WRC and its research portfolio:

'In this respect I want to thank South Africa's Water Research Commission for initiating, funding and supporting research into climate change during the last eight years or so. In particular, a major study on the impacts on water resources has been completed in the last few months, and the full report will be available soon. This research has put South Africa at the forefront of developing techniques for taking the broad-scale results of the global circulation models and down scaling them to a much finer local resolution. Nevertheless, many uncertainties remain to be resolved, and the Water Research Commission has agreed to fund another phase of research to further refine our approaches and understanding.'

Ms Buyelwa Patience Sonjica, MP, Minister of Water Affairs & Forestry at the National Climate Change Conference, 18 Oct 2005, Gallagher Estate, Johannesburg

'The research project undertakes to focus on the provision of safe drinking water, sustainable treatment and safe disposal of wastes and the conservation of resources to improve food security. The results from the research will help us as a municipality improve service delivery, cut environmental and health impacts, and help the poor save money. In the process we are providing students with research topics which are relevant to the society they live in.'

Neil McCloud, Head: Water & Sanitation Unit: Durban Metro

Examples of specific citations addressing capacity building are the following:
'I would like to express my thanks to the WRC for providing me with the funding to attend the EcoSan Congress in Durban. Many of the papers were of great interest to me and the contacts I have made with international colleagues in this field will be invaluable in my studies.'

Siobhan Jackson (University of KwaZulu-Natal) – Student whose registration was sponsored by the WRC

Mr Mbhele: 'I am grateful to the WRC for affording me the opportunity to grow as a dairy farmer. I think it is a great organisation.' (Translated from isiZulu- SABC 1 News Broadcast at 19:00 on 7 May 2005)

'We would like to extend our appreciation and gratitude to the Water Research Commission for providing the opportunity for us to attend COP9 in Kampala, Uganda. The experience was worthwhile for both international exposure and capacity building. We feel privileged to have been able to take part in a wetland conference of such magnitude. Being part of the RAMSAR Secretariat staff meant spending a substantial amount of time on administrative work and less on the actual discussions of the conference; however, we managed to attend some of the crucial sessions. More important we secured and renewed useful contacts.'

Ms Carol Mbali Goge & Mr Vhangani Silima, SANBI

This citation indicates appreciation for the WRC contribution to water-centred knowledge, to knowledge sharing as well as capacity building and recognition of young scientists:

'SANCHIAS and the symposium organising committee for the 12th SANCHIAS symposium kindly acknowledge the contribution of the Water Research Commission to the success of the 12th SANCHIAS symposium that was held at the ESKOM Conference Centre, Midrand, Johannesburg from 5 – 7 September 2005. The contribution included R3 000 for the WRC best paper prizes that went to the younger members of the hydrology research community, R7 500 that helped five graduate students to attend and participate, and R6 000 of general symposium support that included the production of participants' name tags. SANCHIAS also acknowledges that 22 out of the 60 papers presented at the symposium were from WRC-funded projects – an indicator of the significance of WRC's contribution to research hydrology in South Africa. We wish the WRC well and hope it will always be in a position to make similar contributions for our further symposiums to further enhance capacity building and knowledge dissemination in water research in South Africa.'

John Ndiritu (WITS University) Coordinator: 12th SANCHIAS Symposium Organising Committee

The following citation illustrates the relevance of certain global initiatives, e.g. the WRC involvement in the GWRC:
'The good news is that more than three of the selected tests are at UP and available to the WRC. The WRC therefore was the organisation with the most available tests and will, in the end, be a strong partner in the project. It was really good to see that the investment of the WRC in EDC tests was paying off and that South Africa is one of the leaders in the field.'

Tian de Jager: University of Pretoria (UP)

ORGANISATIONAL GOALS AND OBJECTIVES (KEY PERFORMANCE AREAS)

The WRC developed and revised its key performance indicators (KPIs) and set measures and targets by which to assess levels of organisational performance as either excellent, very good or good. In certain areas where a strategic need existed for development and growth, the WRC set specific indicators and targets, or enhanced the targets in relation to the year's objectives and indicators. In other areas where either slow or gradual improvement was required, or where performance-level objectives set were to be maintained, the indicators established for the previous financial year (2004/05) were retained. For developing and setting of KPIs for 2005/06, the organisation had gone through an extensive process of revisiting and building descriptions/ definitions for each indicator, its measures and performance targets. The organisation applied quantitative KPIs to all its key strategic units and all senior staff members.

CUSTOMER/STAKEHOLDER RELATIONSHIPS

This KPA addressed the WRC leadership and positioning activities. One of the objectives of this KPA was to enhance the standing of the WRC nationally, in Africa and globally. Special emphasis was given to strategic positioning activities within South Africa. This was of key importance in the light of the pending amendment of the Water Research Act. Another objective that received special attention during the year was African leadership. The aim was to strengthen the WRC's leadership position within the African water sector. The WRC also received specific feedback regarding its knowledge dissemination activities (with the aim to improve relevance) and a special survey in this regard was conducted during 2005/06. As for the previous year, the overarching objectives have been translated into a number of indicators.

The objective of this KPA was to enhance the standing of the WRC locally, in Africa and globally, and to receive feedback with regard to the WRC's position with special reference to its relevance and effectiveness.

This overarching goal has been translated into a number of indicators as follows:

- **Internal affairs** (activities of the WRC focused on South Africa). These affairs include:
  - Local initiatives (initiatives of key importance to the water, S&T and other related national sectors where the WRC plays a significant role)
  - Public appreciation (this includes feedback regarding the role and relevance of the WRC)

- **External affairs** (activities of the WRC focused outside South Africa). These affairs include:
  - African leadership (key strategic activities in Africa in which the WRC is playing a significant role)
  - International player (activities such as global partnerships, participation in global projects, etc.)

Internal affairs

This KPI addressed:

- **Objective – Local initiatives** these initiatives were measured against the number of initiatives of key importance to the water, S&T and other related national sectors where the WRC played a significant role.
  Performance – *a performance target of 'excellent' which required eight such key initiatives was achieved. Details are given in section entitled 'Leading Water Centred Knowledge'.*
- **Objective – Strategic positioning initiatives** were defined as special activities aimed at improving the knowledge about and recognition of the relevance of the WRC, among various stakeholders and the public at large.
  Performance – *a performance target of 'excellent' was achieved with more than two such major initiatives undertaken during 2005/06. For details see section entitled 'Leading water-centred knowledge'.*
- **Objective – Public appreciation** addressed feedback regarding the value of knowledge transfer and dissemination activities of the WRC and the analysis of the results of project-specific impact studies.
  Performance – *the knowledge dissemination survey resulted in an overall score of 4 out of 5, i.e. excellent performance was achieved. The analysis of the project-specific studies indicated, on average, a score of 4 out of 5.*
  Performance – *the performance target of 'excellent' set as feedback in the format of five citations indicating public application of the WRC was achieved. For details see section entitled 'Leading Water Centred Knowledge.'*

External affairs

The KPI focused on:

- **Objective – African leadership** was measured against key strategic activities in Africa where the WRC has been playing a significant role.
  Performance – *the target for excellent performance in 2005/06 was achieved, i.e. five such key initiatives were undertaken. For details see section entitled 'Leading water-centred knowledge'.*
- **Objective – The WRC as an international player**. The WRC's objective was to maintain a similar level of involvement in international affairs as was targeted during 2004/05.
  Performance – *the target for 'excellent performance' was set at eight such initiatives with 25% of these being established initiatives that are required to be strengthened and the other 75% being new key. The 'excellent' target was achieved. For details see section entitled 'Leading water-centred knowledge'.*

Goals	Indicators	Excellence Target	Performance
Leadership in local affairs * National initiatives * Public appreciation	National initiatives of key importance to the water, S&T and other related national sectors where the WRC plays a significant role	Eight national initiatives	Met
	Feedback regarding the relevance of the WRC to South Africa	Knowledge Dissemination Survey score of 80%	Met
		Project-specific Survey (score of 80%)	Met
		Five citations	Met
Leadership in external affairs • Regional (Africa) • Global	African leadership (key strategic activities in Africa in which the WRC is playing a significant role)	Four Africa initiatives	Met
	International player (activities such as global partnerships, participation in global projects, etc.)	Eight global initiatives	Met

FINANCIAL PERSPECTIVES

The overarching objective of this KPA was to further improve the financial practices, management and performance of the WRC. The two main sub-objectives were the improvement of financial performance and the enhancement of financial management. These have been allocated the same weight of 50% each. During 2005/06 the following KPIs were set:

Improved financial performance

This was measured as follows:

- **Objective – Increase income growth** where growth is measured as meeting the budgetary target of R3.9m. for 2005/06.
  Performance – *The target for excellent performance which was set at 100%, i.e. fully meeting the budgeted figure, and exceeded as income growth amounted to R12.3m. This also exceeded the revised figure for R11.3m.*
- **Objective – Maintain a research ratio**. Research funding and support as a percentage of total income of 75%.
  Performance – *the 'excellent' target of 75% was met and exceeded. Ratio achieved was 77.3%.*
- **Objective – Improved cashflow management** availability of cash for effective operation.
  Performance – *the 'excellent' performance target of R30m. was not met. However, the very good target was met as a balance of R26.2m. was achieved.*

Improved financial management

This was measured as follows:

- **Objective – High quality budget planning and reporting** is assessed against the percentage deviation between actual and budget, at year-end.
  Performance – *the target deviation of 10% or less which was set as excellent performance was achieved and exceeded. On average, for all main categories a 6% deviation was recorded.*

- **Objective – Audit results** indicating the percentage of the previous year's internal audit queries fully addressed and a clean vs. qualified external audit.
  Performance *– the 'excellent performance' target was set at 70% of queries having been addressed and an unqualified external audit report were both achieved and even exceeded as 75% of queries were addressed.*
- **Objective – Efficiency of recoveries** – this was measured as the percentage of projects older than three years fully finalised.
  Performance *– the objective ('excellent' target) which was to fully finalise 100% of these projects by year end was not met. Only 71% of the projects older than three years were finalised i.e. the 'good' target was met.*
- **Objective – The roll-over of research funds reduced to an appropriate target level**. This is measured as the deviation from the budgeted figure for roll-over of research project funds.
  Performance *– the 'excellent performance' target for roll-over was set at 20% deviation from the planned budget. The target was met and exceeded as the deviation was only 13%.*

Goals/Objectives	Indicators	Excellence Target	Performance
Improved financial performance	Income growth (income growth is measured as meeting the budgetary target of R3.9m.)	Meet budget target in full	The excellent target was met and exceeded. The revised budget target of R11.3m. was also exceeded and the actual (cash) external income for the year was R 12.3m.
	Research ratio (measured as research funding and support as percentage of total income)	75% (revised budget)	Excellent target was met and exceeded i.e. 77.3%
	Cashflow management (measured against availability of cash for effective operation)	R30m	Excellent target not met; very good target was met, i.e. R26.2m. cashflow was achieved

Goals/Objectives	Indicators	Excellence Target	Performance
Effective financial management	High quality budget planning and reporting (measured as the percentage deviation between actual and budget at year-end)	10%	Met, even exceeded on average (all main categories) about 6% deviation
	Audit results (measured as a percentage of previous year's internal audit queries fully addressed and an unqualified vs. qualified audit)	70%	Met, exceeded, i.e. 75% was achieved and previous year's external audit was unqualified
	Efficiency of recoveries (measured as the percentage of projects older than three years fully finalised)	100%	Not met; only 71% of projects were finalised. The 'good' target was met
	Roll-over of research funds (measured as the deviation from the budgetary figure for roll-over of research project funds)	20%	Met and exceeded as roll-over is below 20% (about 13%)

LEARNING AND INNOVATION

This KPA aimed to further improve commercialisation of IP, enhance the WRC's contribution towards the building and right-shaping of the water-centred knowledge base in South Africa (emphasising capacity building), and build the position and profile of the WRC as a water-centred knowledge hub through various knowledge-sharing activities. The issues of building the knowledge base (capacity building) and the application, transfer, sharing and dissemination of water-centred knowledge continued to be of great importance to the relevance of the WRC.

During 2005/06, these aims were translated into three indicators with set targets for various levels of performance. All indicators and measures were similar to those set for the previous financial year, while the new performance targets reflect a continuous drive towards improvement, where applicable.

This KPA aimed to improve commercialisation of IP and the WRC's contribution towards the water-centred knowledge base in South Africa, including capacity building, as well as to enhance the WRC's activities and positioning through knowledge-sharing and leadership. The issues of building the knowledge base (capacity building) and the application, transfer, sharing and dissemination of water-centred knowledge are of great importance to the relevance of the organisation.

The above aims are translated into three indicators with set targets for various levels of performance. The measures applied are:

- Improved commercialisation of IP (measured as the percentage of the total number of patents licensed out)
- Improvement of the WRC's contribution towards the water-centred knowledge base in South Africa including capacity building (number of students supported by the WRC research portfolio as well as the percentage of the total made up of historically disadvantaged students)
- Enhancing the WRC activities and positioning through knowledge-sharing and leadership (measured against the number of Open Days and workshops organised by the WRC)

The measures applied included:

- **Objective – improved commercialisation of IP.** This was measured as the percentage of the total number of patents that were licensed out.
  Performance – *The target set for 'excellent' performance which was 80% was met and even exceeded as 88% of the patent portfolio was licensed out.*
- **Objective – the WRC's contribution towards a water-centred knowledge base in South Africa (capacity building).**
  Performance – *The target for 'excellent' that was set at 400 students to be supported by the WRC research portfolio, with 60% of these students being from historically disadvantaged backgrounds was met and exceeded. The WRC supported 581 students and 400 (69%) were from historically disadvantaged backgrounds. The WRC also undertook a number of initiatives which were linked to this KPI. For details see section titled 'Building the Water-Centred Knowledge Base'.*
- **Objective – Enhancing the WRC activities and its position through knowledge-sharing and leadership**. This was measured as the number of Open Days and workshops organised by the WRC. This KPI was also linked to the specific stakeholders' survey planned in the KPA addressing 'Stakeholder/customer relationships' (see above).
  Performance *– the 'excellent' target set for two Open Days and 20 workshops was met. The two Open Days were highly successful and the workshops addressed a variety of topics which were of key importance to the dissemination of research findings as well as identifying future research needs (see above).*

Goals	Indicators	Excellence Target	Performance
Improved commercialisation of IP	The percentage of the total number of patents licensed out	80%	Excellent target met and even exceeded as 88% of the patent portfolio has been licensed out
Improved contribution towards capacity building (knowledge base)	Number of students supported by the WRC research portfolio as well as the percentage of the total made up of historically disadvantaged students	400 students, 60% of whom are historically disadvantaged (HD)	Met and exceeded. A total of 581 students were supported; of them 400 (69%) were historically disadvantaged students
Knowledge sharing and scientific leadership	The number of Open Days and workshops organised by the WRC	Two Open Days and 20 workshops	Target met and exceeded as more than 30 workshops were held

INTERNAL PROCESSES

During 2005/06 the WRC continued to place strong emphasis on this KPA. The objectives of this KPA were to further enhance and strengthen the WRC's internal competence and its ability to improve its functional operation, management practices and performance management to a level of excellence. Improving internal processes requires continuous effort. While the overarching objective remained the same as for the previous year (2004/05), specific performance measures and targets were introduced to allow the organisation to reach higher-level goals, with the aim of further improving the efficiency and effectiveness of the organisation and its core business process of research funding.

The objective of this KPA was to improve and strengthen the WRC with regard to:

- Functional excellence
- Management excellence
- Performance management

The WRC places strong emphasis on improving its internal processes in order to improve the efficiency and effectiveness of the organisation and its core business process of research funding.
The above objectives were translated into the following key indicators and measures:

- **Functional excellence** includes the improvement of the fund management process with regard to its time-frame (measured for the current year as the time gap between receiving a final report to the time of its publication) and the development of an appropriate fund management system (measured against the level of completion of the development of the system). Other indicators address:
  - The ability of the organisation to assess its impact (at project level), which is tied to the development and utilisation of an impact tool (performance is measured against level of application of the tool)
  - The improvement of internal communication and administrative support via an Intranet (this is measured against stages of development and usage)
- **Management excellence** addresses improved organisational management tools (measured against the implementation of a 'business excellence' drive) as well as the level of the organisation's compliance with governing legislation (measured against number of new and revised policies and the extent of compliance as reported by internal and external audits)
- **Performance management** was tied to improving the application of performance management practices in the organisation (this was measured against the level of application of quantitative KPAs/KPIs to all senior staff members)

The following KPIs and targets were set during the year under review:

Improved functional excellence

- **Objective – Fund management** (time-frame and system) was measured against the time gap between receiving a final report to the time of its publication and the level of completion of development of an appropriate fund management system.
  Performance – *the targets for excellent performance were set at 80% of project reports to be published within a period of three months of receiving the final report and for the fund management system to be fully developed and in use. The target for the time-frame was not fully met and only 77% of the projects rather than 80% were finalised within three months and about 3% of the projects met the very good target set for 80% of projects reports published within four months. The excellent target regarding the fund management system was met regarding the external part (web-enabled) of the system and the system is ready for use for the next cycle of call for proposals. However, the target was not met regarding internal usage and training. Currently the system is fully completed and is under extensive testing by a number of internal 'super-users'.*
- **Objective – The development and utilisation of an impact tool to be applied at a project level** was targeted.
  Performance – *excellent performance called for 100% application of the tool. This target was fully met.*
- **Objective – The use of the Intranet as an effective internal communication tool** was measured.
  Performance – *the target for excellent performance was full utilisation of the Intranet by all staff. This was fully achieved.*

Enhanced management excellence

- **Objective – Business excellence drive.** This indicator aimed to measure the application of a business excellence drive (SA Business Excellence Foundation).
  Performance – *the target set for excellent performance was the full implementation of this drive by the end of the financial year. However, the WRC met with unforeseen complications as the 'fitness for use' of the tool (for the WRC) was found to be very low. This required the reformulation of the tool and rendering it fit for a funding agency which functions in a business-like manner rather than a profit-making firm. Although the reformulation of the tool has been completed, this complication significantly delayed the process of implementation and did not allow the WRC to meet the target set against this objective.*
- **Objective – Compliance with all relevant legislation** continued to be addressed.
  Performance – *was measured against 80% compliance for all legislations and 100% compliance for PFMA, being the target for excellent performance. The excellent target was fully met.*

Performance management

- **Objective – The level of application of the quantitative KPIs/tool** was assessed.
  Performance – *the target set for excellent performance, i.e. to have 100% of SMS staff evaluated against new quantitative KPIs, was fully met.*

Goals/Objectives	Indicators	Excellence Target	Performance
Functional excellence	Improvement of the fund management process (time-frame) – minimising the time gap between receiving a final report to the time of its publication	80% of projects to be finalised within a period of three months	'Excellence' target met only for 77% of the projects while 3% met the 'very good' target
	An appropriate fund management system – level of completion of the development of the system	The fund management system to be fully developed and in use	The 'excellent' target was met for the external part of the system but not for the internal part
	The development and utilisation of an impact tool – level of application of the tool	Applied to 100% of the projects to be finalised	Fully met
	Improvement of internal communication – usage of the Intranet	Intranet fully utilised by all staff	Fully met
Management excellence	Business Excellence Drive	Implementation of a Business Excellence Drive	Target not met
	Organisation's compliance – extent of compliance as reported by internal and external audits	80% compliance with all legislation and 100% with the PFMA	Fully met
Performance management	Development and use of KPAs	100% of SMS staff evaluated against quantitative KPIs	Fully met

ORGANISATIONAL TRANSFORMATION

This KPA focused on organisational transformation and was focused on the enhancement of effective leadership and culture, the improved level of staff competence and accelerated equity and redress.

These objectives were measured against the following targets for excellent performance:

The objectives of this KPA included:

- The enhancement of effective leadership and culture
- Improved levels of staff competence
- Accelerated equity and redress

These objectives translated into a number of measures:

- The enhancement of effective leadership and culture was measured against the percentage deviation or the gap between current reality and the vision, as assessed by the organisational effectiveness and cultural survey (OECS)
- Improved levels of staff competence measured as the level of implementation of the skills development plan
- Accelerated equity and redress - indicators relate to the meeting of the organisation's employment equity plan and level of procurement from Black economic empowerment (BEE) suppliers

Goals/Objectives	Indicators	Excellence Target	Performance
Effective leadership and culture	The gap between vision and current reality (culture survey)	20% deviation	Met
Improved competence levels	Skills development plan fully implemented	100% implementation	Met (implementation and re-assessment are ongoing)
Accelerated equity and redress	Meeting targets of EE plan measured against percentage of new appointments	90% of new appointments EE	Met and even exceeded
	Improved ratio of BEE suppliers	80% of suppliers BEE	Not met. 'Good' target was met

- **Objective – The enhancement of effective leadership and culture**
  Performance – *was measured against a 20% gap between current reality and the vision ('excellent' target) as assessed by the organisational effectiveness and cultural survey (OECS). This target was met.*
- **Objective – Improved staff competence level** – The organisational drive to develop tools for improvement of levels of staff competence was measured against the level of implementation of the organisation's skills development plan
  Performance – *the 'excellent' target, which was set at 100% implementation of the plan, was met.*
- **Objective – Accelerated equity and redress** was measured against meeting of objectives of the employment equity plan.
  Performance – 'excellent' target was meeting EE plan which required 90% of all new appointments to be EE based and against a procurement target of 80% of all purchases being from BEE suppliers. These targets were met and even exceeded regarding new appointments but not met regarding BEE suppliers where a ratio of about 60% was obtained.

HUMAN RESOURCES

During 2005/06 the WRC's organisational structure (see organogram) underwent significant changes. With the retirement of the Deputy Chief Executive Officer it was approved by the Board of the WRC that, at this point in time, the position of a Deputy Chief Executive Officer will be discontinued and that the organisation will create a new position at a level of Director entitled Director: Research Coordination and Partnerships.

The current structure, in making allowance for core and direct support functions, provides for 49 permanent staff. In terms of composition by race, there was little change in the number of black staff during the year under review. Female staff members still represent the majority, with staff comprising 55% females and 45% male employees.

IMPROVED LEVELS OF STAFF COMPETENCE

While each staff member has a target for their individual development as part of their KPIs, the WRC implemented a skills development plan. The plan is continuously being monitored to determine the gaps between the plan and the actual training taking place.

ACCELERATED EQUITY AND REDRESS

Meeting employment equity plan targets

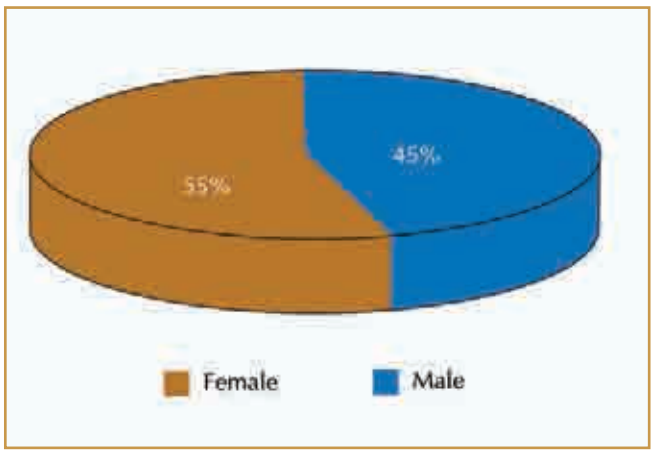
The report measuring progress against the employment equity plan indicates that the WRC has met (or even exceeded) the set employment equity targets for 2005/06, as well as the target set in the KPI (addressing organisational transformation) for excellent performance. During 2005/06 the WRC appointed a number of new employees, all of whom had been found to be highly appropriate for assuming duty against the relevant vacancies. The vacancies resulted from movement of staff within the organisational structure and the provision made for some measure of succession planning. One new research manager was appointed. The same individual was further promoted to the position of Director of the Key Strategic Area – Water Resource Management towards the financial year-end. The Executive of the WRC has therefore a better race and gender balance with two female members of Executive, including one black female.

WRC SUPPORT FOR STAFF EDUCATION AND TRAINING

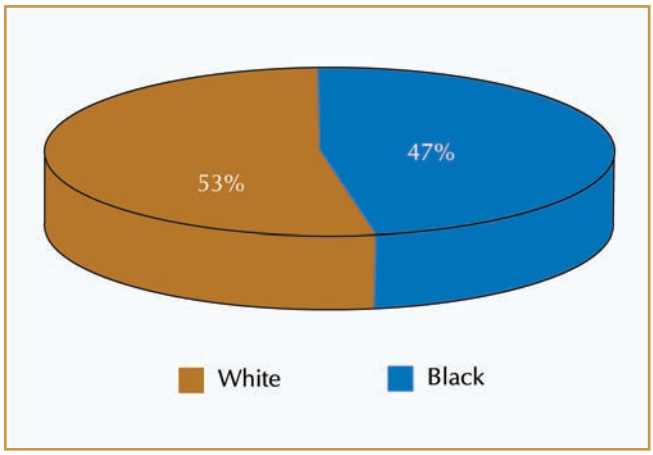
Investment in excellence and effective leadership culture

The continuation of the performance based strategy into 2005/06 demonstrated the WRC's commitment to transformation and upliftment of its staff members. This strategy placed special emphasis on enhancing performance of employees both as individuals and as individuals within the team (WRC) context. In 2005/06 this commitment to enhancing performance started off with all Directors attending a Leadership Impact Analysis followed with one-on-one coaching sessions with the Pacific Institute consultants. Towards the latter part of the year all new employees

Staff composition by gender



Staff composition by race



were taken through Performance Excellence courses.

The Pacific Institute conducted another survey in March 2006 to determine the gap between current reality and the vision of the organisation. The result indicated that the gap between the vision and current reality was kept at about 20% (as for the previous year), although certain patterns of organisational behaviour have been changed.

TRAINING COURSES

Participation in courses on financial management, PC software, project management, business excellence and skills development was also supported. In addition, four staff members continued to be engaged in studies, supported by the WRC, for a variety of degrees and diplomas.

Formal studies	No of Individuals	Status
B. Tech. Public Relations	1	Ongoing
Diploma Public Relations	1	Ongoing
B. Tech. Labour Law	1	Ongoing
Ph.D. (R&D management)	1	Ongoing

LOOKING AHEAD

Building a sound foundation for a relevant and effective water-centred knowledge hub was the focus of the WRC activities over the past four years during which the WRC introduced many new external and internal policies, procedures and practices which were carried out, based on its established strategic framework and implementation plan. The WRC developed key performance areas and indicators which served as markers for its progress along the set strategic road and successfully attained the set goals and objectives, accordingly. The WRC strengthened South Africa's capability, competencies and capacity regarding water-centred knowledge and linked South Africa with both the African continent and globally in this regard.

The current financial year is the 5th and final year served by the current core strategy. During 2006/07 the WRC aims to build on the strong foundation that it has established during recent years. The WRC also plans to undertake an external review with the aim of receiving feedback regarding its relevance and efficacy as South Africa's water knowledge hub. The findings emanating from this review as well as stakeholders' views and needs will form the basis for a new five-year core strategy. This, in turn, will serve as a strategic framework for the period 2007/08 – 2011/12. Another key challenge facing the WRC is the pending amendment of the Water Research Act. This requires an all-embracing effort in building the organisation's profile, its public image and key stakeholders' positive perceptions regarding its relevance and effectiveness.

Water quantity and quality are critical to South Africa's long-term sustainability. Many decades of research and development have provided the basis for the development of policies and strategies that allow for the sustainability of our water resources. This emphasises not only the important role that water-centred knowledge has played in the past, but its growing importance in providing the country with knowledge which will allow it to successfully deal with the many emerging challenges that face our limited water resources in future years. The WRC, which has proven to be a credible and reputable knowledge broker, plays a crucial role in this regard. The WRC leads and coordinates research which, in turn, creates the knowledge that allows us to manage water quantity and quality judiciously and, in so doing, to achieve sustainability. As in the past, the broad spectrum (natural and social sciences) of research planned by the WRC for the next five years should create knowledge which, if well utilised, will ensure that South Africa's limited water resources are not compromised in any way. The WRC will continue to provide the country with a knowledge framework that will ensure that the country has safe drinking water and sanitation for all; a sufficient quantity of water for various allocated uses, promoting a healthy environment and economic growth; sustainable infrastructure for water and sanitation services; effective water management policies; and systems and adaptive and mitigating strategies to face the challenges of climate change.

BOARD APPROVAL

The Annual Financial Statements of the WRC and wholly-owned company for the year ended 31 March 2006, which appear on pages 72 to 95 of this report, were approved by the WRC Board at its meeting held on 29 May 2006. The Board is of the opinion that the WRC is financially sound and operates as a going concern.

These statements are signed on behalf of the WRC by:

Dr SJ Khoza
WRC Board Chairperson

Dr R Kfir
WRC Chief Executive Officer

Report of the Auditor-General

Report of the Auditor-General to Parliament on the Financial Statements of the Water Research Commission for the Year ended 31 March 2006

1. AUDIT ASSIGNMENT

The financial statements as set out on pages 72 to 95, for the year ended 31 March 2006, have been audited in terms of section 188 of the Constitution of the Republic of South Africa, 1996, read with sections 4 and 20 of the Public Audit Act, 2004 (Act No. 25 of 2004) and Water Research Act No. 34 of 1971. These financial statements, the maintenance of effective control measures and compliance with relevant laws and regulations are the responsibility of the accounting authority. My responsibility is to express an opinion on these financial statements, based on the audit.

2. SCOPE

The audit was conducted in accordance with the International Standards on Auditing read with General Notice 544 of 2006, issued in *Government Gazette* no. 28723 of 10 April 2006 and General Notice 808 of 2006, issued in *Government Gazette* no. 28954 of 23 June 2006. Those standards require that I plan and perform the audit to obtain reasonable assurance that the financial statements are free of material misstatement.

AN AUDIT INCLUDES:

- examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements
- assessing the accounting principles used and significant estimates made by management
- evaluating the overall financial statement presentation.

I believe that the audit provides a reasonable basis for my opinion.

3. BASIS OF ACCOUNTING

The entity's policy is to prepare financial statements on the basis of accounting determined by the National Treasury, as described in note 1 to the financial statements.

4. AUDIT OPINION

In my opinion, the financial statements present fairly, in all material respects, the financial position of the Water Research Commission at 31 March 2006 and the results of its operations and its cash flows for the year then ended, in accordance with the basis of accounting determined by the National Treasury of South Africa, as described in note 1 to the financial statements, and in the manner required by Public Finance Management Act, 1999 (Act No. 1 of 1999).

5. APPRECIATION

The assistance rendered by the staff of the Water Research Commission during the audit is sincerely appreciated.

N Manik

N Manik for Auditor-General
Pretoria • 21 July 2006

AUDITOR-GENERAL

STATEMENT OF FINANCIAL POSITION

Water Research Commission and Wholly Owned Company
Statement of financial position as at 31 March 2006

	NOTES	Water Research Commission 2006 R	Water Research Commission 2005 R	Consolidated 2006 R	Consolidated 2005 R
ASSETS					
Non-current assets		43,858,361	35,836,505	46,036,818	38,121,014
Property, plant and equipment	2	3,744,208	2,315,291	13,191,668	9,613,033
Interest in subsidiary	3	755,939	755,939	-	-
Other investments	4	32,845,150	28,507,981	32,845,150	28,507,981
Loans receivable	5	6,513,065	4,257,294	-	-
Current assets		91,204,987	105,452,326	91,784,347	105,716,803
Trade and other receivables	6	50,578,701	39,316,574	50,639,306	39,364,110
Cash and cash equivalents	18	40,626,286	66,135,752	41,145,042	66,352,693
Total assets		135,063,349	141,288,831	137,821,165	143,837,817
NET ASSETS AND LIABILITIES					
Capital and reserves		91,137,053	101,391,133	93,709,447	103,635,838
Accumulated surplus		85,731,626	100,322,876	88,304,020	102,567,581
Other reserves		5,405,427	1,068,258	5,405,427	1,068,258
Non-current liabilities		23,508,978	18,070,372	23,508,977	18,070,372
Provisions	7	2,236,004	2,084,286	2,236,004	2,084,286
Benefit plans	8	20,221,905	15,335,990	20,221,905	15,335,990
Capitalised lease payments	9	1,051,068	650,096	1,051,068	650,096
Current liabilities					
Trade and other payables	10	20,417,318	21,827,326	20,602,741	22,131,607
Total net assets and liabilities		135,063,349	141,288,831	137,821,165	143,837,817

STATEMENT OF FINANCIAL PERFORMANCE

Water Research Commission and Wholly Owned Company
Statement of financial performance for the year ended 31 March 2006

		Water Research Commission		Consolidated	
	NOTES	2006	2005	2006	2005
		R	R	R	R
INCOME		103,168,514	86,603,486	102,493,102	85,763,147
Water research levies		88,407,804	76,548,110	88,407,804	76,548,110
Income on investment	11	2,895,953	4,268,764	2,143,429	3,655,817
Leverage income		8,587,695	2,740,053	8,587,695	2,740,053
Other interest		1,799,920	922,652	1,800,242	922,886
Other income		1,361,061	1,725,436	1,497,851	1,777,810
Valuation of investments		-	156,984	-	156,984
Surplus/(Deficit) on sale of fixed assets		20,990	(4,314)	20,990	(4,314)
Provision for project creditors		35,091	(182,321)	35,091	(182,321)
Project creditors written off		-	148,121	-	148,121
Reduction in loan impairment		60,000	280,000	-	-
EXPENDITURE		117,759,764	79,071,830	116,783,052	78,588,136
Administrative services		5,430,249	3,881,496	5,479,794	3,937,301
Audit fees - external		174,286	142,858	180,905	150,832
Audit fees - internal		319,186	338,656	319,186	338,656
Depreciation of property, plant & equipment		611,839	376,970	611,839	376,969
Directors' emoluments	12	5,042,572	4,865,741	5,042,572	4,865,741
Finance charges capitalised leases		200,180	93,681	200,180	93,681
Municipal services and security		-	-	423,247	408,169
Impairment of trade receivables		2,408,354	7,909,198	2,412,886	7,909,198
Rental and maintenance		2,702,826	1,631,674	1,223,940	636,950
Research projects and support	1.3, 6, 13	72,106,095	42,844,280	72,106,095	42,844,280
Staff expenditure	14	23,579,796	12,404,498	23,598,028	12,443,582
Technology transfer	15	5,184,380	4,582,778	5,184,380	4,582,778
Surplus/(deficit) for the year before taxation		(14,591,249)	7,531,656	(14,289,950)	7,175,009
Taxation (Overprovision)	16	-	-	26,390	-
Surplus/(deficit) for the year		(14,591,249)	7,531,656	(14,263,560)	7,175,009

STATEMENT OF CHANGES IN NET ASSETS

Water Research Commission and Wholly Owned Company
Statement of changes in net assets for the year ended 31 March 2006

	Water Research Commission		Consolidated	
	OTHER RESERVES	ACCUMULATED FUND SURPLUS R	OTHER RESERVES	ACCUMULATED SURPLUS R
Balance at 31 March 2004	-	95,797,807	-	93,819,749
Fair value of available-for-sale financial assets	(1,425,513)	1,425,513	(1,425,513)	1,425,513
IFRS adjustments:				
Depreciation	-	(15,913)	-	(15,913)
Interest on leases	-	(7,713)	-	(7,713)
Lease expenses	-	19,746	-	19,746
Reduction of loan to subsidiary	-	(4,428,221)	-	-
Amortisation on consolidation adjustment	-	-	-	151,189
Restated balance 1 April 2004	(1,425,513)	92,791,219	(1,425,513)	95,392,571
Surplus for the year	-	7,531,656	-	7,175,009
Fair value of available-for-sale financial assets	2,493,771	-	2,493,771	-
Balance at 31 March 2005	1,068,257	100,322,876	1,068,257	102,567,581
Surplus/(deficit) for the year	-	(14,591,249)	-	(14,263,560)
Fair value of available-for-sale financial assets	4,337,169	-	4,337,169	-
Balance at 31 March 2006	5,405,427	85,731,626	5,405,427	88,304,020

CASH FLOW STATEMENT

Water Research Commission and Wholly Owned Company
Cash flow statement for the year ended 31 March 2006

	NOTES	Water Research Commission 2006 R	Water Research Commission 2005 R	Consolidated 2006 R	Consolidated 2005 R
Net cash flow from operating activities		(21,634,903)	2,236,317	(21,439,137)	1,978,016
Cash receipts		87,189,523	77,739,500	87,253,246	77,597,719
Cash payments		(113,520,300)	(80,694,598)	(112,662,444)	(80,198,405)
Net cash generated by/(outflow from) operating activities	17	(26,330,776)	(2,955,099)	(25,382,809)	(2,600,687)
Interest received		4,695,873	5,191,416	3,943,672	4,578,703
Net cash (outflow)/inflow from investing activities		(3,874,562)	(1,350,053)	(3,768,513)	(1,226,825)
Purchase of fixed assets		(2,040,755)	(1,493,262)	(4,190,476)	(1,493,262)
Proceeds from sale of fixed assets		20,991	16,880	20,991	16,881
Impairment adjustment on loan		-	-	-	(400,540)
Lease financing		400,972	650,096	400,972	650,096
Increase in investment in subsidiary		(2,255,770)	(523,767)	-	-
Net increase/(decrease) in cash and cash equivalents		(25,509,466)	886,264	(25,207,650)	751,191
Cash and cash equivalents at the beginning of the year		66,135,752	65,249,488	66,352,693	65,601,502
Cash and cash equivalents at the end of the year	18	40,626,286	66,135,752	41,145,042	66,352,693

NOTES

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

1 Accounting policies

1.1 Basis of preparation

The financial statements have been prepared in accordance with the South African Statements of Generally Accepted Accounting Practices (GAAP) including any interpretations of such Statements issued by the Accounting Practices Board, with the prescribed Standards of Generally Recognised Accounting Practices (GRAP) issued by the Accounting Standards Board replacing the equivalent GAAP Statement as follows:

Standard of GRAP	Replaced statement of GAAP
GRAP 1: Presentation of financial statements	AC101: Presentation of financial statements
GRAP 2: Cash flow statements	AC118: Cash flow statements
GRAP 3: Accounting policies, changes in accounting estimates and errors	AC103: Accounting policies, changes in accounting estimates and errors

The recognition and measurement principles in the GRAP and GAAP Statements do not differ or result in material differences in items presented and disclosed in the financial statements. The implementation of GRAP 1, 2 & 3 has resulted in the following significant changes in the presentation of the financial statements:

a. Terminology differences:

Standard of GRAP	Replaced statement of GAAP
Statement of financial performance	Income statement
Statement of financial position	Balance sheet
Statement of changes in net assets	Statement of changes in equity
Net assets	Equity
Surplus/deficit for the period	Profit/loss for the period
Accumulated surplus/deficit	Retained earnings
Contributions from owners	Share capital
Distributions to owners	Dividends
Reporting date	Balance sheet date

b. The cash flow statement can only be prepared in accordance with the direct method.
c. Specific information such as:
   (i) receivables from non-exchange transactions, including taxes and transfers;
   (ii) taxes and transfers payable;
   (iii) trade and other payables from non-exchange transactions; must be presented separately on the statement of financial position
d. The amount and nature of any restrictions on cash balances is required to be disclosed.

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

Paragraph 11 - 15 of GRAP 1 has not been implemented as the budget reporting standard is in the process of being developed by the international and local standard setters. Although the inclusion of budget information would enhance the usefulness of the financial statements, non-disclosure will not affect fair presentation.

1.2 Property, plant and equipment

Land and buildings are not depreciated. Depreciation on office equipment (20%), office furniture (10%), and computer equipment (33.33%) is calculated annually on the straight-line method at the rates indicated. Where the expected life of an asset deviates from the life expectancy as calculated using the above percentages, depreciation is adjusted accordingly. Motor vehicles are depreciated on a pro rata basis calculated on the basis of kilometres travelled annually as a portion of the expected useful life of the vehicle. The rates are appropriate to reduce each asset to its estimated residual value over the period of its useful life.

Computer software that is in the process of being developed is carried at capitalised cost. Depreciation of developed computer software commences when the software is ready for intended use.

1.3 Research projects and research support services

Payments made by the Water Research Commission are accounted for as advances. In cases where audited statements are not received from research grantees before preparation of the year end financial statements, the payments are accounted for as expenditure. It is the policy of the Water Research Commission that its management may allow overspending on a project budget in a given year, only if acceptable reasons are given, provided the total contract amount is not exceeded. The total amount paid in respect of research during the year under review are therefore reflected either as advances or as expenditure (refer to note 6) and expenditure (refer to note 13).

1.4 Investments

1.4.1 Investments in subsidiaries are recognised at cost less accumulated impairment losses.

1.4.2 The Water Research Commission classifies its investments in equity securities into the category of available-for-sale. The classification is dependent on the purpose for which the investments were acquired.

NOTES (continued)

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

Purchases and sales of investments are recognised on the trade date, which is the date that the Water Research Commission commits to purchase or sell the asset. Cost ofpurchase includes transaction costs. Available-for-sale investments are subsequently carried at fair value. Realised and unrealised gains and losses arising from changes in the fair value are included in the statement of changes in net assets in the period in which they arise.

1.5 Intangible assets

No value is attributed to internally developed patents.
Costs incurred on patents, whether purchased or created by the Water Research Commission, are charged to the statement of financial performance during the period in which they are incurred.

1.6 Consolidation principles

The consolidated financial statements incorporate the financial statements of the Water Research Commission and its wholly owned subsidiary. The results of the subsidiary are included from the effective date of acquisition.

1.7 Post-employment pension benefit costs

The Water Research Commission makes provision for post-employment benefits for the eligible employees and retirees. The Water Research Commission operates two defined contribution plans, the assets of which are held in separate trustee-administered funds.

The pension and provident funds are funded by payments from employees and the Water Research Commission, taking into account the recommendations of independent qualified actuaries. For the active members this does not represent a liability for the employer. However, for the retirees, although no contributions are payable by the members or the employer, adverse market conditions could result in a liability for the employer. For the retirees the related current service cost, and where applicable, past service cost are determined by using the projected unit credit method. Actuarial gains or losses are recognised immediately in the Statement of Financial Performance (refer to note 8)

1.8 Post-employment medical aid benefit costs

The Water Research Commission operates a defined medical aid benefit plan. No assets are held to fund the benefit plan. For defined plans, the defined obligation, the related current service costs, and where applicable, past service costs are determined by using the projected unit credit method. Vested service costs and actuarial gains and losses are recognised immediately in the Statement of Financial Performance.

1.9 Revenue

The Department of Water Affairs and Forestry, Rand Water and Umgeni

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

Water Boards collect levy income. The rate of the levy is approved by the Minister of Water Affairs and Forestry on an annual basis. Revenue recognition of levy income represents amounts received and receivable from the equity securities into the category of available-for-sale. The classification is dependent on the purpose for which levies by way of an impairment charge.

1.10 Leverage income

The WRC receives leverage income from various sources which is provided for research. This revenue is recognised in the accounting period in which the research expenditure is incurred.

1.10 Financial instruments

Financial instruments carried on the statement of financial position include cash and bank balances, investments, receivables, payables, loans and liabilities.

Cash and bank balances are held at estimated fair values.

Investments in equity instruments are classified as available for sale and are carried at fair value, with fair value adjustments being accounted for directly in the statement of changes in net assets. To the extent that such fair value adjustments are realised, they are recognised in the statement of financial performance.

Loans and receivables are initially measured at fair value and subsequently at amortised cost using the effective interest rate method. Loans are tested annually at year end for impairment. If there are indications of impairment, the impairment loss is recognised in the statement of financial performance

1.11 Cash flows

For the purpose of the cash flow statement, cash includes cash on hand, deposits held on call with Corporation for Public Deposits and bank balances.

1.12 Foreign currencies

Transactions in currencies other than South African rands are recorded at the rates of exchange prevailing on the dates of the transactions. At each reporting date, monetary assets and liabilities that are denominated in foreign currencies are translated at the rates prevailing on the reporting date. Income and expense items are translated at spot rate. Exchange differences arising on monetary assets and monetary liabilities, are set off against each other.

1.13 Leasing

Leases are classified as finance leases whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee. All other leases are classified as operating leases.

NOTES (continued)

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

	Water Research Commission		Consolidated	
	2006	2005	2006	2005
	R	R	R	R
2 Property, plant and equipment				
2.1 Fixed property				
Carrying value: End of year	-	-	9,447,460	7,297,742
- Cost	-	-	615,855	615,855
- Improvements	-	-	8,075,667	5,925,948
- Revaluation on consolidation	-	-	755,938	755,939
Fixed property consists of Erf 706 Rietfontein, Pretoria, Gauteng. The property has been valued at R11m. by Reinertsen International Valuation Services, an independent valuer, on 12 December 2005.				
2.2 Motor vehicles				
Carrying value: Beginning of year	33,649	36,942	33,649	36,942
- Cost	68,975	68,975	68,975	68,975
- Accumulated depreciation	(35,326)	(32,033)	35,326)	(32,033)
MOVEMENTS during year	(3,118)	(3,293)	(3,118)	(3,293)
- Disposals	-	-	-	-
- Depreciation	(3,118)	(3,293)	(3,118)	(3,293)
Carrying value: End of year	30,531	33,649	30,531	33,649
- Cost	68,975	68,975	68,975	68,975
- Accumulated depreciation	(38,444)	(35,326)	(38,444)	(35,326)
2.3 Office furniture				
Carrying value: Beginning of year	776,770	866,632	776,770	866,632
- Cost	1,198,371	1,265,250	1,198,371	1,265,250
- Accumulated depreciation	(421,601)	(398,618)	(421,601)	(398,618)
Movements during year	(23,945)	(89,862)	(23,945)	(69,322)
- Acquisitions	76,846	35,237	76,846	35,237
- Disposals and write offs	(12,927)	(20,540)	(12,928)	-
- Depreciation	(87,864)	(104,559)	(87,864)	(104,559)
Carrying value: End of year	752,825	776,770	752,825	776,770
- Cost	1,262,290	1,198,371	1,262,289	1,198,371
- Accumulated depreciation	(509,465)	(421,601)	(509,465)	(421,601)
2.4 Office equipment				
Carrying value: Beginning of year	382,277	69,737	382,277	69,737
- Cost	1,282,244	923,737	1,282,244	923,737
- Accumulated depreciation	(899,967)	(854,000)	(899,967)	(854,000)
Movements during year	7,540	312,540	7,540	312,540
- Acquisitions	101,597	372,638	101,597	372,638
- Disposals and write offs	(641,321)	(654)	(641,321)	(654)
- Accumulated depreciation on write offs	595,000	-	595,000	-
- Depreciation	(47,736)	(59,444)	(47,736)	(59,444)

NOTES (continued)

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

	Water Research Commission		Consolidated	
	2006	2005	2006	2005
	R	R	R	R
2.4 Office equipment (continued)				
Carrying value: End of year	389,817	382,277	389,817	382,277
- Cost	742,520	1,282,244	742,520	1,282,244
- Accumulated depreciation	(352,703)	(899,967)	(352,703)	(899,967)
2.5 Computers				
Carrying value: Beginning of year	919,015	61,248	919,015	61,248
- Cost	1,498,208	414,854	1,498,208	414,854
- Accumulated depreciation	(579,193)	(353,606)	(579,193)	(353,606)
Adjustment for IFRS previous year	-	175,043	-	175,043
- Acquisitions	-	190,956	-	190,956
- Depreciation	-	(15,913)	-	(15,913)
Adjusted carrying value 1 April 2004	-	236,291	-	236,291
Movements during year	760,570	682,724	760,570	682,724
- Acquisitions	1,174,749	110,073	1,174,749	110,073
- Acquisitions-Adjustment for IFRS	-	782,325	-	782,325
- Disposals and write offs	(70,072)	-	(70,072)	-
- Accumulated depreciation on write offs	70,072	-	70,072	-
- Depreciation	(414,179)	(57,892)	(414,179)	(57,892)
- Depreciation- Adjustment for IFRS	-	(151,782)	-	(151,782)
Carrying value: End of year	1,679,585	919,015	1,679,585	919,015
- Cost	2,602,885	1,498,208	2,602,885	1,498,208
- Accumulated depreciation	(923,300)	(579,193)	(923,300)	(579,193)
2.6 Computer software				
Carrying value: Beginning of year	203,580	-	203,580	-
- Cost	203,580	-	203,580	-
- Accumulated depreciation	-	-	-	-
Movements during year	687,870	203,580	687,870	203,580
- Acquisitions	687,870	203,580	687,870	203,580
- Disposals	-	-	-	-
- Depreciation	-	-	-	-
Carrying value: End of year	891,450	203,580	891,450	203,580
- Cost	891,450	203,580	891,450	203,580
- Accumulated depreciation	-	-	-	-
Total property, plant and equipment	3,744,208	2,315,291	13,191,668	9,613,033

The carrying amount of computers includes an amount of R 1,571,212 (2005 - R 805,585) in respect of assets held under finance leases by the Water Research Commission.

NOTES (continued)

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

		Water Research Commission		Consolidated	
		2006	2005	2006	2005
		R	R	R	R
3	**Interest in subsidiary**				
3.1	**Shares at cost**	755,939	755,939	-	-
		755,939	755,939	-	-

3.2 The following information relates to the Water Research Commission's interest in its subsidiary: Erf 706 Rietfontein (Proprietary) Limited is incorporated in South Africa. The total issued ordinary share capital of the company is held by the Water Research Commission and amounts to R1.

4	**Other investments**				
	Old Mutual	29,023,466	25,588,822	29,023,466	25,588,822
	Momentum Wealth	3,821,684	2,919,159	3,821,684	2,919,159
		32,845,150	28,507,981	32,845,150	28,507,981

National Treasury has granted exemption from the requirement to invest surplus cash with the Corporation for Public Deposits in terms of Treasury regulation 31.3.3. National Treasury has also confirmed that the above investments are in compliance with Treasury regulation 31.3.5.

5	**Loans and receivables**				
	Loan to subsidiary	10,661,286	8,685,515	-	-
	Less: Impairment	(4,148,221)	(4,428,221)	-	-
		6,513,065	4,257,294	-	-
6	**Trade and other receivables**				
	Water research levies	30,702,819	28,130,756	30,702,819	28,130,756
	Project advances (notes 1.3 and 13)	39,780,679	28,700,541	39,780,679	28,700,541
	Personal computer loans	24,876	4,338	24,876	4,338
	Other	228,966	244,972	289,570	292,507
		70,737,340	57,080,608	70,797,944	57,128,143
	Impairment of trade receivables	(20,158,638)	(17,764,033)	(20,158,638)	(17,764,032)
	Levies	(18,324,411)	(15,182,465)	(18,324,411)	(15,182,465)
	Projects	(1,834,227)	(2,581,568)	(1,834,227)	(2,581,568)
		50,578,701	39,316,574	50,639,306	39,364,110

Project debtors have been reviewed by management, and those which are not considered to be recoverable have been impaired.

Receivables are held at amortised cost using the effective interest rate method. The impact of discontinuing receivables on this basis was a decrease of receivables of R620,679 (2005: R681,989). The WRC has reviewed arrear levies, and has considered that on the basis of all available information, that the arrear levies are unlikely to be recovered. They have therefore been impaired in full.

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

7 Provisions

7.1 Provisions were made for the following:

	Water Research Commission			Consolidated		
	Balance at beginning of year	New provisions	Balance at end of year	Balance at beginning of year	New provisions	Balance at end of year
2006						
Leave pay	2,084,286	151,718	2,236,004	2,084,286	151,718	2,236,004
	2,084,286	151,718	2,236,004	2,084,286	151,718	2,236,004
2005						
Leave pay	1,516,030	568,256	2,084,286	1,516,030	568,256	2,084,286
	1,516,030	568,256	2,084,286	1,516,030	568,256	2,084,286

The leave pay provision represents the potential liability in respect of leave outstanding.

NOTES (continued)

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

8 Benefit plans

Pension and provident schemes

The Water Research Commission has pension and provident schemes covering all employees. Until 31 March 2005 all eligible employees were members of the defined benefit funds administered by ABSA Consultants & Actuaries. As at 1 April 2005 both the pension fund and provident fund converted from a defined benefit fund to a defined contribution fund, for current employees. The effect of this is that the Water Research Commission has no liability other than the defined contributions payable to the fund on a monthly basis. No liability can arise due to adverse market conditions. However, all pensioners remain entitled to their benefits in terms of the old dispensation. (Refer to note 1.7)

The assets of these funds are held in administered trust funds separately from the Water Research Commission's assets. Fund assets primarily consist of investments in Momentum Group Life Limited. The funds are governed by the Pension Funds Act of 1956.

The funds are actuarially valued for financial reporting purposes at annual intervals to determine the liability for the Water Research Commission. The funds were last actuarially valued on 31 March 2006. At that time all funds were certified by the reporting actuary as being in a sound financial position, subject to the continuation of their current contribution rates. In arriving at his conclusion, the actuary took into account the following assumptions at balance sheet date (expressed as weighted averages):

	Pension fund	Provident fund
General inflation rate	4.6%	4.6%
Valuation rate	7.4%	7.4%
Expected investment return	8.4%	8.4%
Salary inflation	5.6%	5.6%

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

Medical aid scheme

The Water Research Commission has made provision for a medical aid benefit scheme covering both active and retired employees. All eligible employees are members of the defined benefit scheme. The funds are governed by the Medical Schemes Act, 1998 (Act No. 131 of 1998).

The defined benefit schemes administered are valued actuarially at an interval of not more than three years using the projected unit credit method. No plan assets are held by the Water Research Commission to fund the obligation. The scheme was last actuarially valued on 31 March 2006. At that time the reporting actuary certified that the vested liability for continuation members will fluctuate depending on the mortality rate of current continuation members and the rate of new retirements over the next few years. The active member liability will be affected by whether the actual withdrawals match those expected and the rate of medical aid inflation.

In arriving at his conclusion, the actuary took into account the following assumptions at balance sheet date (expressed as weighted averages):

	2006	**2005**
Investment returns	7.5%	9.5%
Medical aid inflation rate	6.5%	7.5%
Withdrawal rates	Medium	Medium
Percentage married on retirement	75.0%	90.0%
Retirement age	65	65
Early retirement age	55	55

NOTES (continued)

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

		Water Research Commission		Consolidated	
		2006	2005	2006	2005
		R	R	R	R
8	**Benefit plans (continued)**				
	Pension fund benefit plan				
	Present value of plan obligation	4,587,000	24,678,000	4,587,000	24,678,000
	Fair value placed on assets	(4,152,000)	(24,250,000)	(4,152,000)	(24,250,000)
		435,000	428,000	435,000	428,000
	Obligation at beginning of the year	428,000	1,203,000	428,000	1,203,000
	Expensed in the income statement	7,000	(775,000)	7,000	(775,000)
	Prior years service costs	-	-	-	-
	Current service costs	(429,000)	1,589,000	(429,000)	1,589,000
	Interest costs	345,000	1,821,000	345,000	1,821,000
	Expected return on assets	(315,000)	(1,809,000)	(315,000)	(1,809,000)
	Actuarial gains	406,000	(611,000)	406,000	(611,000)
	Contributions to the fund	-	(1,765,000)	-	(1,765,000)
		435,000	428,000	435,000	428,000
	Provident fund benefit plan				
	Present value of plan obligation	2,279,000	5,941,000	2,279,000	5,941,000
	Fair value placed on assets	(2,058,000)	(5,941,000)	(2,058,000)	(5,941,000)
		221,000	-	221,000	-
	Obligation at beginning of the year	-	-	-	-
	Expensed in the income statement	221,000	48,000	221,000	48,000
	Prior years service costs	4,300,000	(2,216,000)	4,300,000	(2,216,000)
	Current service costs	(4,300,000)	35,000	(4,300,000)	35,000
	Interest costs	172,000	487,000	172,000	487,000
	Expected return on assets	(157,000)	(694,000)	(157,000)	(694,000)
	Actuarial gains	206,000	(547,000)	206,000	(547,000)
	Unrecognised asset	-	2,983,000	-	2,983,000
	Contributions to the fund	-	(48,000)	-	(48,000)
		221,000	-	221,000	-

NOTES (continued)

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

	Water Research Commission		Consolidated	
	2006	2005	2006	2005
	R	R	R	R
Medical aid scheme				
Present value of plan obligation	19,565,905	14,907,990	19,565,905	14,907,990
Fair value placed on assets	-	-	-	-
	19,565,905	14,907,990	19,565,905	14,907,990
Obligation at beginning of the year	14,907,990	13,640,584	14,907,990	13,640,584
Expensed in the income statement	1,918,201	2,079,860	1,918,201	2,079,860
Contributions to the fund	(710,099)	(676,830)	(710,099)	(676,830)
Actuarial gains	3,449,813	(135,624)	3,449,813	-
	19,565,905	14,907,990	19,565,905	15,043,614
Benefit plans				
Pension fund benefit plan	435,000	428,000	435,000	428,000
Provident fund benefit plan	221,000	-	221,000	-
Medical aid scheme	19,565,905	14,907,990	19,565,905	14,907,990
	20,221,905	15,335,990	20,221,905	15,335,990

NOTES (continued)

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

		Water Research Commission		Consolidated	
		2006	2005	2006	2005
		R	R	R	R
9	**Capitalised lease payments**				
	Total amount outstanding	1,680,156	847,925	1,680,156	847,925
	Less: Payable within one year	(629,088)	(197,829)	(629,088)	(197,829)
		1,051,068	650,096	1,051,068	650,096
10	**Trade and other payables**				
	Amounts due to Research Contractors	7,762,544	14,466,720	7,762,544	14,466,719
	Other	11,972,769	2,542,589	12,176,366	2,944,016
	Outstanding cheques	52,917	114,450	52,917	114,450
	Value-added tax	-	4,505,738	(18,174)	4,408,593
	Capitalised lease payments due within one year	629,088	197,829	629,088	197,829
	Total payables	20,417,318	21,827,326	20,602,741	22,131,607
11	**Income on investments**				
	Interest on loan to subsidiary	752,524	612,947	-	-
	Interest on other investments	178,246	228,912	178,246	228,912
	Interest on deposits and cash investments	1,965,183	3,426,905	1,965,183	3,426,905
		2,895,953	4,268,764	2,143,429	3,655,817
12	**Disclosure of emoluments of all Board Members (Directors) in terms of section 28 of Treasury Regulations**				
12.1	**Total directors' emoluments**				
	Fees for services as Directors	235,966	175,839	235,966	175,839
	Basic salary	3,902,689	3,780,556	3,902,689	3,780,556
	Bonuses and performance payments	323,713	311,242	323,713	311,242
	Travel allowances	580,204	598,104	580,204	598,104
		5,042,572	4,865,741	5,042,572	4,865,741

NOTES (continued)

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

	Water Research Commission		Consolidated	
	2006	2005	2006	2005
	R	R	R	R
12.2 Executive directors				
Dr R Kfir - Chief Executive Officer	770,503	725,197	770,503	725,197
- Salary	623,711	582,932	623,711	582,932
- Bonuses and performance payments	66,788	62,261	66,788	62,261
- Travel allowances	80,004	80,004	80,004	80,004
Mr A Rampershad - Chief Financial Officer	591,792	553,615	591,792	553,615
- Salary	475,209	417,761	475,209	417,761
- Bonuses and performance payments	35,583	34,854	35,583	34,854
- Travel allowances	81,000	101,000	81,000	101,000
Dr GR Backeberg	592,316	561,396	592,316	561,396
- Salary	491,40	461,741	491,400	461,741
- Bonuses and performance payments	36,116	34,855	36,116	34,855
- Travel allowances	64,800	64,800	64,800	64,800
Mr JN Bhagwan	592,325	561,397	592,325	561,397
- Salary	466,209	468,942	466,209	468,942
- Bonuses and performance payments	36,116	34,855	36,116	34,855
- Travel allowances	90,000	57,600	90,000	57,600
Dr CG Green (Retired 30 November 2005)	436,721	611,889	436,721	611,889
- Salary	367,426	511,337	367,426	511,337
- Bonuses and performance payments	41,295	39,852	41,295	39,852
- Travel allowances	28,000	60,700	28,000	60,700
Ms E Karar (Appointed 1 March 2006)	46,525	-	46,525	-
- Salary	40,525	-	40,525	-
- Bonuses and performance payments	-	-	-	-
- Travel allowances	6,000	-	6,000	-
Dr SA Mitchell	592,316	561,396	592,316	561,396
- Salary	491,400	458,141	491,400	458,141
- Bonuses and performance payments	36,116	34,855	36,116	34,855
- Travel allowances	64,800	68,400	64,800	68,400
Dr IM Msibi	592,316	561,396	592,316	561,396
- Salary	480,600	450,941	480,600	450,941
- Bonuses and performance payments	36,116	34,855	36,116	34,855
- Travel allowances	75,600	75,600	75,600	75,600
Dr KC Pietersen	591,792	553,616	591,792	553,616
- Salary	466,209	428,761	466,209	428,761
- Bonuses and performance payments	35,583	34,855	35,583	34,855
- Travel allowances	90,000	90,000	90,000	90,000

NOTES (continued)

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

		Water Research Commission		Consolidated	
		2006	2005	2006	2005
		R	R	R	R
12.3	**Non-Executive directors**	235,966	175,839	235,966	175,839
	Prof HC Kasan - Chairperson (Resigned 31 May 2005) - Salary	25,122	144,339	25,122	144,339
	Dr SJ Khoza - Chairperson (Appointed 1 July 2005) - Salary	127,344	-	127,344	-
	Mr RJC Nay - Fees for services	3,000	15,000	3,000	15,000
	Ms MM Matsabu - Fees for services	10,000	12,000	10,000	12,000
	Prof CG Palmer - Fees for services	-	4,500	-	4,500
	Prof F Otieno - Fees for services	8,000	-	8,000	-
	Ms VGM Mkaza - Fees for services	15,500	-	15,500	-
	Prof. EM Stack - Fees for services	11,000	-	11,000	-
	Mr M Sirenya - Fees for services	17,000	-	17,000	-
	Mr JN Campbell - Fees for services	5,500	-	5,500	-
	Prof JA Adams - Fees for services	13,500	-	13,500	-
13	**Research projects and support**				
	Subsistence and travel	2,435,703	1,841,751	2,435,703	1,841,751
	Research projects (note 1.3 and 6)	62,250,366	36,770,935	62,250,366	36,770,935
	Research consultancies	7,420,026	4,231,594	7,420,026	4,231,594
		72,106,095	42,844,280	72,106,095	42,844,280

NOTES (continued)

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

	Water Research Commission		Consolidated	
	2006	2005	2006	2005
	R	R	R	R
14 Staff expenditure				
Human resources	14,242,164	11,343,837	14,260,396	11,382,920
Leave pay provision	151,718	568,255	151,718	568,255
	14,393,882	11,912,092	14,412,114	11,951,176
Pension fund conversion	4,300,000	-	4,300,000	-
Pension benefit costs valuation	7,000	(775,000)	7,000	(775,000)
Provident benefit costs valuation	221,000	-	221,000	-
Medical benefit costs valuation	4,657,914	1,267,406	4,657,914	1,267,407
	23,579,796	12,404,498	23,598,028	12,443,582
15 Technology transfer				
Publications	3,901,878	3,822,684	3,901,878	3,822,684
Conferences	1,091,972	532,401	1,091,972	532,401
Maintenance of patents	190,531	227,692	190,531	227,692
	5,184,380	4,582,778	5,184,380	4,582,778
16 Taxation				
No provision was made for normal tax as the Water Research Commission is exempted from income tax in terms of Section 10(1)(c)A(i) of the Income Tax Act.	-	-	(26,390)	-
17 Reconciliation of net income with cash generated from operating activities				
Net income	(14,591,249)	7,531,656	(14,263,560)	7,175,009
Adjustments for:				
Profit on the sale of fixed asset	(20,990)	4,314	(20,990)	4,314
Depreciation	611,839	376,970	611,839	376,969
Provisions	151,718	568,256	151,718	568,256
Benefit plans	4,885,915	492,406	4,885,916	492,406
Valuation of investments	-	(156,984)	-	(156,984)
Interest received	(4,695,873)	(5,191,416)	(3,943,672)	(4,578,703)
Net income before changes in working capital	(13,658,640)	3,625,203	(12,578,748)	3,881,267
Changes in working capital	(12,672,136)	(6,580,301)	(12,804,061)	(6,481,954)
Decrease/(increase) in debtors	(11,262,128)	(3,519,900)	(11,275,194)	(3,434,054)
(Decrease)/increase in creditors	(1,410,008)	(3,060,401)	(1,528,865)	(3,047,900)
Net cash generated/(utilised) by operating activities	(26,330,776)	(2,955,099)	(25,382,809)	(2,600,687)

NOTES (continued)

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

	Water Research Commission		Consolidated	
	2006	2005	2006	2005
	R	R	R	R
18 Cash and cash equivalents				
Cash and bank balances	40,626,286	66,135,752	41,145,042	66,352,693
	40,626,286	66,135,752	41,145,042	66,352,693

19 Financial instruments

19.1 Credit risk

Accounts receivable

Accounts and other receivables are presented net of an allowance for impairment, which are estimated based on prior experience and the current environment. The credit risk with respect to accounts receivable in respect of water levies is limited due to their dispersion across different geographical areas in South Africa. Amounts reflected as advances to research organisations represent payments in respect of research in progress and constitute a very low level of risk.

Cash and bank

The credit risk in respect of cash resources is limited as the counter party is a high quality credit institution with a sound reputation.

19.2 Fair values

The carrying amounts of cash and short-term deposits and accounts payable and short-term liabilities approximates their fair values due to the short-term maturities of these assets and liabilities.

19.3 Investment risk management

Old Mutual and Momentum Wealth manage the investments of the Commission and have a sound reputation. The investment strategy is to increase long-term capital growth and return on the investment portfolio while maintaining a low level of risk within the portfolio.

19.4 Price risk

Due to the nature and extent of the Commission's investments, the Commission is not unduly exposed to price risks as investments are in unit trusts, cash and deposits which are classified in the category of available-for-sale.

19.5 Interest rate risk

Due to the nature and extent of the Commission's investments, the Commission is not unduly exposed to interest rate risks as at least 80% of the investments are held in unit trusts.

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

19.6 Other risks

Cash flow and liquidity risks of the Commission are minimal as the investments in units trusts are available within three working days. The Commission does not have any foreign accounts receivables, foreign accounts payable or derivative market instruments.

20 Related party transaction

20.1 Controlled entity

Erf 706 Rietfontein (Pty) Ltd is wholly owned by the Water Research Commission.

Transaction type	2006 R	2005 R
Interest received by WRC	(752,524)	(1,293,487)
Rent paid by WRC	1,353,536	913,248
Municipal expenses paid by WRC	180,066	181,495
Administration fees received by WRC	187,235	202,000

Related party transactions are eliminated on consolidation.

20.2 Directors

No transactions other than directors emoluments disclosed in note 11 were entered into with directors during the year.

21 Restatement of comparative figures

During 2006 the Water Research Commission restated certain items from the 2005 financial statements in order to ensure adherence to new IFRS statements. The following were reclassified in the financial statements of 2005:

- Other investments (Nedcor account now disclosed as cash and cash equivalents)
- Interest in subsidiary (Loan to subsidiary now separately disclosed as loans and receivables)
- The carrying value of fixed property on consolidation was adjusted with amounts previously disclosed as goodwill.

The adjustments had no effect on the opening balance of accumulated funds.

NOTES (CONTINUED)

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

22 Change in accounting policy

22.1 Investments in equity securities

During the financial year under review, the Water Research Commission changed its accounting policy with respect to investments in equity securities. Where realised and unrealised gains and losses arising from changes in fair value in these instruments were previously recognised in the income statement, they are now recognised as part of equity. This was done to comply with IAS 39 – Finacial Instruments Recognition and Measurement. The change in policy has been accounted for retrospectively and comparative figures have been appropriately restated. The effect of the change in accounting policy is as follows:

	Water Research Commission		Consolidated	
	2006	2005	2006	2005
	R	R	R	R
Valuation of investments	-	156,984	-	156,984
Decrease in profit	-	156,984	-	156,984

22.2 Capitalised lease payments

	Water Research Commission		Consolidated	
	2006	2005	2006	2005
	R	R	R	R
Amounts payable under finance leases:	2,098,351	1,248,598	2,098,351	1,248,598
Payable within one year	879,356	354,923	879,356	354,923
In the second to fifth years	1,218,995	893,675	1,218,995	893,675
Less: future finance charges	(418,195)	(400,673)	(418,195)	(400,673)
Present value of lease obligations	1,680,156	847,925	1,680,156	847,925
Less: Capital amount due for settlement within 12 months	(629,088)	(197,829)	(629,088)	(197,829)
Capital amount due for settlement after 12 months	1,051,068	650,096	1,051,068	650,096

It is the Water Research Commission's policy to lease certain of its fixed assets under finance leases. The average lease term is two to five years. For the year ended 31 March 2006, the average effective borrowing rate was 16,29 % (2005: 16,29%).

Interest rates are fixed at the contract date. All leases are on a fixed repayment basis. All lease obligations are denominated in Rands. The fair value of the lease obligations approximates their carrying amount.

Water Research Commission and Wholly Owned Company
Notes to the financial statements for the year ended 31 March 2006

22.3 Amortisation of trade receivables

During the financial year under review, the Water Research Commission changed its accounting policy with respect to discounting trade receivables. This is to comply with the requirements of IAS 39 – Financial Instruments Recognition and Measurement, which requires the present valuing of receivables and payables if the difference between invoice amount and discounted amount is material.

The impact has not been considered material for payables and therefore no adjustment has been processed for payables.

The impact on receivables was considered to be material, which necessitated a retrospective adjustment. The effect of the change in accounting policy on prior year financial statements is as follows:

	Water Research Commission 2005 R	Consolidated 2005 R
Decrease in trade receivables	(681,989)	(681,989)
Decrease in surplus	(681,989)	(681,989)
Decrease in Water Research Levies	(1,304,656)	(1,304,656)
Increase in other interest	622,667	622,667

22.4 Impairment of trade receivables

During the financial year under review, the Water Research Commission changed its accounting policy with respect to impairment of trade receivables. This is to comply with the requirements of IAS 39 – Financial Instruments Recognition and Measurement, which requires receivables to be reviewed on an individual basis to determine the amount of impairment.
On this basis, the WRC reviewed the impairment provision for the current and prior year to meet this requirement.
On this basis, it was considered that the full arrear levies were not considered to be recoverable.
The prior year impairment was therefore amended to reflect this requirement.
The effect of the change in accounting policy on prior year financial statements is as follows:

	Water Research Commission 2005 R	Consolidated 2005 R
Increase in impairment of trade receivables	5,880,246	5,880,246
Decrease in surplus	(5,880,246)	(5,880,246)
Increase in impairment of trade receivables	(5,880,246)	(5,880,246)

Report of the Auditor-General

Report of the Auditor-General on the financial Statements of ERF SEWE-NUL-SES Rietfontein (Pty) Ltd for the year ended 31 March 2006

1. AUDIT ASSIGNMENT

The financial statements as set out on pages 100 to 110, for the year ended 31 March 2006, have been audited in terms of section 188 of the Constitution of the Republic of South Africa, 1996, read with sections 4 and 20 of the Public Audit Act, 2004 (Act No. 25 of 2004) and section 55(b) of the Public Finance Management Act. These financial statements are the responsibility of the accounting officer. My responsibility is to express an opinion on these financial statements, based on the audit.

2. SCOPE

The audit was conducted in accordance with the International Standards on Auditing read with General Notice 544 of 2006, issued in *Government Gazette* no. 28723 dated 10 April 2006 and General Notice 808 of 2006, issued in *Government Gazette* no. 28954 dated 23 June 2006. Those standards require that I plan and perform the audit to obtain reasonable assurance that the financial statements are free of material misstatement.

An audit includes:

- examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements
- assessing the accounting principles used and significant estimates made by management
- evaluating the overall financial statement presentation.

I believe that the audit provides a reasonable basis for my opinion.

3. BASIS OF ACCOUNTING

The entity's policy is to prepare financial statements on the basis of accounting determined by the National Treasury, as described in note 1 to the financial statements.

4. AUDIT OPINION

In my opinion, the financial statements present fairly, in all material respects, the financial position of Erf Sewe-Nul-Ses Rietfontein (Pty) Ltd as at 31 March 2006 and the results of its operations and its cash flows for the year then ended, in accordance with South African Statements of Generally Accepted Accounting Practice and in the manner required by section 55(b) of The Public Finance Management Act.

5. APPRECIATION

The assistance rendered by the staff of Erf Sewe-Nul-Ses Rietfontein (Pty) Ltd during the audit is sincerely appreciated.

A. H. Muller for Auditor-General
Pretoria
31 July 2006

AUDITOR-GENERAL

ERF SEWE-NUL-SES RIETFONTEIN (PTY) LTD

APPROVAL OF FINANCIAL STATEMENTS

The Directors' Report and Financial Statements set out on pages 100 to 110 were approved by the Board of Directors and were signed on its behalf by:

Dr SJ Khoza
WRC Board Chairperson

Dr R Kfir
WRC Chief Executive Officer

GENERAL INFORMATION

Directors:
Prof HC Kasan (Resigned 31 May 2005)
Dr R Kfir
Dr GC Green (Resigned 30 November 2005)
Dr SJ Khoza (Appointed 1 July 2005)

Registered office:
301 Watko Building
491, 18th Avenue
Rietfontein
PRETORIA

Registration number:
1984/003566/07

Main business and purpose:
The main business of the company is to own the immovable property known as Erf 706 Rietfontein and in addition and supplementary to the aim of the Water Research Commission (WRC), to place the property at the disposal of the WRC as their main place of business.

Water Research Commission

Directors' Report

for the year ended 31 March 2006

GENERAL REVIEW

(a) To review the business and operations of the company for the above accounting period in general, the directors draw attention to the statement of financial position, statement of financial performace, statement of changes in net assets and cash flow statement attached, where the business of the company, the results and state of affairs are clearly reflected.

(b) The Fourth Schedule to the Companies Act, 1973, requires the Directors to report on any material facts or circumstances which occurred between the accounting date and the date of their report. No such material facts or circumstances occurred.

SPECIFIC MATTERS

(a) The main aim of the company is that of owning the immovable property known as Erf 706 Rietfontein, including all permanent improvements, and to use the property for the purpose of promoting the operations of the Water Research Commission.

(b) No shares were allotted or issued by the company for the year ending 31 March 2006.

(c) Improvements to the fixed property totaling R 2 149 719 (2005: R Nil) were made in this financial year and capitalised.

(d) No distributions to owners were paid or declared during the accounting period and we have no recommendation to make in respect of distributions to owners (2005: R Nil).

(e) The Directors and certain members of staff of the Water Research Commission, for whom an administration fee is paid to the Water Research Commission, managed the business of the company. No third person was involved in managing the company.

(f) The names of Directors are shown below with resignations and new appointments. The company's secretary is Mr D de Lange.

Prof HC Kasan
(Resigned 31 May 2005)
Dr R Kfir
Dr GC Green
(Resigned 30 November 2005)
Dr SJ Khoza
(Appointed 1 July 2005)

The company is wholly owned by the Water Research Commission.

STATEMENT OF FINANCIAL POSITION

Erf Sewe-Nul-Ses Rietfontein (Pty) Ltd
Statement of financial position as at 31 March 2006

	NOTES	2006 R	2005 R
ASSETS			
Non-current assets		8,691,522	6,541,803
Investment property	4	8,691,522	6,541,803
Current assets		597,531	361,621
Trade and other receivables	8.3	78,776	144,680
Cash and cash equivalents	8.3,10	518,755	216,941
Total assets		9,289,054	6,903,424
NET ASSETS AND LIABILITIES			
Capital and reserves		(3,030,543)	(2,584,055)
Contributions from owners	2	1	1
Accumulated deficit		(3,030,544)	(2,584,056)
Non-current liabilities			
Interest-bearing borrowings	3,8.1	12,115,999	9,086,055
Current liabilities		203,597	401,424
Trade and other payables	8.4	203,597	401,424
Total net assets and liabilities		9,289,054	6,903,424

Water Research Commission

STATEMENT OF FINANCIAL PERFORMANCE

Erf Sewe-Nul-Ses Rietfontein (Pty) Ltd

Statement of financial performance for the year ended 31 March 2006

	NOTES	2006 R	2005 R
Revenue	6	1,857,625	1,349,117
Interest received		323	234
Operating expenses		(744,128)	(813,037)
Surplus from operations		1,113,821	536,313
Finance costs		(1,586,698)	(1,293,487)
Deficit before taxation		(472,877)	(757,174)
Taxation (Overprovision)	5	26,390	-
Net deficit for the year		(446,488)	(757,174)

STATEMENT OF CHANGES IN NET ASSETS

Erf Sewe-Nul-Ses Rietfontein (Pty) Ltd

Statement of changes in net assets for the year ended 31 March 2006

	Contributions from owners	Accumulated Deficit	Total
	R		R
Balance at 1 April 2004	1	(1,826,882)	(1,826,881)
Less: Interest adjustment previous year	-	-	-
	1	(1,826,882)	(1,826,881)
Net deficit for the year	-	(757,174)	(757,174)
Balance at 31 March 2005	1	(2,584,056)	(2,584,055)
Net deficit for the year	-	(446,488)	(446,488)
Balance at 31 March 2006	1	(3,030,544)	(3,030,543)

CASH FLOW STATEMENT

Erf Sewe-Nul-Ses Rietfontein (Pty) Ltd
Cash flow statement for the year ended 31 March 2006

	NOTES	2006 R	2005 R
Cash outflow from operating activities:		(578,412)	(658,839)
Cash receipts		1,923,540	1,393,001
Cash payments		(915,577)	(758,586)
Cash generated by operating activities	10.1	1,007,963	634,414
Interest received		323	234
Finance costs		(1,586,698)	(1,293,487)
Cash in/(out)flow from investing activities:		(2,149,719)	2
Disposals of property and equipment		-	2
Improvements to investment property		(2,149,719)	-
Proceeds from investment		-	-
Cash flow from financing activities:			
(Decrease)/Increase in long-term borrowings		3,029,944	523,767
Net (decrease)/increase in cash and cash equivalents		301,813	(135,070)
Cash and cash equivalents at beginning of year		216,941	352,011
Cash and cash equivalents at end of year	10.2	518,755	216,941

DETAILED STATEMENT OF FINANCIAL PERFORMANCE

Erf Sewe-Nul-Ses Rietfontein (Pty) Ltd
Detailed statement of financial performance for the year ended 31 March 2006

	2006 R	2005 R
Income	1,857,949	1,349,351
Rent received	1,621,189	1,122,840
Municipal expense recoveries	236,437	223,906
Interest received	323	234
Sundry income	-	2,370
Expenses	2,330,826	2,106,524
Administration and management fee	205,285	207,311
Advertising	-	608
Auditor's remuneration	6,619	7,974
Bad debts	4,532	-
Bank charges	5,367	4,215
Insurance	24,890	28,754
Interest paid	1,586,698	1,293,487
Municipal services and levies	281,766	277,727
Professional fees	11,840	12,125
Regional services council	2,500	5,650
Rent – meter readings	1,223	2,332
Repairs and maintenance	54,715	100,018
Security	141,480	130,442
Staff expenditure	182	33,432
Sundry expenses	-	500
Telephone	3,730	1,951
Deficit before taxation	(472,877)	(757,174)
Taxation (Overprovision)	26,390	-
Deficit after taxation	(446,488)	(757,174)

NOTES

Erf Sewe-Nul-Ses Rietfontein (Pty) Ltd
Notes to the financial statements for the year ended 31 March 2006

1 Accounting policies

1.1 Basis of preparation

The financial statements have been prepared in accordance with the South African Statements of Generally Accepted Accounting Practices (GAAP) including any interpretations of such Statements issued by the Accounting Practices Board, with the prescribed Standards of Generally Recognised Accounting Practices (GRAP) issued by the Accounting Standards Board replacing the equivalent GAAP Statement as follows:

Standard of GRAP	Replaced statement of GAAP
GRAP 1: Presentation of financial statements	AC101: Presentation of financial statements
GRAP 2: Cash flow statements	AC118: Cash flow statements
GRAP 3: Accounting policies, changes in accounting estimates and errors	AC103: Accounting policies, changes in accounting estimates and errors

The recognition and measurement principles in the above GRAP and GAAP Statements do not differ or result in material differences in items presented and disclosed in the financial statements. The implementation of GRAP 1, 2 & 3 has resulted in the following significant changes in the presentation of the financial statements:

a. Terminology differences:

Standard of GRAP	Replaced statement of GAAP
Statement of financial performance	Income statement
Statement of financial position	Balance sheet
Statement of changes in net assets	Statement of changes in equity
Net assets	Equity
Surplus/deficit for the period	Profit/loss for the period
Accumulated surplus/deficit	Retained earnings
Contributions from owners	Share capital
Distributions to owners	Dividends
Reporting date	Balance sheet date

b. The cash flow statement can only be prepared in accordance with the direct method.

c. Specific information such as:

(i) receivables from non-exchange transactions, including taxes and transfers;

(ii) taxes and transfers payable;

(iii) trade and other payables from non-exchange transactions; must be presented separately on the statement of financial position.

d. The amount and nature of any restrictions on cash balances is required to be disclosed.

Paragraph 11 - 15 of GRAP 1 has not been implemented as the budget reporting standard is in the process of being developed by the international and local standard setters. Although the inclusion of budget information would enhance the usefulness of the financial statements, non-disclosure will not affect fair presentation.

NOTES (CONTINUED)

Erf Sewe-Nul-Ses Rietfontein (Pty) Ltd
Notes to the financial statements for the year ended 31 March 2006

1.2 Investment property

Investment property, which is property held to earn rentals and for capital appreciation, is held as a long-term investment and is therefore carried at initial cost. All improvement costs are capitalised against the investment property. Investment property is not currently depreciated because its residual value has been assessed to exceed the carrying amount.

1.3 Revenue

Revenue consists primarily of rental income excluding value added tax.

1.4 Financial instruments

Financial instruments carried on the statement of financial position include cash and bank balances, receivables, payables, loans and liabilities.

Cash and bank balances are held at estimated fair values.

Loans and receivables are initially measured at fair value and subsequently at amortised cost using the effective interest rate method where material. Loans are tested annually at year end for impairment. If there are indications of impairment, the impairment loss is recognised in the statement of financial performance.

NOTES (CONTINUED)

Erf Sewe-Nul-Ses Rietfontein (Pty) Ltd
Notes to the financial statements for the year ended 31 March 2006

	2006 R	2005 R
1.5 Cash flows		
For the purposes of the cash flow statement, cash includes a bank balance.		
2 Contributions from owners		
Authorized		
4 000 Ordinary shares of R1 each	**4,000**	**4,000**
Issued		
1 Ordinary share of R1 each	1	1
3 Long-term borrowings		
Water Research Commission		
Total borrowings	12,115,999	9,086,055
Loan No. 1 The loan is unsecured and repayable over 12 years. Interest was charged at 15% on the monthly balance.	9,715,999	9,086,055
Loan No. 2 The loan is unsecured, and has no fixed terms repayment and interest is charged at prime plus 2% on the monthly balance.	2,400,000	-
4 Investment Property		
Erf 706, Rietfontein, Pretoria, Gauteng		
- At cost	615,855	615,855
- Improvements	8,075,667	5,925,948
	8,691,522	6,541,803
The directors' value of the investment property at 31 March	11,000,000	6,500,000

NOTES (CONTINUED)

Erf Sewe-Nul-Ses Rietfontein (Pty) Ltd
Notes to the financial statements for the year ended 31 March 2006

		2006 R	2005 R
5	**Income Tax**	(26,390)	-
	The company applied for, but was not granted tax exemption. The South African Revenue Services then issued tax assessments for previous years. An overprovision for taxation for previous years has been written back. No provision has been made for taxation in the current year as the company sustained a deficit for the year.		
6	**Revenue**	1,857,626	1,349,116
	Rent received	1,621,189	1,122,840
	Municipal expense recoveries	236,437	223,906
	Sundry income	-	2,370
7	**Surplus from operations**		
	Surplus from operations has been arrived at after charging (crediting):		
	- Interest received	(323)	(234)
	- Auditors' remuneration	6,619	7,974
	- Interest paid	1,586,698	1,293,487
8	**Financial Instruments**		
8.1	**Credit risk**		
	Financial assets which potentially subject the company to concentrations of credit risk consist principally of cash and trade receivables. The company's cash equivalents are placed with high credit quality financial institutions.		
8.2	**Fair values**		
	The carrying amounts of cash, accounts receivables, accounts payable and short-term liabilities approximated their fair values due to the short-term maturities of these assets and liabilities.		

Water Research Commission

NOTES (CONTINUED)

Erf Sewe-Nul-Ses Rietfontein (Pty) Ltd
Notes to the financial statements for the year ended 31 March 2006

	2006 R	2005 R
8.3 Financial assets		
Trade and other receivables	78,776	144,680
- Trade debtors	42,340	34,776
- Deposits	18,262	12,760
- SA Revenue Services: VAT refund due	18,173	97,144
Cash and cash equivalents		
Refer to note 10 for cash and cash equivalents	518,755	216,941
8.4 Financial liabilities		
Trade and other payables	203,597	401,424
- Expenses payable	189,743	90,765
- Rental deposits	13,854	10,590
- Receiver of Revenue: Tax payable	-	300,069

9 Related Party Information

9.1 Controlling entity

The company is wholly owned by the Water Research Commission.

9.2 Directors

The directors whose names appear in the attached directors' report each held office as a director of the company during the year ended 31 March 2006.

NOTES (CONTINUED)

Erf Sewe-Nul-Ses Rietfontein (Pty) Ltd
Notes to the financial statements for the year ended 31 March 2006

	2006 R	2005 R
9.3 Related party transaction		
Transactions between the company and the Water Research Commission, which are related parties, are disclosed below		
Interest paid	(1,586,698)	(1,293,487)
Rent received	1,353,536	913,248
Municipal expenses	(180,066)	(181,495)
Administration fees	(202,510)	(202,000)
10 Notes to the Cash Flow Statement		
10.1 Cash generated by operating activities		
Net deficit for the year before tax	(472,877)	(757,174)
Adjustment for:		
Investment income	(323)	(234)
Finance charges	1,586,698	1,293,487
Net deficit before working capital changes	1,113,497	536,079
Working capital changes	(105,534)	98,335
Decrease/(Increase) in debtors	65,915	43,884
(Decrease)/Increase in creditors	(171,449)	54,451
Cash generated by operating activities	1,007,963	634,414
10.2 Cash and cash equivalents		
Bank balance	518,755	216,941

Water Research Commission