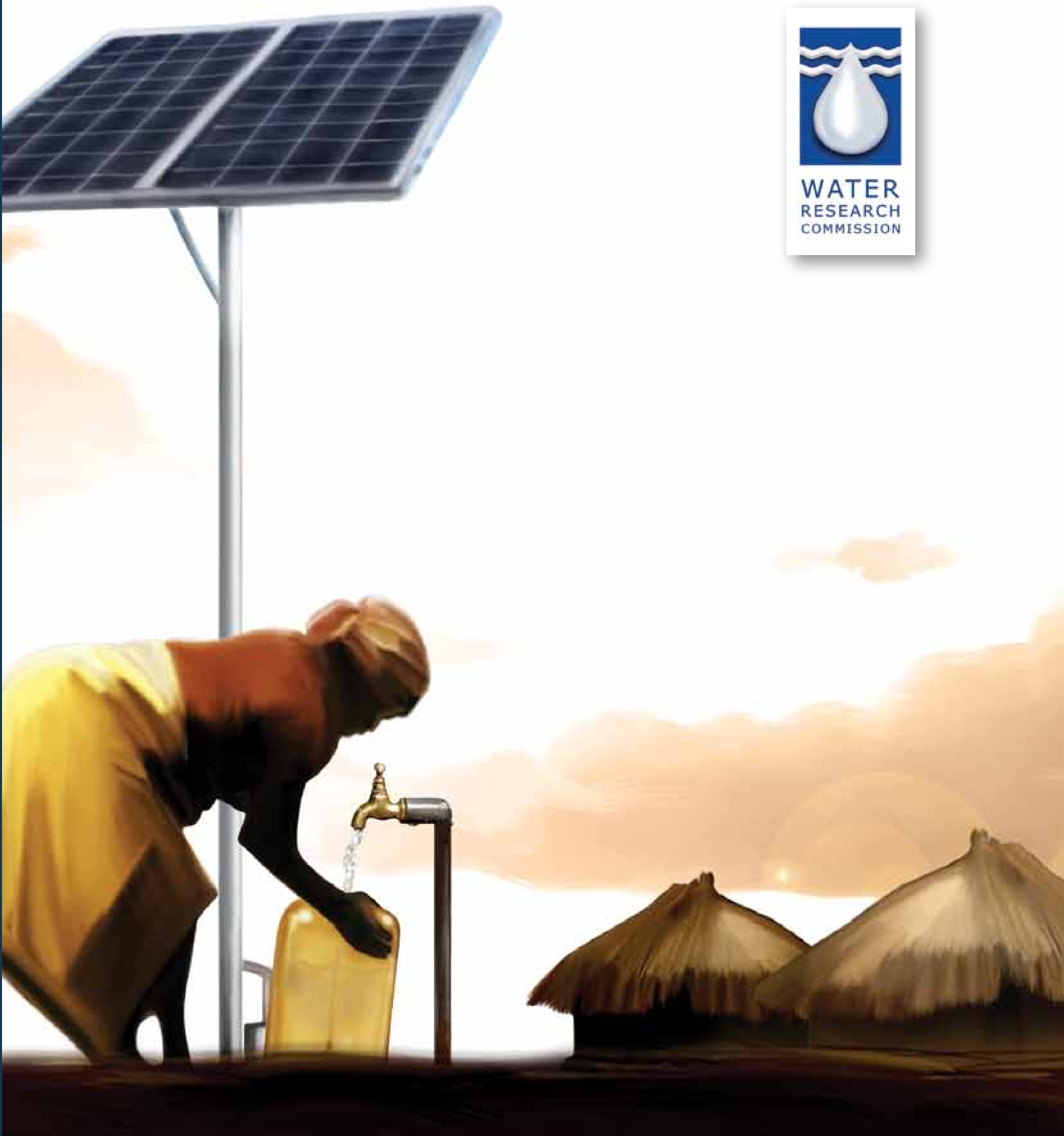

WATER RESEARCH COMMISSION

ANNUAL REPORT 2011/12

vision

To be a globally recognised leader in providing innovative solutions for sustainable water management to meet the changing needs of society and of the environment.

mission

The WRC is a dynamic hub for water-centred knowledge innovation and intellectual capital.

We provide leadership for research and development through the support of knowledge creation, transfer and application.

We engage stakeholders and partners in solving water-related problems which are critical to South Africa's sustainable development and economic growth, and are committed to promoting a better quality of life for all.

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CHAIRPERSON'S ADDRESS

It is my pleasure to report on the activities and performance of the WRC for 2011/12, which was a time of celebration as the WRC turned 40 years old. Reflecting on past performance it is evident that many of the greatest achievements were a result of collaborative projects involving co-ordination and co-operation of many stakeholders and experts in the various water disciplines. Much can be achieved through partnerships, as the year under review has also shown. One such example was the production of the *Atlas of Freshwater Ecosystem Priority Areas in South Africa*. In another example, the WRC successfully teamed up with the Department of Education and Irish Aid to research social franchising partnerships for water and sanitation service delivery in the Eastern Cape.

The total investment in the support of knowledge creation, sharing and dissemination amounted to R140.9 million in 2011/12. Research was funded in four key strategic areas: Water Resource Management, Water-Linked Ecosystems, Water Use and Waste Management, and Water Utilisation in Agriculture; 45% of the budget was invested in projects that focused on water resources, including water-linked ecosystems, and 55% on projects that focused on water utilisation, including effluent treatment and management as well as agriculture. Approximately 31% of the new projects were solicited research projects, which are long-term, consortia-based, and address multifaceted issues. Interactive information sessions were held with stakeholders to establish research needs and priorities. The sector also participates in the research cycle through the project review process, development of terms of reference, and representation on reference groups.

The WRC has aligned its research portfolio to the Government's Outcomes. A number of research projects also directly supported policy and decision-making. For example, a study on the South African water sector institutional landscape identified scenarios relating to the governance of water. Scenario planning for the future plays an important part in assisting policy-makers and stakeholders to develop strategies that will lead towards a desired future. We wait in anticipation for the future results from the WR2012 study, a truly collaborative initiative that requires input from our best water experts in the country. The Water Resources 2012 study is the sixth comprehensive national water resource assessment to be undertaken in South Africa since the first was completed in 1952. All hydrological and water quality data will be updated and made available in a web-based interactive reporting system.

WRC research has addressed important issues that the country is grappling with. A study consolidated existing research on fracking and the associated impact this has on the environment. Several concerns were identified and recommendations made to the Minister of Water and Environmental Affairs. It is interesting to note that, as early as 1996, the WRC funded a study on the effects of acid mine drainage in the Central and East Rand. This was one of the first in the country to synthesise various aspects of flooding, including water quality and expected long-term impacts. The WRC has supported research that has made a difference in the lives of the people of South Africa. Community empowerment has been achieved through collaborative projects on subsistence farming. Research on aquaculture has focused on making food available to poor rural communities and improving their livelihoods. Through collaborative efforts with the provincial agriculture department, the Turfloop hatchery near Polokwane became operational again. Other existing provincial hatcheries have been identified to act as development hubs for emerging farmers.

Embedding knowledge where it can be utilised best remains an important focus. A record number of technical and policy briefs were published. Quality outputs such as a fully-illustrated field guide on wetland plants, a guide for waste stabilisation pond management (oxidation ponds) and guidelines for irrigation management in pasture production were produced. It is encouraging to see the use of materials at higher education institutions; for example, material on water harvesting and conservation will be used in existing curricula at agricultural colleges and higher education organisations. The WRC played an active role at the 17th Conference of the Parties (COP17) to the United Nations Framework Convention on Climate Change, held in Durban in December 2011. During the 40-year celebration event a book was launched which highlights the impact of the WRC research over the past four decades. A special edition of *Water SA* was also published with peer-reviewed papers from the proceedings of the 40-year conference.

The WRC has provided South Africa with future researchers as well as a source of skilled human capital for other institutions within the water sector. An important challenge for the WRC is to provide research capacity into the future so that there is expertise to address our water issues. The WRC continued to excel in its support to students, with special emphasis on historically-disadvantaged students. It is interesting to note that just over 250 students supported in 2011/12 were Master's students.

The WRC, under the proficient leadership of its shareholder, the Minister of Water and Environmental Affairs, and the Board, managed its strategic and operational affairs within a sound corporate governance framework. An unqualified audit report was received as the WRC complied with the relevant legislation and Treasury Regulations. During the year under review, the Board re-assessed the organisation's risk environment and identified strategic and operational risks. Progress was reported quarterly against the four key performance areas; knowledge generation, knowledge dissemination and capacity building, financial perspectives, and support systems and processes. Achievements and progress would not have been possible without the support and dedication of each staff member, and they are thanked for their continued hard work.

Board members are thanked for their strategic input, not only for the period under review, which was particularly busy, but also for their contribution to the effective governance during their term of office. It has been a great pleasure and privilege to work with all of you. We bade farewell to our CEO of 10 years, Prof Rivka Kfir, and acknowledged her significant contribution to the WRC. From July 2001 she managed a comprehensive refocusing, restructuring and transformation of the WRC to ensure its position as the hub for water-centred knowledge in South Africa. Rivka will be remembered for her many great qualities, leadership skills and water wisdom. In October 2012 we welcomed our new CEO, Dhesigen Naidoo. He brings with him a wealth of experience from the university and government sectors, and through his leadership the mandate and role of the WRC in the South African water sector will be strengthened.

It has indeed been my privilege to serve as Chairperson of the Board of the WRC and to be associated with the great team that makes up the WRC. May we continue into the future to remain relevant and committed to addressing the country's water research needs through co-operation and co-ordination.

Prof JB Adams
Chairperson of the Board

CEO'S ADDRESS

The 2011/12 year was for the WRC a Janus, the Roman god of beginnings and transitions who has a face that looks at the past and a face that looks into the future. In this financial year the organisation celebrated its 40th anniversary, having been established in 1971, and a 40th anniversary celebration was held in September 2011. The accolades from the South African water sector were indicative of the pivotal role that the WRC has played in developing water research and development in South Africa. September was also the last month of CEO Rivka Kfir's tenure, ending a valuable, productive and greatly appreciated 10-year term as leader of the WRC. The face of Janus looking back had good reason to be pleased with the work of an organisation that now has an entrenched reputation locally and internationally as a leader in water research.

This financial year has also been one of great changes in the water sector as well as the Ministry and national department. Minister Molewa launched the Business Process Realignment Committee to co-ordinate the appraisal and strategy for the reorganisation of the water sector and its institutions, into a well-oiled machine for development and implementation of solutions to ensure a highly-productive and delivering water sector to the economy, meeting social needs and those of the environment, and carefully organising for South Africa to be internationally competitive while ensuring a direct improvement in the daily quality of life of all who live here. In particular, it is vital to ensure that the poor and marginalised are real beneficiaries of increased efforts to expand the frontiers of human dignity through the proliferation of water and sanitation services. The three components of this exercise all affect the WRC intimately. The first is the relook at, and possible amendments to, the three cornerstone pieces of legislation – the National Water Act (1998), the Water Services Act (1997) and the Water Research Act (1971 and amended six times since, most recently in 1996). The second is the Institutional Reform and Realignment, which, among other things, re-examines the rationale and business case for the WRC. The third is the development of the next version of the National Water Resource Strategy (NWRS). Many parts of this exercise affect the WRC directly, i.e., through the amendment of the founding legislation, an update of the business case and model of the WRC, and the WRC contributions to the revised NWRS. The process as a whole has strongly informed the development of the new multi-year Strategic Plan of the WRC.

The forward-looking face of Janus saw the beginning of the first year of the WRC's fifth decade with the appointment of its first Black CEO. It also saw the acceleration of a set of vibrant new partnerships with organisations like the Technology Innovation Agency (TIA) and the Economic Development Department (EDD), as well as the deepening of other partnerships, such as those with the Academy of Science of South Africa (ASSAf) and the Department of Science and Technology (DST). We also witnessed the launch of several important products to assist the economic development objectives of the country, e.g., the *Atlas of Freshwater Ecosystem Priority Areas in South Africa* and the *Manual for Inland Aquaculture*. With the generous support and hard work of its Board the WRC has managed to greatly improve its project management systems and processes, which has resulted in a set of Key Performance Area indicators that has surpassed the targets in all major domains of performance. On the international front, the WRC continues to be an important and respected player in water management, both globally as well as in the African region. We began the 41st year of the WRC in the middle of the financial year under review, with a Janus that has the makings of a widening smile, and with the objective of introducing some wrinkling as his cheeks join in as the WRC commits to performing even better in the years ahead.

Dhesigen Naidoo
Chief Executive Officer

HIGHLIGHTS

Throughout the ages, every innovation that has propelled humanity forward has started out as a mere idea in the inventor's mind. It is only by nurturing that small seed, by tinkering with it – whether in a laboratory, in the field, or in a workshop – that the idea can grow into a meaningful solution to society's challenges.

Such is the research and development (R&D) funded by the WRC. Some ideals might be small and easy to reach, others might take longer to mature, but in the end the ultimate aim of each project is to support South Africa's people practically in their pursuit towards social and economic prosperity through the sustainable management and use of our scarce water resources.

Standing at the beginning of its fifth decade of serving as the country's premier source of water knowledge, the WRC remains committed to arming the South African water sector with the right technology, capacity and skill to tackle its present and future challenges through, among others, a meaningful contribution to co-ordination, co-operation and communication in the area of water R&D; enhancing knowledge and capacity building in the water sector; and promoting the effective transfer of information and technology. The following pages are dedicated to highlighting a handful of the WRC's achievements in this regard during the year under review.

SERVING OUR COMMUNITIES

Successful schools sanitation project

In March, 2012, the WRC celebrated the successful completion of a pilot project involving social franchising partnerships for water and sanitation service delivery in the Eastern Cape. The project was initiated by the Commission in partnership with the Department of Education and Irish Aid. The initiative to pilot franchising principles for municipal service delivery stemmed from WRC-funded research on infrastructure maintenance and the reasons behind the poor condition of infrastructure in some areas. Years of research resulted in a piloting and demonstration project by the CSIR and East London–based water services provider, Impilo Yabantu. A number of emergent micro-entrepreneurs were consequently trained and mentored, and have since successfully undertaken the routine servicing of water and sanitation facilities at schools in the Butterworth area in the Eastern Cape. Among the significant achievements of the project is the fact that 400 schools have been serviced, and that six emergent franchisee micro-entrepreneurs have been established and supported. In addition, a number of training modules and tools have been developed, while more than 20 sustainable jobs and many employment opportunities have been created. More importantly, perhaps, are the benefits that have accrued to the learners at the schools which have been the recipients of the project. The girl learners, especially, now have access – some for the first time in their school careers – to clean, hygienic toilets. The success of the model has also been demonstrated in the Amathole Municipal District, where franchisees emptied 250 ventilated improved pit toilets over a period of two months. They have since been requested to tackle the toilets of a further 160 households.

Testing perceptions about water quality

During the financial year the WRC funded a survey into the perceptions of urban South Africans regarding their water quality and the variables that influence perceptions. Results showed that the majority of urban South Africans (81%) believe that their tap water is safe to drink. However, rather than relying on media reports or the results of the national Blue Drop certification process, most consumers depend on their sense of sight, taste and smell to determine the quality of their water. Women were found to be less confident about the safety of tap water than men, and more likely to boil or filter water or drink bottled water instead. Living standards and income made no difference to how people perceived the quality of their water supply. Residents of metropolitan areas were found to be more confident about the quality of their water supply than residents in other urban centres.

Identifying groundwater potential for towns

With economic development and population growth placing increased pressure on the country's surface water resources, groundwater development has been placed high on the list of future water supply options for South Africa's towns and cities. During the year under review the WRC concluded a project aimed at identifying areas of favourable groundwater potential for bulk municipal water supplies, providing a method to quantify this potential, and packaging the information in such a way that it is accessible for planning purposes. The main focus was on the Main Karoo Basin. In order to present yields in an accessible manner to water supply planners, the same concepts used in surface water resource assessments and dam or reservoir design were adapted and applied to groundwater. Two methods were developed during the project, namely the Aquifer Assured Yield Model and the Aquifer Firm Yield Model (the latter of which was also developed into a software package). Target generation using the methodology led to the successful drilling of a very high-yielding borehole in the Karoo formations.

Water metering guide

There has been found to be a lack of proper water meter management in South Africa, with many bulk water suppliers and municipalities without optimal and integrated meter calibration, replacement, reading, and information management systems. Often the divided responsibility between billing and meter management results in poor billing, incorrect information capture, and poor maintenance. This is further compounded by the fact that, where initiatives of water demand management and conservation are required, the data is not easily accessible to the departments responsible for this task, and there is a frequent lack of integration between domestic and bulk water metering. During the past financial year, the WRC published the *Introduction to Integrated Water Meter Management*, which is expected to go a long way in improving water meter management in South African municipalities. The publication covers the theoretical principles of meters, legal and metrological requirements, meter types, best practice guidelines as well as practical aspects of water meter management. It will serve as a training aid and a valuable tool for water utility managers, engineering technical staff, operations and maintenance as well as meter-reading personnel and researchers.

BUSTING HUNGER, FEEDING THE NATION

Arming trainers with knowledge

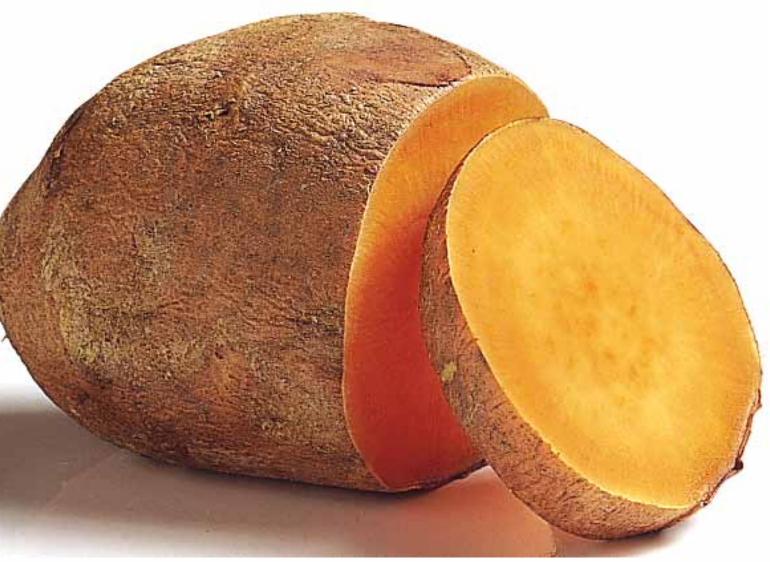
Water harvesting and conservation (WH&C) is a highly productive and sustainable practice and, today, is used by small producers and commercial farmers alike. The WRC has supported research into WH&C for more than 15 years; however, benefits have mostly accrued to the communities where the research has been undertaken. While many poorly-resourced farmers express an interest in learning WH&C practices, facilitators such as extension officers are not always equipped to provide the necessary training and support. To fulfil this need, the WRC funded the compilation of a comprehensive WH&C learning materials package. Developed over four years, the learning materials target three user groups, namely, learners and training organisations, facilitators at training operations responsible for teaching the WH&C course, and resource-poor farmers and gardeners who are the end-users of water conservation techniques. There has been a marked positive interest in embedding this new material in existing curricula at agricultural colleges and higher education organisations, with some colleges proving so enthusiastic that they were willing to use the draft materials. A number of learners from the University of KwaZulu-Natal Centre for Adult Education have already received training in the material during the pilot testing phase, while, in a spin-off from the project, 68 art students from Walter Sisulu University were financially supported through fieldwork exposure and competition funding to provide illustrations for the course materials.

A leg up for rural aquaculture

Aquaculture can make a valuable contribution to alleviating hunger and improving rural livelihoods in South Africa. Over the past decade, the WRC has initiated and invested in a number of research projects on aquaculture, particularly focused on poor, rural communities. The latest project saw the WRC project team working together closely with the provincial departments of agriculture to formulate provincial aquaculture strategies and programmes. Strategies have been developed for the Limpopo, Mpumalanga, KwaZulu-Natal, Free State, Northern Cape and North West provinces, and provide a valuable 'road map' for the provincial agricultural departments to plan and develop aquaculture in the provinces. In addition, the project undertook the revitalisation of selected existing provincial hatcheries, to act as development hubs for emerging farmers, and from which to provide services such as advice, training and fingerlings. One of the state hatcheries to receive a successful makeover was Turfloop hatchery, near Polokwane, Limpopo. The facility, which ceased operation in the early 1990s, began operating again following investment from the provincial agriculture department and support by the WRC project team.

Proving the value of indigenous crops

Micronutrient malnutrition is also called 'hidden hunger', as the consequences thereof often go unnoticed. Indigenous crops or 'wild vegetables', such as *morogo* or *imifino*, are excellent sources of micronutrients (including Vitamin A, folate, Vitamin C, iron, and protein). This WRC project created valuable new knowledge regarding the nutritional status of South Africans and the links to agriculture and water. It also generated innovative approaches on the cultivation and agronomic practices for African leafy vegetable production, particularly with regard to water use, plant nutrient requirements, germination and emergence, as well as the response to drought and heat stress. One of the products of this project has been a comprehensive guide on the production of African leafy vegetables.



Better pastures, better dairy

Management of dairy farming has now attained unprecedented levels of technology, largely due to the availability of practical equipment and methods of planning, managing and monitoring most facets of dairy farming. However, these advancements have not been applied to the irrigation of pastures, which still tend to rely on experience and tradition despite the increasing role of pastures in milk production. This WRC project sought to develop guidelines for irrigation management in pasture production. The comprehensive research report and generic irrigation guidelines produced are expected to improve the decision-making process with respect to the irrigation of pastures for dairy production.

SUPPORTING POLICY- AND DECISION-MAKING

Water Resources 2012 study

What promises to be the most accurate assessment of South Africa's water resources to date was launched by the WRC early in 2012. The Water Resources 2012 study, or WR2012, is the sixth comprehensive national water resource assessment to be undertaken in South Africa since the first was completed in 1952. Financed by the WRC, the study is being undertaken by a consortium of consulting engineering firms. The objective of the study is to assist decision makers at all levels of government to make informed choices about

all policies concerning South Africa's water resources. WR2012 will include the updating of all hydrological data covering the country's total water spectrum, including surface water, groundwater and water quality data. For the first time the project will make available a publicly-accessible, web-based and interactive reporting system to continually quantify both the surface and groundwater resources of South Africa.

Hydraulic fracturing and water

The recent public debate that gas exploration will take place in the Karoo and other sites in South Africa has had a wide public response. There has been great concern raised in various quarters around the potential negative environmental impacts. At the same time much is being said about the economic growth contributions of

gas harvesting through using the hydraulic fracturing methodology. A study commissioned by the WRC attempted to consolidate existing research in the field of gas development processes and the associated impact this might have on the environment. It summarised the current knowledge on hydraulic fracturing in the public domain and provided a review of South Africa's regional geology and geohydrology. Several concerns were identified, mainly relating to the migration of gas, migration of fracturing fluids, water use, management of produced water, surface spills and identification of chemical additives. Recommendations have been made to the Minister of Water and Environmental Affairs in this regard.

SA's first atlas of freshwater ecosystem priority areas

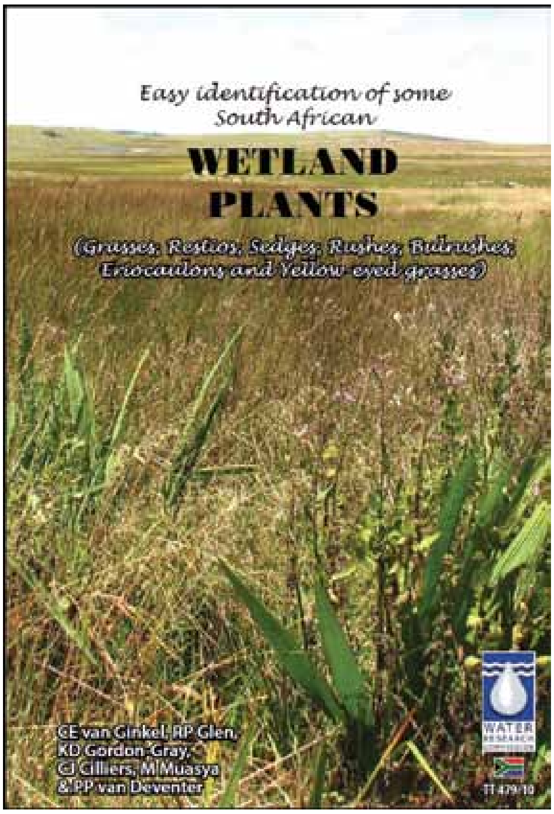
On 14 November 2011, Deputy Minister of Water and Environmental Affairs, Rejoice Mabudafhasi, launched the final product of South Africa's first comprehensive assessment of the country's freshwater ecosystem priority areas or those areas of the country that are most important for ensuring the integrity and continued functioning of our freshwater ecosystems. The *Atlas of Freshwater Ecosystem Priority Areas in South Africa* is the result of a three-year project to answer the question as to how many and which rivers and wetlands the country needs to maintain in a natural condition to sustain economic and social development, while still conserving freshwater biodiversity. The project partners included a host of lead organisations, including the WRC. In addition to the project team and reference group, the project also relied on the participation of some 150 stakeholders, representing about 1 000 person years of collective experience in either aquatic science or biodiversity planning. The criteria for identifying freshwater priority areas were based on earlier work in which government departments agreed on a vision for managing and conserving freshwater ecosystems. These criteria included, among others, areas where populations of threatened or near-threatened freshwater fish occur; areas that are considered high water yield or high groundwater recharge areas; and free-flowing rivers and connected ecosystems which are most likely to support biodiversity.

Plotting the future of the water sector institutional landscape

This research project sought to build knowledge about key drivers and uncertainties related to the future of the South African water sector institutional landscape. The focus was on scenarios relating to the governance of water. Scenario planning for the future plays an important part in helping policy-makers and other stakeholders to develop strategies that will lead towards a desired future. Inputs to the scenarios were sourced through a structured participative research process. Key drivers and uncertainties were identified, described and ranked, and translated to potential implications, both for social and economic development as well as for the management of water resources and water services. The selection and development of indicators served as navigation instruments to assess trajectories of change and support adaptive management towards desirable outcomes. A better understanding of key drivers and uncertainties in the water sector will promote the effective deployment of environmental goods and services towards social and economic development, while allowing for a comprehensive management of environmental risk and ensuring environmental sustainability.

Turning up the heat on the ecological Reserve

Climate change is likely to have a range of impacts on South Africa's freshwater resources. Anticipated rising air temperatures and lower rainfall in some regions as a result of climate change are expected to result in elevated water temperatures in river ecosystems. The latter is amplified by anthropogenic impacts such as thermal discharges from industrial plants, flow modification due to river impoundment, inter-basin water transfers and modification to riparian vegetation. The WRC identified a need for fundamental research on water temperature and biotic response in South African systems, not only to understand and predict the impacts of climate change, but also to incorporate water temperature guidelines into the ecological Reserve. The four-year project was completed during the year under review. Among others, the project team developed *in-situ* protocols for monitoring temperature – one of the key drivers of ecosystem integrity. The insights obtained will be useful in developing an ecologically meaningful water temperature classification for the ecological Reserve, ensuring better protection of riverine ecosystems from both immediate threats such as pollution, as well as long-term threats such as climate change.



GUIDING THE WATER SECTOR

First-time guide on SA wetland plants

Wetlands are recognised as one of the richest and most productive ecosystems on earth. Not only are wetlands important in the protection, processing and regulation of runoff, they also act as sponges, holding back flood waters and releasing it during drier periods. Associated with wetlands are a wide range of specially-adapted plant species giving food and shelter to a variety of animal life. For the first time in South Africa, the WRC has made available a fully-illustrated field guide on wetland plants for the layman or student. This field guide focuses primarily on obligate wetland plants, paying special attention to grass-like plants. In total, 290 species of plants are covered. These are all plants which require a high water table, thus providing a good indicator of wetland health.

Irrigation water use – finding the balance

Irrigated agriculture remains the largest water user in South Africa. The WRC recognised as early as 2003 that the efficient use of water by the irrigation sector would become increasingly important in future in light of growing social and economic demands. For this reason the Commission launched a major project to investigate and formulate guidelines to improve the management and use of water by irrigated agriculture in South Africa. The resultant publication, *Standards and Guidelines for Improved Efficiency of Irrigation Water Use from Dam Wall Release to Root Zone Application*, introduces a relatively new concept, namely the water balance approach, for achieving the necessary efficiencies in irrigation. The guidelines will assist both water users and authorities to obtain a better understanding of how irrigation water management can be improved, thereby building human capacity so that targeted investments can be made with fewer social and environmental costs. Various lessons learnt, best practices and technologies are introduced and illustrated, as developed and tested through extensive fieldwork undertaken at irrigation schemes across the country.

Guides for waste stabilisation pond management

Waste stabilisation ponds, also known as oxidation ponds, are internationally accepted low unit-cost wastewater treatment systems, especially suited to smaller communities. Concerns have been raised over the operational state of waste stabilisation ponds in some municipal areas and their impact on both the natural environment and human health. This has led to, among others, a WRC-funded study into the status of waste stabilisation pond systems, with a focus on the Eastern Cape and Free State provinces. The study confirmed the poor operation and maintenance of many of the ponds in these two provinces, which was mainly linked to poor management practices. Based on these findings, the WRC has funded the development of two guides and one manual to assist water service authorities to improve the management, operation and maintenance of their waste stabilisation ponds. Among other themes, the management guide covers types of ponds, design considerations, and typical failures, as well as troubleshooting and upgrading of ponds. The operations and maintenance guide provides a simple pictorial look at the different operations within a pond system.

Diatom index for wetland health

Water quality monitoring has traditionally been by means of physic-chemical analysis; this has more recently been augmented with the use of biomonitoring techniques. However, since the biota commonly used to indicate aquatic conditions are not always present in wetlands, this study instead tested the use of diatoms as bio-indicators in wetlands. Diatom samples were collected from 13 wetlands in the Western Cape. Cells from these communities were then enumerated, and diatom-based indices calculated. The indices proved useful for indicating water quality conditions, when compared to the measured physic-chemical parameters. In addition, most diatom species found were also common to those found in riverine environments, making the transfer of ecological optima possible.

BRINGING WATER STAKEHOLDERS TOGETHER

IWA nano and water specialist conference

The WRC played a pivotal role in shaping the programme and reviewing the content of the first conference of the International Water Association Specialist Group on Nano and Water, held in Ascona, Switzerland, in May 2011. Nanotechnology has promising perspectives for drinking water and wastewater treatment. New and advanced treatment technologies can be developed with very specific targets that are very difficult to achieve with conventional technology. The conference brought together over 100 leading scientists and water professionals from around the world. South Africa was very well-represented with delegates and presenters from the Universities of Johannesburg, Stellenbosch and the Western Cape, as well as from the WRC itself. A number of current WRC-funded nano- and water projects were presented. Session themes covered nanosorbents, nanocatalysts, bio- and redoxactive particles, polyfunctional membranes and risks and fate of nanoparticles.

Benchmarking partnership

A new project focusing on benchmarking of water services by water services authorities (WSAs) got underway during the past financial year. The three-year project is being undertaken in partnership with the South African Local Government Association (SALGA) and will build on existing knowledge in this regard. In particular, the project is aimed at using water services benchmarking as a tool in WSA's endeavours towards continual performance improvement. Through this initiative, WSAs build on the experience of their peers to make the most efficient use of available resources to improve service delivery and customer services.

TIGER(s) in the making

The WRC, along with the Department of Water Affairs (DWA), hosted the first Technology Informatics Guiding Educational Reform (Tiger) workshop in South Africa in December. More than 200 water resource management specialists from across Africa received training in the use of near real-time satellite data to make the best use of the continent's limited water resources. Tiger, an initiative of the European Space Agency, was originally launched in 2002, and is concerned with employing space technology to improve water resource management in Africa. The December workshop was focused on the needs of the Southern African Development Community countries.

International conference on groundwater

The WRC played an active role in the organisation of the International Conference on Groundwater, held in Pretoria in October. The conference, which was attended by 400 national and international delegates, incorporated the Biennial Conference of the Groundwater Division of the Geological Society of South Africa and was held in association with the International Association of Hydrogeologists. Under the theme 'Groundwater: Our source of security in an uncertain future', delegates deliberated on challenges and possibilities around the increased use of groundwater as well as methodologies for improved groundwater development and management, among others.

Workshop series on ecosystems and livelihoods

The WRC hosted two workshops on 'Ecosystems and Livelihoods' in the Eastern Cape and Limpopo during the year under review. Many communities rely directly on the products and services delivered by ecosystems, such as fish, fibres and medicinal plants; yet it is a subject that is often neglected. Sustainable management of these ecosystems is central to ensuring communities' development. The workshops drew water resource managers, local government officials, regional DWA officials, university academics and consultants, and knowledge was successfully shared regarding the topic under discussion. The WRC also used the opportunity to identify needs for further research and knowledge transfer.

COP 17

The WRC played an active role at the 17th Conference of the Parties (COP17) to the United Nations Framework Convention on Climate Change, held in Durban in December 2011. The Commission hosted four side events, the first focusing on downscaling of coupled climate models, application of climate models in the water sector, application of soil moisture techniques, and flash floods and adaptive water management strategies. The second workshop focused on climate change adaptation, water management and agriculture in the Berg River catchment, while the third was held on climate change adaptation and water governance. A fourth side event was co-hosted with Umgeni Water on potential impacts of a changing climate on hydrology and water security of the Mgeni River system. All of the events were widely attended by local and international delegates.

INNOVATIVE SOLUTIONS

SA irrigation innovation rewarded

The SAPWAT3 irrigation and planning management tool was awarded the WatSave Award in the 'Innovative Management' category at the 21st Congress on Irrigation and Drainage held in Tehran, Iran, in October 2011. Since its introduction, SAPWAT has been applied by more than 300 users in 13 countries, including

Angola, Mali, Mozambique, Swaziland, Niger, Namibia and Uzbekistan. Through the years the program has been continuously upgraded and improved, mainly with funding from the WRC. The current version, SAPWAT3, is used by all irrigation designers in South Africa to optimise water use to its fullest extent. The latest version is designed to maximise user interaction, an approach which contributes to the user's understanding of issues affecting good irrigation planning and management. This approach has the added benefit that SAPWAT3 serves as a good training and demonstration aid. Water savings have been achieved in a number of water management areas and, as a result, officials of the Department of Water Affairs are using the tool to quantify the optimum amount of water for a specific command area. The Department has also endorsed SAPWAT3 as a tool to issue water use licences for irrigation purposes.

Turning water power into electric power

The first pressurised hydropower system has been installed in a pilot project at the Pierre van Ryneveld Reservoir in the City of Tshwane Metropolitan area. The micro-hydropower solution generates about 16 kW of electricity per hour, providing the City of Tshwane

with additional electricity to power security around the reservoir as well as for water level monitoring purposes. WRC studies indicate that pressurised hydropower offers huge potential for complementing the energy needs of municipalities. Scoping studies conservatively indicate that by introducing pressurised hydropower into the reservoir outlets of metropolitan areas in South Africa some 26 000 MW/hour can be generated immediately. Further pressurised hydropower systems are planned for Bloemwater, eThekwini Metro, and Rand Water in the next financial year.

Water technology innovation showcase

Acid mine drainage treatment solutions, an emergency water bottle, an irrigation management system, a social franchising partnership solution and electrospun nanofibres were only some of the innovations on display at the first ever WRC – Department of Science & Technology Innovation Showcase, held on the East Rand in March, 2012. The event was aimed at fostering collaboration between the proponents of WRC-funded research into water technologies and the South African commercialisation community, around the theme of sustainable water use, treatment and management. Whether it is saving water, turning water power into energy, or cleaning pollution, all of the innovations on show had one thing in common – they are all aimed at improving the sustainable use and protection of the country's most precious resource. The ultimate aim of the event was to bring the innovations one step closer to entering the water market, where a difference will be made not only to people purchasing the products, but eventually to society as a whole.

CELEBRATING OUR WATER HERITAGE

WRC turns 40

In the 2011/12 financial year the WRC celebrated 40 years of service to the South African water sector by hosting a technical conference. The conference, which was held over two days, brought together more than 400 delegates from the entire water spectrum, from researchers and scientists to representatives from government, industry and non-governmental organisations. A total of 125 eminent scientists and subject experts presented on progress and knowledge gaps in the water sector under various themes. A special publication, *WRC – 40 Years of Excellence* was also launched. The WRC's contribution to the country's research community – and the water sector as a whole – was widely lauded. In the past five years alone, the Commission has employed about 3 000 students on its research projects, and every year it supports around 300 research projects with a budget of about R150 million.

SUPPORTING TOMORROW'S LEADERS

Tools for river water quality monitoring

The WRC, in collaboration with local partners, launched the latest South African Scoring System – version 5 (SASS 5) – and its simplified version, miniSASS, at a special event held in March in Pietermaritzburg, KwaZulu-Natal. A key tool in the assessment of the health of the country's rivers for a number of years, the system uses the composition of invertebrate communities living in rivers, and is based on the sensitivity of various animals to water quality. The mini-version reduces the taxonomic complexity of SASS to a few aquatic invertebrate groupings (13 instead of 90) and forms a useful educational tool for school learners and non-specialists. It also allows communities to play an active role in the monitoring of water quality of the rivers in their area. The latest product in the SASS range, a locally-produced DVD, appeals to learners and general members of the public and encourages them to learn more about the impact of their land-use activities on their local water resources. The DVD is also a useful educational tool for Government's Adopt-a-River drive.

ACCOLADES

International achievement for WRC Director

WRC Director: Water Utilisation in Agriculture, Dr Gerhard Backeberg, was appointed Vice-President of the International Committee on Irrigation and Drainage (ICID) at its 21st International Congress, held in Iran, in October 2011. This is a considerable achievement considering that ICID is represented by 110 member countries. Dr Backeberg has played a significant role in research leadership and project management on a range of issues regarding agricultural water management. His strategic focus is on improving knowledge of the biological, technical and economic processes for efficient water use and food production; improving knowledge for effective management of water by people in the food value chain; and improving knowledge of natural processes and people-induced impacts of water resource use.

Praise for capacity building

Representatives from the WRC, Department of Education, Irish Aid and the CSIR were recognised by the local small franchising business, Impilo Yabantu, for their contribution towards capacity building in the Eastern Cape. This relates to the school sanitation pilot project described elsewhere in this chapter.

International recognition

PhD graduate, Dyllon Randall, of the University of Cape Town, was one of three South African winners in the 'GreenTalents 2011' competition held by the International Forum for High Potentials in Sustainable Development. Randall won the prize for his work on potential ways of processing wastewater from mines. He has developed, with the aid of WRC funding, a completely new technology (eutectic freeze) which allows the saline solutions produced in mine-water treatment to be processed. The jury highlighted the global significance of his research work which contributes towards a sustainable solution to urgent problems, such as water contamination and water shortages.

DIRECTORS' REPORT

The Board of the WRC submits this report to the South African Parliament through the Minister of Water and Environmental Affairs. The report is 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 01 April 2011 to 31 March 2012. The report addresses corporate governance practices and structures, the mandate and core business of the WRC, the WRC's achievements and progress made against the WRC's key performance areas and targets.

MANDATE

The WRC is a listed national public entity in Schedule 3A of the PFMA.

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 co-ordination, co-operation 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

The **Mandate** of the WRC clearly links the organisation to both the water and knowledge cycle (Fig. 1). The WRC serves as South Africa's water-centred knowledge hub providing the nation with knowledge for sustaining its most precious resource, i.e. water.

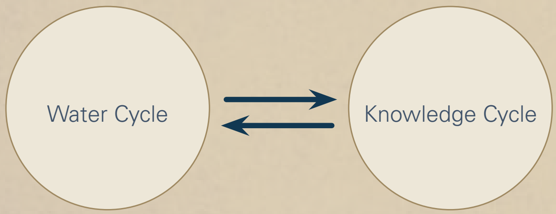


Figure 1: Linkage between the water and knowledge cycle

The **Mandate** states the WRC's role in co-ordinating and leading the five building blocks of the knowledge cycle, from knowledge generation to dissemination and transfer (Fig. 2).

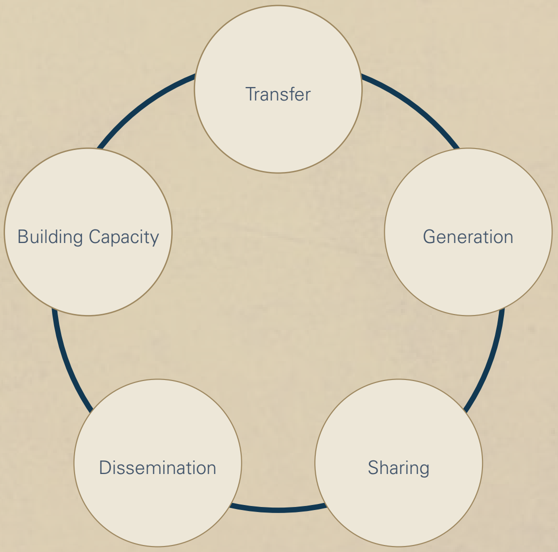


Figure 2: Knowledge cycle

GOVERNANCE

Governance framework

The WRC, under the proficient leadership of its shareholder, the Minister of Water and Environmental Affairs, and the strategic direction set by its Board, continued to manage its strategic and operational affairs within a sound corporate governance framework. The WRC aims to comply strictly with both the Water Research Act and the Public Finance Management Act (PFMA), Treasury Regulations and all other relevant legislation. The corporate governance framework provided the organisation and its leadership with integrity, accountability and transparency.

The Board of the WRC led the organisation with a clear governance framework and oversight, ensuring sound management, compliance and control practices. The Board and its various committees provided effective structures for strategically guiding the WRC throughout the year under review.

Risk management

The management of the WRC developed a risk policy which was approved by the Board on 24 March 2011 and formed part of the risk management framework that also includes a risk management strategy, risk management implementation plan, risk assessment, risks identified and mitigating actions planned. During the year under review, the Board re-assessed the organisation's risk environment and identified strategic and operational risks. The WRC developed and implemented its strategic and operational plan based on the risk areas identified. The risk plan included risk-mitigating strategies and actions and also set the basis for many of the organisation's performance objectives. The risks identified and the risk management framework were approved by the Board of the WRC and were also used to set the internal audit plans.

An advisory, external auditing firm, KPMG, was appointed by the Board of the WRC as an internal auditor and undertook an internal audit of the organisation in terms of an audit plan. The audit plan was reviewed and recommended for approval by the Audit 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 operational practices. One of the key performance objectives of the WRC included providing feedback on the level to which management had addressed the issues identified by the internal audit in the previous year. The audit results and the WRC management's response, as well as a description of the successful and planned actions intended to bring about further improvements, were reviewed and approved by the Audit Committee and the Board.

Farewell to Dr Rivka Kfir

In the year under review the WRC bade farewell to Dr Rivka Kfir, who served as CEO from 2001 to 2011. During her tenure, Dr Kfir successfully led the Commission through an extensive phase of strategic refocusing, restructuring and transformation. The WRC thanks her for her leadership and vision, enabling the WRC to move closer to its ultimate goal of being South Africa's hub for water-centred knowledge, innovation and intellectual capital. In her own words she leaves behind "a vibrant and dynamic WRC, well-recognised in South Africa and internationally, with a strong management team and excellent staff members."

GOVERNANCE STRUCTURES

During the year under review the WRC operated under the leadership of its Board, which is appointed by the Minister of Water and Environmental Affairs. The Board Members are all independent Non-Executives with the exception of the Chief Executive Officer and Director-General of the Department of Water Affairs, who are Ex Officio members. The current Board Members (with the exception of the two Ex Officio Members) were appointed for a period of three years, ending on 31 May 2011. However, the current Board's term was extended by the Minister until 31 January 2012 or until such time as the new Board has been appointed.

Board Members

- Prof JB Adams (Chairperson)
- Mr M Sirenya (Vice-Chairperson)
- Dr TPE Auf der Heyde
- Mr P Cross
- Ms ZB Mathenjwa
- Ms D Ndaba
- Mr N Mhlongo (Appointed October 2010)
- Mr DP Naidoo (Resigned January 2011)

Ex Officio Members

- Mr T Balzer, Acting Director-General of the Department of Water Affairs until 31 December 2011
- Mr M Sirenya, Director-General from 1 January 2012
- Dr R Kfir, Chief Executive Officer of the WRC until 30 September 2011
- Mr D Naidoo, Chief Executive Officer of the WRC from 1 October 2011

Role of the Board

The role of the Board is to provide leadership and governance to the organisation, overseeing that the WRC is true to its Mandate and Mission by:

- Promoting the creation, dissemination, sharing and application of water-centred knowledge
- Optimally using available resources (achieving the best return on investment)
- Striving to be financially sustainable and viable
- Promoting the relevance and effectiveness of water-centred knowledge, *inter alia*, through feedback from external reviews to be conducted periodically, at least every five years, at the discretion of the Board
- Taking cognisance of the short-, medium- and long-term research needs of the water sector
- Taking into account national and provincial policies, objectives and developments
- Acting in a transparent and fair manner

Board meetings held during 2011/12

- 27 July 2011
- 20 September 2011
- 06 December 2011 (Board Strategic Planning)
- 07 December 2011 (Board Strategic Planning)
- 27 March 2012

Board Committee Secretaries

- 27 July 2011 Ms A Jansen
- 20 September 2011 Ms A Jansen
- 06 December 2011 Ms R Lutchman
- 07 December 2011 Ms R Lutchman
- 27 March 2012 Ms A Jansen

BOARD MEMBERS


Prof JB Adams
(Chairperson)


Mr M Sirenya
(Vice-Chairperson)


Dr TPE Auf der Heyde


Mr P Cross


Ms ZB Mathenjwa


Ms D Ndaba


Mr N Mhlongo (Appointed
October 2010)


Mr DP Naidoo
(Ex Officio)

EXECUTIVE MANAGEMENT OF THE WRC

Mr Dhesigen Naidoo
(CEO)

Dr Rivka Kfir
(CEO 2001 – 2011)

Ms Eiman Karar

Mr Jay Bhagwan

Ms Reshmili Lutchman

Dr Stanley Liphadzi

Dr Gerhard Backeberg

Mr Naresh Patel

Dr Heidi Snyman

Executive Committee of the Board (ExCo)

Members	
Prof JB Adams	Chairperson
Ms G Mathenjwa	Invited to represent Mr P Cross on 24 May 2011
Ms D Ndaba	
Mr M Sirenya	
Dr R Kfir	CEO until 30 September 2011
Mr DP Naidoo	Chief Executive Officer: WRC (1 October 2011 to date)
WRC (in attendance)	
Mr N Patel	Chief Financial Officer: WRC
Ms R Lutchman	Company Secretary
Committee Secretary	
24 May 2011	Ms A Jansen
Meetings	
24 May 2011	ExCo separately from Audit Committee
Terms of Reference of ExCo:	
The ExCo role is defined by the Board as a Special Committee addressing strategic tasks delegated from time to time by the Board to the Committee in accordance to needs and requests. This includes the specific delegated task of approval of Financial Year-End Statements and the Executive Report.	

Remuneration Committee of the Board

Members	
Prof JB Adams	Chairperson
Mr P Cross	
Ms G Mathenjwa	Invited to represent Mr P Cross on 22 June 2011
Mr N Mhlongo	
Ms D Ndaba	
Mr M Sirenya	
Mr DP Naidoo	
WRC (in attendance)	
Ms R Lutchman	Company Secretary
Committee Secretary	
22 June 2011	Ms A Jansen
27 March 2012	Ms A Jansen
Meetings	
22 June 2011	Remuneration Committee
27 March 2012	Remuneration Committee
Terms of Reference of the Remuneration Committee:	
• 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	

Human Resources and Information Technology Committee of the Board (HR & IT)

Members	
Ms D Ndaba	Chairperson
Dr T Auf der Heyde	
Adv D Block	
Ms E Karar	Represented the CEO on 21 February 2012
Dr R Kfir	CEO until 30 September 2011
Ms G Mathenjwa	
Mr DP Naidoo	CEO from 1 October 2011
Mr M Sirenya	Invited on 30 August 2011 in order to form a quorum
WRC (in attendance)	
Ms R Lutchman	Company Secretary
Committee Secretary	
30 August 2011	Ms A Jansen
21 February 2012	Ms A Jansen
13 March 2012	Ms A Jansen
Meetings	
30 August 2011	HR Committee
21 February 2012	HR Committee
13 March 2012	HR & IT Committee

Terms of Reference of the HR & IT Committee of the Board:

The HR & IT Committee of the Board will strive to inform and recommend to the Board on the following HR matters:

- Level of the WRC compliance with all HR-related Acts (legislation) and possible applications for exemption deemed necessary in the interests of enhancing the WRC's performance
- HR policies and practices in the WRC
- HR plan and budgets
- Amendments to the conditions of employment and remuneration structure
- The WRC's performance management system
- Job level assessment system, policy and procedures
- The strategic structure and composition of Top Management
- Transformation and employment equity plans
- Internal Climate/Culture Studies with emphasis on leadership issues
- Performance of HR to the strategic execution of the WRC
- Monitor the scope and effectiveness of the internal audit function from the human resource perspective

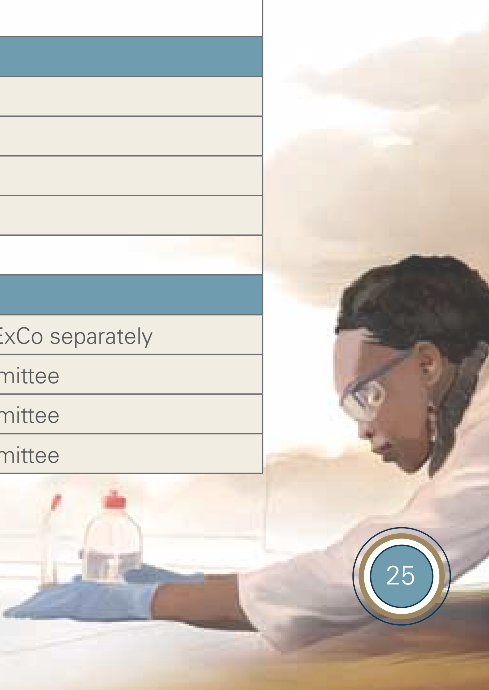
The HR & IT Committee of the Board will strive to inform and recommend to the Board on the following IT matters:

- Level of the WRC compliance with all IT-related Acts (legislation) and possible applications for exemption deemed necessary in the interests of enhancing the WRC's performance
- IT policies and practices in the WRC
- IT plan and budgets
- Effectiveness of WRC's IT governance framework
- Performance of IT to the strategic execution of the WRC
- Examining major IT risks
- Monitor the scope and effectiveness of the internal audit function from an IT perspective

The HR & IT Committee should report to the Board on an ongoing basis.

Audit, Risk and Finance Committee of the Board

Members	
Mr N Mhlongo	Chairperson
Mr P Cross	Co-opted
Ms E Karar	Represented the CEO on 21 February 2012
Dr R Kfir	CEO until 30 September 2011
Ms RNM Maphumulo	
Ms G Mathenjwa	Invited to represent Mr P Cross on 24 May 2011
Ms D Ndaba	
Mr DP Naidoo	CEO from 1 October 2011
WRC (in attendance)	
Mr N Patel	Chief Financial Officer: WRC
Ms R Lutchman	Company Secretary
Office of the Auditor-General (AGSA) and consultants Gobodo (SizweNtsalubaGobodo from 1 January 2012)	
24 May 2011	Mr J Aguma; Mr D Fouche
26 July 2011 and reconvened on 27 July 2011	Mr J Aguma; Ms NO Mutwanamba; Mr D Fouche; Mr D Simpson
27 July 2011 (reconvened)	Ms NO Mutwanamba
30 August 2011	Mr J Aguma; Mr D Fouche
21 February 2012	Mr J Aguma; Mr D Fouche
KPMG	
24 May 2011	Ms Y Small; Mr P Lalla
26 July 2011	Mr P Lalla
Reconvened on 27 July 2011	KPMG did not attend
30 August 2011	Ms Y Small; Mr P Lalla
21 February 2012	Mr S Kajee; Ms J Kruger
Committee Secretary	
24 May 2011	Ms A Jansen
26 July 2011 and reconvened on 27 July 2011	Ms A Jansen
30 August 2011	Ms A Jansen
21 February 2012	Ms A Jansen
Meetings	
24 May 2011	Audit, Risk and Finance and ExCo separately
26 July 2011 and reconvened on 27 July 2011	Audit, Risk and Finance Committee
30 August 2011	Audit, Risk and Finance Committee
21 February 2012	Audit, Risk and Finance Committee



Audit and Risk Committee of the Board

Terms of Reference of the Audit and Risk Committee:

Internal Control

In order to consider the effectiveness of internal control over annual financial reporting, including information technology and security, the Audit Committee:

- Evaluate the process by which management is setting the appropriate 'control culture' by communicating the importance of internal control and the management of risk to employees, and ensuring that all employees have an understanding of their roles and responsibilities
- Develop an understanding of the scope of the internal and external auditors' review of internal control over financial reporting, and obtain reports on significant findings and recommendations, together with management's responses
- Establish whether internal control recommendations made by internal and external auditors have been implemented by management
- Consider what procedures management applies in relation to the security of computer systems and applications, and the contingency plans for processing transactions in the event of a systems breakdown, to ensure the adequate protection of the financial and other records

Financial Reporting – General

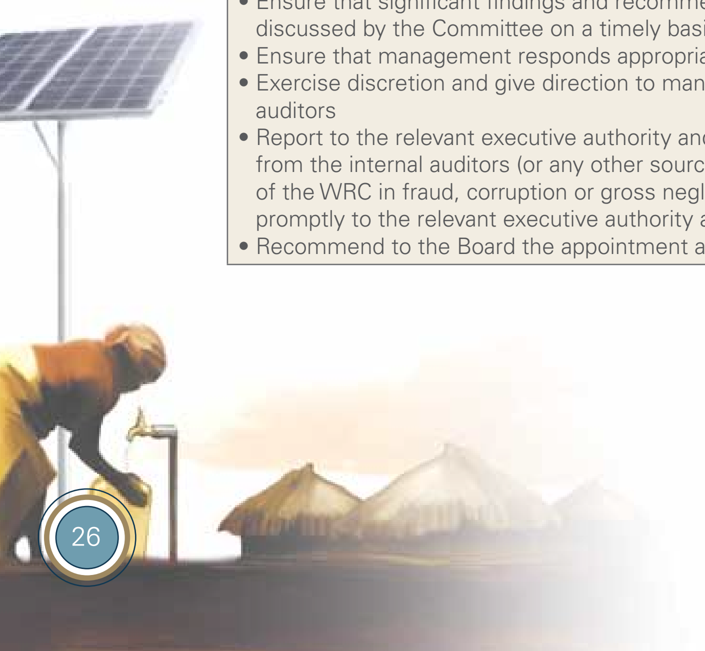
In preparation for a review of the annual financial statements, the Audit Committee:

- Gain an understanding of the current areas of greatest business/operational risk and financial risk and consider whether management is managing these effectively
- Consider, together with the internal and external auditors, any fraud, illegal acts, deficiency in internal control or other similar issues that have arisen during the financial year under review
- Take note of significant accounting and reporting issues, including recent professional and regulatory pronouncements, and understand their impact on the financial statements
- Obtain information from management and the internal and external auditors on significant risks and exposures identified, and the actions taken by management to protect the organisation

Internal Audit

In order to gauge the adequacy of the internal audit function as part of the overall risk management, the Audit Committee:

- Review and approve, together with management and the internal auditors, the internal audit plans and activities for the period under review, review the budgeted internal audit fee in relation to the services provided and recommend the fee for approval by the Board
- Assess the effectiveness of the internal audit function and ensure that no unjustified restrictions or limitations are placed upon the internal auditors
- Meet separately with the internal auditors to discuss any matters that the Committee or auditors believe should be discussed privately
- Ensure that significant findings and recommendations made by the internal auditors are received and discussed by the Committee on a timely basis
- Ensure that management responds appropriately to recommendations by the internal auditors
- Exercise discretion and give direction to management on differences of opinion between WRC Executive and auditors
- Report to the relevant executive authority and the Auditor-General (Treasury Regulation 27.1.8) should a report from the internal auditors (or any other source) to the Audit Committee implicate any member(s) of the Board of the WRC in fraud, corruption or gross negligence. The Chairperson of the Audit Committee shall report this promptly to the relevant executive authority and the Auditor-General (Treasury Regulation 27.1.8)
- Recommend to the Board the appointment and/or reappointment of an internal auditor



External Audit
To assess the effectiveness of the external audit process, the Audit Committee: • Review, for the purpose of a recommendation for approval to the Board, the external auditors' proposed audit plan, including the co-ordination of their audit with procedures carried out by the internal auditors, and the budgeted external audit fee • Consider the independence of the external auditors, in the light of the range of services provided, in the context of all consulting services provided to the WRC • Meet separately with the external auditors to discuss any matters that the Committee or auditors believe should be discussed privately • Ensure that significant findings and recommendations by the external auditors are received by the Committee and discussed on a timely basis • Ensure that management responds timeously and appropriately to recommendations made by the external auditors • Review the performance of the external auditors, including regularity and compliance, to ensure that the WRC receives the best possible serve and value for money. The Audit Committee should consider the audit approach adopted, the management letters issued, the audit fee, the quality of audit personnel engaged on the audit and the timely and satisfactory completion of the audit. Make recommendations to the Board regarding their reappointment or dismissal, except in the case of the Auditor-General. The Audit Committee, notwithstanding, acknowledges the right of the external auditors to perform external audits and to make decisions relating to the audit arising from the legislative mandate of the Auditor-General.

Compliance with Laws and Regulations
It is the duty of the Board to ensure compliance with all laws and regulations relating to the WRC. To ensure compliance, the Audit Committee: • Review the effectiveness of the system for monitoring compliance with laws and regulations and the results of management's investigation and follow-up (including disciplinary action) of any instances of non-compliance • Review changes in the laws and regulations by obtaining regular updates from management • Review the findings of any examinations by regulatory bodies, and any auditor observations made during the relevant audits • Be satisfied that all regulatory compliance matters have been considered in the preparation of the financial statements

Reporting Responsibilities

It is the responsibility of the Audit Committee to report and make appropriate recommendations to the Board of the WRC for approval, including the following:

- Report on the effectiveness of internal controls of the WRC
- Report on the effectiveness of the risk management process
- Ensure that open channels of communication exist between internal auditors, the external auditors and the Board of the WRC
- Ensure that the Board of the WRC is aware of matters which may significantly impact the financial condition or affairs of the business
- Communicate any concerns it deems necessary to the Board of the WRC, the executive authority (the Minister of Water and Environmental Affairs) and the Auditor-General (Treasury Regulation 27.1.9)

Compliance with the Code of Ethics and Business Conduct

In ensuring compliance with the Code of Ethics and Business Conduct of the WRC, the Audit Committee:

- Ensure that the Code of Ethics and Business Conduct is in written format and that arrangements are made for all employees to be made aware of it
- Evaluate whether management is setting the appropriate 'tone at the top' by communicating the importance of the Code of Ethics and Business Conduct and the guidelines for acceptable behaviour
- Review the process used by management to monitor compliance with the Code of Ethics and Business Conduct
- Obtain regular updates from management regarding compliance with the Code of Ethics and Business Conduct

Other Responsibilities

- Perform such other activities related to this Charter as are requested by the Board of the WRC
- If necessary, institute and oversee special investigations
- Review and assess the adequacy of the Audit Committee Charter on a regular basis, requesting approval from the Board of the WRC of proposed changes
- Evaluate the Committee's and individual members' performance on an annual basis. The results of the evaluation shall be made available to the Board

Finance Committee

Members and meeting dates were the same as for the **Audit and Risk Committee of the Board**. The Finance Committee was appointed to assist the Board in carrying out its compliance responsibilities in terms of the PFMA.

The responsibilities of the Finance Committee are as follows:

Budgets

- Review and evaluate budgeting systems, policies and procedures
- Review the budget for the current financial year to be submitted for approval to the Board
- Analyse and review individual amounts projected in the budget
- Periodically review and evaluate variance analyses comparing actual amounts with budgeted amounts

Financial Reporting – General

- Review and evaluate the financial policies and procedures
- Review and evaluate, quarterly, the procedures for the management of debtor balances to ensure that they are effectively managed
- Review and evaluate bad debts to be written off
- Review and evaluate the policy regarding investments on a regular basis to ensure that they are effectively managed
- Review and evaluate the investment schedule

Financial Reporting – Annual Financial Statements

- Review the annual financial statements paying particular attention to complex and unusual transactions
- Focus on judgmental areas, for example, those involving the valuation of assets and liabilities and other contingencies and commitments
- Consider changes in accounting policies or their application, the reasons for changes, the effects of the changes on the current and future Annual Financial Statements, and the external auditor's view on these
- Review significant accounting and reporting issues, including recent professional and regulatory pronouncements, and understanding their impact on the Annual Financial Statements
- Review the possible impact of the significant risks identified in the process of risk assessment and management on the Annual Financial Statements
- Review any legal matters which could significantly impact on the Annual Financial Statements

Compliance with Laws and Regulations

- Review and evaluate compliance with the Public Finance Management Act No. 1 of 1999
- Review and evaluate compliance with other applicable legislation

Other Responsibilities

- Review and evaluate major financial and operational system changes
- Review and evaluate the overall effectiveness of the procurement process as well as any material procurement transactions
- Review and evaluate the restructuring of business processes
- Review and evaluate the extent to which the WRC complies with Corporate Governance principle

Risk Committee

Members and meeting dates were the same as for the **Audit and Risk Committee of the Board**. The responsibilities of the Risk Committee are as follows:

Risk Management and Fraud Prevention

- Evaluate, on an annual basis, the adequacy and effectiveness of the risk management processes followed by the WRC and evaluate the strategy for managing these risks effectively.
- The Risk Committee shall provide an assurance function in respect of the integrated risk management of the WRC and, in order to be informed of the enterprise-wide risk exposure of the WRC, the Accounting Officer or his/her delegate shall refer the Risk Committee to any significant risk issues identified by the WRC, including the following matters:

  - the overall risk management processes of the WRC;
  - the typical risks inherent to the functions and activities of the WRC, as well as the management and control of such risks;
  - areas where there has been a major change in the risk factors; and
  - details of the action plans of management to control the level of risk.
- The Risk Committee shall review the fraud prevention framework and related strategies of the WRC in order to direct the internal and external audit efforts and priorities and to assist the Accounting Officer or his/her delegate to determine the skills required to improve controls and to manage fraud-related risks.
- The Risk Committee shall evaluate the effectiveness of the monitoring systems pertaining to fraud-related risks and the results of management's investigation and follow-up of alleged fraud and other matters, and shall review and comment on, where appropriate, cases of alleged fraud and related matters, when these are referred to it by the Accounting Officer or his/her delegate.

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

Members	
Mr P Cross (Chairperson)	
Prof JB Adams	
Dr TPE Auf der Heyde	
Mr T Balzer	
Ms E Karar	Represented CEO on 22 February 2012 (CEO joined meeting later)
Dr R Kfir	CEO until 30 September 2011
Ms ZB Mathenjwa	
Mr N Mhlongo	
Mr DP Naidoo	CEO
Mr MP Nepfumbada	
WRC (in attendance)	
Dr H Snyman	Director: Water-Centred Knowledge
Ms R Lutchman	Company Secretary
Dr J Burgess	Represented Dr H Snyman on 22 February 2012
WRC (in attendance by invitation, 22 February 2012)	
Dr S Liphadzi	
Mr N Patel	
Mr J Bhagwan	
Dr G Backeberg	
Committee Secretary	
31 August 2011	Ms A Jansen
07 November 2011	Dr H Snyman
22 February 2012	Ms A Jansen

Meetings	
31 August 2011	RPS
07 November 2011	Workshop
22 February 2012	RPS

Terms of Reference of the RPS Committee:

The RPS Committee of the Board will:

- Review and advise on the alignment of research goals and plans with national policy and priorities and the mission of the WRC
- Advise the Board on compliance with the Water Research Act and other relevant legislation governing the use of public funds for research and development
- Advise on overall research priorities of the WRC
- Advise on capacity-building initiatives, including the support of students through WRC research projects
- Advise, review and monitor the development and effectiveness of the implementation of the WRC's research management policies, procedures and practices
- Advise on procedures guiding the development of annual business plans for the WRC and each of the KSAs
- Advise on procedures governing research funding allocation and the evaluation of research outcomes
- Advise on policies and procedures regarding knowledge dissemination and application
- Review KSA business plans and provide the Board with a recommendation for approval (with special emphasis on KSA research portfolios)
- Evaluate the outputs, outcomes and impact of WRC-funded research
- Review and monitor the WRC's drive to transform the South African water-centred knowledge base, i.e., research capacity building
- Monitor the scope and effectiveness of the internal audit function and the ethical conduct of the WRC from the research management perspective

Business Address:	Postal Address:
Marumati Building 491 18th Avenue Rietfontein Pretoria 0084	Private Bag X03 Gezina 0031

ACHIEVEMENTS

During 2011/12 the WRC continued to serve South Africa's Government, reporting through its Board to the Minister of Water and Environmental Affairs, its shareholder, and the Department of Water Affairs (DWA). Knowledge created through WRC funds strongly supports DWA's overarching objective, i.e., water for economic growth and sustainable development.

INVESTING IN THE CREATION OF WATER-CENTRED KNOWLEDGE

Investing in the creation and sharing of knowledge

During 2011/12, the WRC supported the water sector and all its relevant institutions and partners by providing the sector with knowledge aimed at informing decision-making processes, improving monitoring and assessment tools, and making available a range of new and improved technologies related to water resource management, improved use of water in agriculture and the provision of water and sanitation services. The WRC continued to address the issue of climate change and the linked phenomena of extreme events. Research funded by the WRC will support the development of adaptive and mitigating strategies which will ensure the future sustainability of the country's water resources and services.

As the WRC aims to provide appropriate knowledge to further improve South Africa's ability and capacity to govern and manage its water resources, its research portfolio has to continue to incorporate various water uses in relation to applied land uses, with emphasis on issues of water quality, quantity and accessibility. Research projects focused on resource protection and sustainability are also required. Table 1 shows the four key strategic areas (KSAs) and the research thrusts within each of these.

Table 1: The key strategic research areas and thrusts

Water Resource Management	• Water Resource Assessment and Planning • Water Quality Management • Water Resource Protection • Water Resources and Climate • Water Resource Institutional Arrangements
Water-Linked Ecosystems	• Ecosystem Processes • Ecosystem Management and Utilisation • Ecosystem Rehabilitation
Water Use and Waste Management	• Water Services – Institutional and Management Issues • Water Supply and Treatment Technology • Sustainable Municipal Wastewater and Sanitation • Sustainable and Integrated Industrial Water Management • Mine Water Treatment and Management • WaterSmart Fund
Water Utilisation in Agriculture	• Water Utilisation for Food and Fibre Production • Water Utilisation for Fuelwood and Timber Production • Water Utilisation for Poverty Reduction and Wealth Creation in Agriculture • Water Resource Protection and Reclamation in Agriculture

The research portfolio for 2011/12 was set on the basis of the WRC's strategic plan. The schematic presentation above (Table 1) provided the frame for the research addressed during the year under review. 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. These research KSAs were supported by the **Water-Centred Knowledge** KSA. This structure continued to form the core operating framework for WRC-funded R&D and was further consolidated during the year.

Water Resource Management

The objectives of the Key Strategic Area (KSA) were closely aligned with various Government Outcomes, particularly Outcome 10 relating to 'environmental assets and natural resources that are well-protected and continually enhanced'. The impact of the KSA at national level also reached both regional and international levels through partnerships and collaboration. The KSA continued to play a prominent role in addressing many challenging water resource issues within the sector. This ranged from investigating appropriate forms of water governance for South Africa to development of improved water resource assessment tools, development of appropriate conceptual frameworks for regulation of water quality, revision of groundwater Reserve methodologies, and developing projection scenarios for potential impact of climate change on Karoo aquifers. The KSA also participated in the development of South Africa's Green Paper and subsequent White Paper on the National Climate Change Response, and made significant inputs to the National Water Resource Strategy review process. In a particularly integrative initiative, it has recently played a leading role in mobilising groundwater specialists to work collaboratively with surface water hydrologists through the Groundwater Division of the Geological Society of South Africa.

Water-Linked Ecosystems

Research in this KSA put strong emphasis on the creation of knowledge aimed at protection, and ensuring the utilisation and sustainable management, of water-linked ecosystems in our water-scarce country during a time of demographic and climate change. Research portfolios within this KSA promoted critical issues about conservation of aquatic ecosystems in order to provide the knowledge required for their sustainable functioning, in terms of national legislation, commitments to international conventions, and the ongoing provision of goods and services which ecosystems deliver. The research in this KSA develops the understanding of the ecological processes underlying the delivery of goods and services and provides the knowledge to sustainably manage, protect, utilise and rehabilitate aquatic ecosystems. Three main research areas were addressed during 2011/12: ecosystem processes, i.e., the biophysical process, form and function of ecosystems; ecosystem management and utilisation, including issues such as the ecological Reserve, socio-economic considerations, ecosystem governance and ecosystem health; and ecosystem rehabilitation, including rehabilitation and

restoration of process, form and function of estuaries, rivers and wetlands. The research addressed national priorities and Government Outcomes relating to the KSA's portfolio.

Water Use and Waste Management

During the year under review, this KSA focused mainly on research for the domestic, industrial and mining water sectors. The aim was to proactively and effectively lead and support the advancement of technology, science, management and policy relevant to water supply, waste and effluent management, for these sectors. The KSA continued to support studies on appropriate technologies for improving the quality and quantity of our water supplies for domestic use, with a focus on water supply and treatment technologies serving urban, rural, large and small systems. Greater emphasis has been put on aspects related to water footprints, energy efficiency and generation in the supply of services, water conservation and demand management, reuse and beneficiation from water supply and wastewater treatment, treatment of AMD, and adaptation and mitigation strategies at a water services level to deal with future challenges associated with climate change. Waste and effluent, as well as reuse technologies that can support and improve management in the municipal, mining and industrial sectors, were also addressed, and innovative, integrated solutions for water and waste management in the industrial and mining sectors were studied. The research areas included water services (institutional and management issues); water supply and treatment technology; sustainable municipal wastewater and sanitation, industrial and mine-water management; sanitation and hygiene education, and the WaterSmart Fund which supports the demonstration and development of innovative solutions.

Water Utilisation in Agriculture

Research carried out in this KSA aimed at increasing household food security and improving the livelihoods of people at farming, community and regional levels, through efficient and sustainable utilisation and development of water resources in agriculture. More specifically, this research focused on increased biological, technical and economic efficiency of water use, the reduction of poverty through water-based agricultural activities, increases in profitability of water-based farming systems, and the sustainable use of water resources through protection and restoration practices. All agricultural sub-sectors were addressed, including irrigated and dryland agriculture; woodlands and forestry; grasslands and livestock watering; aquaculture and inland freshwater fisheries. During 2011/12 emphasis was placed, through new projects, on determination of water use of irrigated crops through satellite imagery; improved water use efficiency and reduced canopy management inputs through deficit irrigation of wine grapes; rehabilitation of catchments invaded with alien plants and measurement of the water use of indigenous trees; empowerment of women through water use security, land use security and knowledge generation for skills development to achieve household food security and sustainable rural livelihoods in selected areas of Limpopo and Eastern Cape Provinces; and indigenous coping strategies for drought adaptation

with scenarios for agriculture in the Southern Cape. This research output will support development and application of approaches, models, techniques, practices and guidelines for efficient and beneficial agricultural water management.

Supporting research projects

During the year under review the WRC managed 322 research projects at various stages of project life cycle (Table 2), of which about 79% (259 projects) were active projects; the balance were mostly projects that have been finalised and are in the process of being financially closed.

Table 2: Overview of research project activity for the year under review and the previous financial year

Financial year	2011/12	2010/11
Total no. of projects	322	328
No. of active projects	258	259
No. of new projects	74	77
No. of finalised projects	96	76
No. of solicited projects	101	109

In the year under review, the WRC initiated 74 projects at the beginning of the financial year.

The key strategic area focusing on **Water Resource Management** initiated 31 projects:

1. Development of a groundwater resource assessment methodology for South Africa: Towards a holistic approach (K5/2048)
2. The hydrogeology of Groundwater Region 17: Central Highveld (K5/2049)
3. Unifying weather and climate variability predictions – An operational seamless forecasting system for Southern Africa at time scales from days to seasons (K5/2050)
4. Surface water, groundwater and vadose zone interactions in selected pristine catchments in the Kruger National Park (K5/2051)
5. Vadose zone hydrology: Spatial and temporal influences, assessment techniques and aquifer susceptibility (K5/2052)
6. Impact of fault structures on the occurrence of groundwater in fractured rock aquifers (K5/2053)
7. Groundwater-surface water interaction: From theory to practice (K5/2054)
8. Investigation of groundwater potential in fractured crystalline rocks of the Northwest Province, South Africa (K5/2055)
9. Implementing uncertainty analysis in water resources assessment and planning (K5/2056)
10. Developing a citizen-based rainfall monitoring system (K5/2057)
11. Development of the pressure release flow test method for artesian flow aquifers with case study in TMG (K5/2058)
12. Optimising fog water harvesting (K5/2059)

13. South African climate multidisciplinary analysis (K5/2060)
14. Development of defensible regional climate change projections for adaptation and policy (K5/2061)
15. The establishment of rain gauge networks for rainfall estimation calibration of the South African new weather radar network (K5/2062)
16. Implementation of salinity and water management tools for the Berg and Breede catchments in the Western Cape (K5/2063)
17. Towards an integrated framework for the assessment and management of sediment-related impacts on water resources in South Africa: A dam performance case (K5/2064)
18. Nutritional factors influencing the biosynthesis of the neurotoxin beta-n-methylamino-L-alanine by cyanobacteria (K5/2065)
19. Validation of the forcing variables (evaporation and soil moisture) in hydrometeorological models (K5/2066)
20. The limits of predictability of the South African seasonal climate (K5/2067)
21. Improvement of early preparedness and early warning systems for extreme climatic events flood warning (K5/2068)
22. Guidelines for the delineation of protection zones in a complex aquifer setting (K5/2069)
23. Preventing production borehole clogging by *in-situ* iron removal in South African aquifer systems (K5/2070)
24. Water Sensitive Urban Design (WSUD) or Low Impact Design (LID) for improving water resource protection/ conservation and reuse in urban landscapes (K5/2071)
25. Advancing Strategic Adaptive Management (SAM) as a framework for implementation of IWRM by catchment management agencies (K5/2072)
26. Embedding property rights theory in co-operative approaches to the management of aquatic ecosystem services in South Africa (K5/2073)
27. Change-oriented learning and water management practices: Knowledge flows and mediation tools (K5/2074)
28. Approaches to engaging basin risk and the political economy of water in the Western Cape system (K5/2075)
29. Investigating stakeholder engagement cycles and identities within water resource management, using narrative techniques (K5/2076)
30. Considering alternative dispute settlement practices for water resources management in South Africa (K5/2077)
31. An analysis of water pricing instruments governed by the DWA water pricing strategy, and its potential for generating revenue for CMAs (K5/2078)

The key strategic area focusing on **Water-Linked Ecosystems** initiated 7 projects:

1. Assessment of locally-manufactured radio telemetry equipment for manual and remote behavioural monitoring of fish in lentic and lotic freshwater ecosystems in South Africa (K5/2111)
2. Long-term response of specific wetlands to Working for Wetlands rehabilitation (K5/2035)
3. Setting objectives for urban river rehabilitation (K5/2036)
4. Hyperspectral remote sensing of water hyacinth: From plant physiology to landscape-level changes (K5/2037)
5. Aquatic microbial diversity: A sensitive and robust tool for assessing ecosystem health and functioning (K5/2038)
6. Biology, ecology and management of indigenous and invasive alien fish species in the Groot Marico River catchment (K5/2039)
7. The effects of sediment as a physical water quality variable on macroinvertebrates as input into sediment water quality guideline development (K5/2040)

The key strategic area focusing on **Water Use and Waste Management** initiated 30 projects:

1. Mechanism for pricing and financing the implementation of the Green Drop Report to guide the strategic decrease of the risk factor of waste water treatment works (K5/2085)
2. Assessing the impact of expansion of bulk infrastructure on capital requirements of water boards (K5/2086)

3. Providing water services at tariff levels that cover cost and that are sensitive to demand (K5/2087)
4. Adapting and piloting the new concepts of Community-Led Total Sanitation (CTLS) into the South African municipal environment (K5/2088)
5. A comparative analysis of water management devices in Cape Town and prepayment meters in Johannesburg (K5/2089)
6. Strategy for large-scale roll-out of community-based service provision (K5/2090)
7. Social norms and moderation of water consumption in a major South African city (K5/2091)
8. Energy efficiency in the South African water industry: a compendium of best practices and case studies (K5/2092)
9. Scoping study and research strategy development on currently known and emerging contaminants influencing drinking water quality (K5/2093)
10. Verification and validation of analytical methods for testing the levels of PPHCP (pharmaceutical and personal health care products) in treated drinking water and sewage (K5/2094)
11. Energy generation from distribution systems (K5/2095)
12. Exploring knowledge on natural processes for novel approaches to constructed wetlands design and performance for wastewater using biomimicry (K5/2096)
13. Investigation into the long-term risks associated with deep row entrenchment of pit latrine and wastewater treatment sludges for forestry and land rehabilitation purposes (K5/2097)
14. An investigation into technical sanitation solutions for informal areas (K5/2098)
15. Adapting water footprints for South Africa and exploring the value of integrating water, carbon and energy (environmental) footprints for the South African industrial sector (K5/2099)
16. Industrial brine minimisation: Determining the physical-chemical parameters that affect evaporation rates on multi-component hyper-saline effluents (K5/2100)
17. Evaluation of forward osmosis technology for the treatment of concentrated brines (K5/2101)
18. Evaluation of partitioning coefficients for South African soils to inform the new National Framework for the Management of Contaminated Land with emphasis on the protection of water resources (K5/2102)
19. Valuing water for South African industries: A production-function approach (K5/2103)
20. Adapting constructed wetlands for real-world applications (K5/2104)
21. Integrated photo-catalytic and anaerobic treatment of industrial wastewater for biogas production (K5/2105)
22. A modern role for wastewater ponding systems in the beneficiation of specialist effluents in industry (K5/2106) (The project had to be withdrawn at the request of the institution)
23. Toxicity evaluation of metal and metal oxide nanoparticles to aquatic invertebrates and algae (K5/2107)
24. Improved analytical strategies for monitoring heavy metal removal in selected wastewater treatment works and constructed wetlands in Gauteng and KwaZulu-Natal Province (K5/2116)
25. Removal of metal ions from industrial effluents and acid mine drainage by metal sulphide precipitation (K5/2108)
26. Development of a toolkit to enable quantitative microbial ecology studies of sulphate reducing and sulphide oxidising system (K5/2109)
27. Promoting and improving water services authority/provider performance and identification of good practices through benchmarking (K5/2112)
28. CLARA: Capacity-linked water supply and sanitation improvement for Africa's peri-urban and rural areas (EU FP7 Project) (K5/2114)
29. An investigation into pollution from on-site dry sanitation system (K5/2115)

The key strategic area focusing on **Water Use in Agriculture** initiated 6 projects:

1. Water use efficiency of irrigated agricultural crops determined with satellite imagery (K5/2079)
2. Investigating the possibility to improve water use efficiency and reduce canopy management inputs of wine grapes through deficit irrigation (K5/2080)
3. Rehabilitation of alien-invaded riparian zones and catchments using indigenous trees: An assessment of indigenous tree water use (K5/2081)
4. Empowerment of women through water use security, land use security and knowledge generation for improved household food security and sustainable rural livelihoods in selected areas of, amongst others, Limpopo Province (K5/2082)

5. Empowerment of women through water use security, land use security and knowledge generation for improved household food security and sustainable rural livelihoods in selected areas of, amongst others, the Eastern Cape Province (K5/2083)
6. Insights into indigenous coping strategies to drought for drought adaptation in agriculture: The Southern Cape scenario (K5/2084)

In the year under review, the WRC finalised 96 projects.

The key strategic area focusing on **Water Resource Management** finalised 32 projects:

1. Protocol for assessing the sustainability of springs (K5/1488)
2. Persistent organic pollutants (POPs) in the environment (K5/1561)
3. Development of a model to assess the costs associated with eutrophication (K5/1568)
4. Endocrine disruptive chemical (EDC) activity and health effects of identified veterinary compounds in surface and ground water (K5/1686)
5. Sampling and monitoring protocol for radioactive elements (K5/1694)
6. Influence of catchment development on peak urban runoff (K5/1752)
7. Investigation into the effects of water quality (organic vs. inorganic) on the immune systems of humans (K5/1756)
8. Review and update of the SANCOLD Guidelines for the design of freeboard of dams (K5/1759)
9. Measurement of the bulk flow and transport characteristics of selected fractured rock aquifer systems in South Africa (K5/1760)

10. The identification and delineation of high-yielding well-field areas in Karoo aquifers as future water supply options to local authorities (K5/1763)
11. Field investigations to study the fate and transport of light non-aqueous phase liquids (LNAPLs) in groundwater (K5/1766)
12. Identification, estimation, quantification and incorporation of risk and uncertainty in water resources management tools in South Africa (K5/1838)
13. Integrating water resources and water services management tools (K5/1840)
14. The water sector institutional landscape by 2025 (K5/1841)
15. Towards regulation of water resource management in South Africa (K5/1842)
16. An evaluation of the sensitivity of socio-economic activities to climate change in climatically divergent South African catchments (K5/1843)

17. A comparison of the costs associated with pollution prevention measures to that required to treat polluted water resources (K5/1845)
18. Optimised monitoring of groundwater – surface water – atmospheric parameters for enhanced decision making at a local scale (K5/1846)
19. Nitrate removal for groundwater supply to rural communities (K5/1848)
20. Assessment of the toxicity of cyanobacteria in the Kruger National Park (K5/1850)
21. Quality control and assurance guideline for South African toxicity testing laboratories (K5/1853)
22. Development of a risk indicator methodology to estimate the relative risk of pesticide contamination in South African water resources (K5/1854)
23. Water allocation reform, instruments and processes for achieving equity and gender balance (K5/1855)
24. The preparation of a hydrologically-improved Digital Elevation Model for South Africa based on the SRTM data set (K5/1908)
25. Reducing uncertainties of evapotranspiration and preferential flow in the estimation of groundwater recharge (K5/1909)
26. Water resources in rural communities in the Limpopo Province: Social, chemical and microbiological quality evaluations and interactions (K5/1910)
27. Implementation of a conceptual framework model for the regulation of water quality in an integrated, preventative management approach (K5/1912)
28. Scoping study on the management of microbial contamination (taking also chemical quality in consideration) in water resources in CMAs (K5/1934)
29. Prospects and processes for the establishment of stakeholder-initiated catchment management agencies (K5/1972)
30. Development of a system dynamics model for the implementation of IWRM in South Africa: PHASE II: Pilot implementation and design of the PMS (K5/1973)
31. Determining the socio-economic value of groundwater in the TMG Aquifer (K5/1974)
32. Enhancements to WR2005 study (K5/2019)

The key strategic area focusing on **Water-Linked Ecosystems** finalised 14 projects:

1. Chronic toxicity test method for selected indigenous riverine macroinvertebrates (K5/1313A)
2. Estuaries and economic empowerment (K5/1705)
3. Environmental assessment in an area where ongoing DDT spraying occurs (K5/1706)
4. Development of a diatom-based biomonitoring protocol for South African rivers and streams Phase 3: Regional testing, method refinement and calibration, index formulation and River Health Programme accreditation (K5/1707)
5. The Shared Rivers Initiative Phase 1 Part A: Contextual profiles of the shared rivers of Kruger National Park (K5/1711)
6. Riparian landscapes: Interfluvial patch mosaics (K5/1790)
7. Deriving conservation targets for freshwater systems (K5/1796)
8. Water temperatures and the ecological Reserve (K5/1799)

9. Identifying and enabling protection of national freshwater heritage ecosystems for South Africa (K5/1801)
10. Development of a revised Desktop Reserve Estimation Model (K5/1856)
11. Deployment, maintenance, and further development of SPATSIM hydrological decision support framework (SPATSIM-HDSF) (K5/1870)
12. Pilot design implementation and testing of a simple cost-effective method for monitoring temperature in SA rivers and streams. Refinement of business plan, Phase 2 (K5/1872)
13. Situation assessment of the basic human needs and ecological Reserve (K5/1939)
14. Extracting scientific evidence for the development of ecosystem services production functions for the Resource Directed Measures (K5/1978)

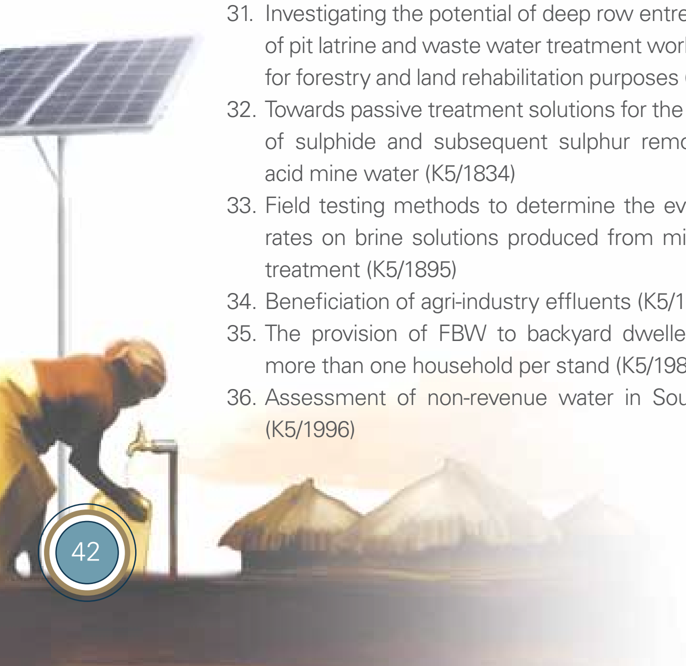
The key strategic area focusing on **Water Use and Waste Management** finalised 38 projects:

1. Development of water balances for operational and post-closure situations for gold mine residue deposits to be used as input to pollution prediction studies for such facilities (K5/1460)
2. Prediction of how different management options will affect drainage water quality and quantity in the Mpumalanga coal mines up to 2040 (K5/1628)
3. Situation and gap analysis of water quality testing in South Africa (K5/1720)
4. Establishment of a sanitation technology demonstration centre (K5/1890)
5. Material mass balance modelling of wastewater treatment systems (K5/1620)
6. Improving health-related microbial quality of drinking water at the point of use by selected home treatment interventions: effects on rural people living with HIV/AIDS (K5/1653)
7. Inverse transients to determine deficiencies in pipelines (K5/1721)
8. Health Impact Assessment (HIA) of water, sanitation and hygiene services in relation to home/community-based care services for HIV/AIDS especially with regard to home/community-based care (K5/1738)
9. How does the HIV and AIDS epidemic in South Africa impact on the water, sanitation and hygiene sectors? (K5/1813)
10. Development of strategies and guidelines for integrated water meter management (K5/1814)
11. Development of people-centred programmes (K5/1815)
12. Technical guidelines for the determination of municipal effluent charges to encourage industries to switch to cleaner production (CP) alternatives (K5/1832)
13. Investigating operational and indigenous knowledge of water use and waste management and establishing ways to integrate them into water services management (K5/1941)
14. Investigating the social vulnerability of people and their livelihoods and their response to water infrastructure (K5/1888)
15. Guidelines on determining the vulnerability and risks of water services infrastructure (K5/1893)
16. The establishment and piloting of the Technical Assistance Centre for Small Water and Wastewater Treatment Plants (K5/1896)
17. Social scarcity of water and water use (K5/1940)
18. Support to EU - EUROMBRA project: Development of an anaerobic membrane bioreactor (K5/1661)
19. Management of microbial waterborne diseases: Volume 5 – What our children need to know (K5/1672)
20. FISHing for indigenous anammox bacteria (K5/1823)
21. Rapid enzymatic detection of organophosphorus and carbamate pesticides in water (K5/1902)
22. Development of a zero-effluent mathematical model for wastewater minimization in a pharmaceuticals facility (K5/1898)
23. 'Health for purpose' in wetlands treating waste streams (K5/1936)
24. Dual grey- and drinking water reticulation systems for high-density urban residential dwellings in South Africa: A pilot study (K5/1821)

25. Survey of handwashing and hygiene behaviour (K5/1886)
26. A toolkit to measure sociological, economic, technical and health impacts and benefits of 10 years of water supply and sanitation interventions in South Africa (K5/1700)
27. Sustainable and beneficial use of biosolids land application strategies: Quantifying nitrogen and phosphorus plant-soil mass balances (K5/1724)
28. An approach to reducing risks and hazards from human waste generated by informal settlements: Community-based risk assessment with municipal partnerships (K5/1901)
29. Understanding the sludge accumulation in VIPs, UDS and other on-site sanitation systems, and strategies to manage desludging in the future when pits are full (K5/1745)
30. Using ethnographic research to better understand water and sanitation practices in rural South Africa (1990)
31. Investigating the potential of deep row entrenchment of pit latrine and waste water treatment works sludge for forestry and land rehabilitation purposes (K5/1829)
32. Towards passive treatment solutions for the oxidation of sulphide and subsequent sulphur removal from acid mine water (K5/1834)
33. Field testing methods to determine the evaporation rates on brine solutions produced from mine water treatment (K5/1895)
34. Beneficiation of agri-industry effluents (K5/1937)
35. The provision of FBW to backyard dwellers and/or more than one household per stand (K5/1987)
36. Assessment of non-revenue water in South Africa (K5/1996)
37. Critical assessment of raising basic level of water services (K5/1892)
38. Web enablement of a Water Safety Plan and incorporation of existing similar supply system assessment tool (K5/1993)

The key strategic area focusing on **Water Use in Agriculture** finalised 12 projects:

1. The effect of the introduction of agroforestry species on the soil moisture regime of traditional cropping systems in rural areas. Phase II: On-farm trials of alternative agroforestry systems (K5/1351)
2. Sustainable techniques and practices for water harvesting and conservation and their effective application in resource-poor agricultural production (K5/1465)
3. Agro-forestry systems for improved food production through the efficient use of water (K5/1480)
4. Modelling non-point source (NPS) pollution in agriculture from field to catchment scale (K5/1516)
5. Nutritional value and water use of indigenous crops for improved rural livelihoods (K5/1579)
6. Participatory development of provincial aquaculture programmes for improved rural food security and livelihoods alternatives (K5/1580)
7. Managing salinity associated with irrigation in selected areas of South Africa (K5/1647)
8. Guidelines for irrigation management in pasture production (K5/1650)
9. Development of a comprehensive learning package for education on the application of water harvesting and conservation (WH&C) (K5/1776)
10. Technology transfer on the technical aspects and



cost-estimating procedures of surface and sub-surface drip irrigation systems (K5/1806)

11. The impacts of unpaved access roads on runoff, sediment fluxes and soil water movement within timber plantations (K5/1807)
12. Definition of process zones and connectivity in catchment-scale NPS processes (K5/1808)

The WRC published 133 research reports and products in this period. This included 103 printed reports, 12 electronically-published reports, 15 posters and 3 DVDs.

The various funding streams 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. Solicited research projects are mostly long-term, consortia-based, and address multifaceted issues, often calling for more than one research discipline and a substantial budget. About 31% of the total number of projects were solicited projects.

Figure 3 provides a schematic representation of the total number of research projects per annum for the past five years. The average number of projects remained around 300.

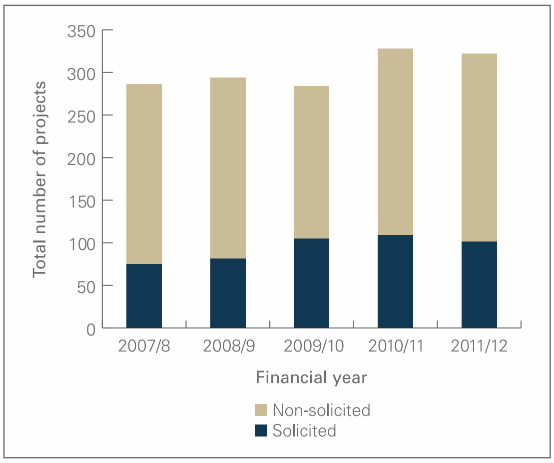


Figure 3: Total number of non-solicited and solicited research projects per annum for the past five years

Over the past 5 years the WRC has finalised 363 research projects (Fig. 4) indicating a significant contribution to knowledge in the water sector. An average number of 73 projects were finalised per year, for the past 5 years. Over the same 5-year period 342 new projects (Fig. 5) were initiated, ensuring the continuous contribution of new knowledge to the sector. An average number of 68 new projects were started per year, for the past 5 years.

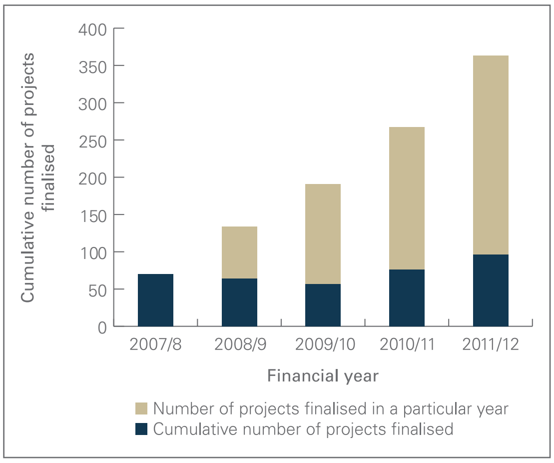


Figure 4: Annual and cumulative number of projects finalised over the past 5 years

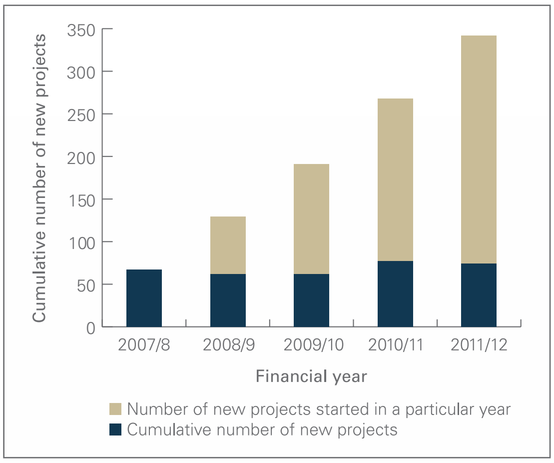
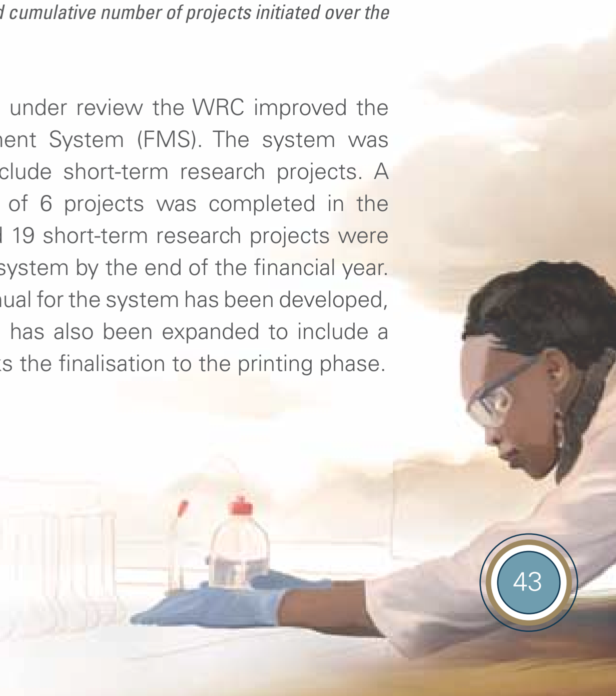


Figure 5: Annual and cumulative number of projects initiated over the past 5 years

During the year under review the WRC improved the Fund Management System (FMS). The system was expanded to include short-term research projects. A pilot consisting of 6 projects was completed in the first quarter and 19 short-term research projects were entered on the system by the end of the financial year. A draft user manual for the system has been developed, and the system has also been expanded to include a module that links the finalisation to the printing phase.



Providing innovative solutions to the water sector

The key strategic area **Water Resource Management** provided 2 new innovative approaches to support water management.

Indirect measurement of soil moisture

South Africa has very few (if any) direct soil moisture observations, and yet this information is critical for a wide range of applications, e.g., irrigation scheduling in agriculture, flood and drought forecasting, etc. The University of KwaZulu-Natal (UKZN) adapted an innovative approach, using indirect measurement of soil moisture from satellites, for South African conditions. The basic technique has been used internationally; however, the UKZN team applied and tested the technology in South Africa (K5/1683) and improved its efficiency by reducing modelling time scales from monthly, weekly and daily to three-hourly. In the year under review, the team enhanced the PyTOPKAPI Model (K5/2024), conducting validation and calibration campaigns to improve the accuracy of the data, and to make this data routinely available over the entire country. Preliminary results of the study are already being used in agriculture. On 13 February 2012 the WRC hosted a training workshop for a hands-on PyTOPKAPI Model.

Methodology to use groundwater resources for bulk municipal supply

The project aimed to identify favourable groundwater-potential areas for bulk municipal water supplies, to provide a method to quantify them, and to package the information so that it is accessible for planning purposes. In identifying favourable groundwater areas, the focus turned to developing a detailed transmissivity map of the Main Karoo Basin. Two methods were developed, namely, the Aquifer Assured Yield Model and the Aquifer Firm Yield Model (which was developed into a software package together with the other products). Geohydrologists traditionally provide a single, time-invariant estimate of the average safe or sustainable yield of an aquifer using average inputs and outputs. This new method significantly improves groundwater planning by aligning it to the planning 'language' used in surface water assessments. Two knowledge transfer activities (training courses) were held for DWA staff members.

The key strategic area **Water-Linked Ecosystems** provided 3 new innovative approaches to support water management.

SPATSIM-hydrological decision support framework (SPATSIM-HDSF)

The SPATSIM hydrological modelling framework is a software package that includes a GIS (geographic information system) interface to a comprehensive and flexible database, as well as a wide range of hydrological and water resource estimation models. Many of the Reserve (environmental flow requirements) assessment methods in use in South Africa today have been developed as part of SPATSIM. A project completed in the year under review resulted in improved efficiency of the SPATSIM-HDSF model and improvement of the whole SPATSIM modelling framework. The further development of SPATSIM-HDSF included changes to the database structure, changes and enhancements to the main user interface, enhancements to the internal GIS functionality, development of additional time-series analysis tools, and the development of an ArcGIS extension to provide further GIS functionality. As part of the same project, the ACRU agrohydrological model was modified and a new model input structure and supporting tools were developed to include the ACRU model as one of the framework-compliant models available to users.

The Velocity Depth Guild Model

The main objective of Project K5/1856 was to create a Revised Desktop Reserve Model (RDRM) that more explicitly includes the links between hydrology, hydraulics and ecological response. The previous version of the Desktop Reserve Model was largely based on hydrology and regional model parameters that attempted to implicitly include variations in ecological response and the flow requirements needed to maintain different levels of ecological functioning. A Velocity Depth Guild (VDG) model was developed to incorporate the flow-habitat requirements of fish in the RDRM, based on the predicted response of fish 'flow guilds' (groups of species that exploit the same environmental resources in similar ways – in this case, having the same requirement for flowing water). This approach was based on the fact that only generic information regarding the width of the stream and the possible proportions of velocity-depth (VD) classes will be available in desktop Reserve studies. The suitability of the habitat must therefore be seen in terms of the width of the stream and suitability

can only be calculated in terms of VD categories and width. Other aspects such as cover and life cycles cannot be considered as the information is not available generically. Further development of the VDG model will include development of a stress profile for each VD-guild. If information on flow durations and stream widths can be provided by the other sub-models, the fish VD-guild response in terms of habitat stress (VD classes) durations can be calculated and provided according to ecological categories.

MiniSASS now on DVD to encourage the public to participate in river health monitoring

Reliable indicators of water quality and river health are often difficult and expensive to derive. To address this need, the SASS (South African Scoring System) river health biomonitoring method was first developed in the mid 1990s, as a low-technology, scientifically reliable and robust technique to monitor water quality in rivers and streams. MiniSASS represents the development of a simplified method of biomonitoring, based on the tried and tested SASS technique, by reducing the taxonomic complexity of SASS to a few aquatic invertebrate groups. The miniSASS method is an easy-to-learn river health biomonitoring tool which is ideal as an environmental education tool for learners, but can even be used by non-technical, private persons to monitor the health of rivers in their communities. The WRC has now developed a demonstrable user-friendly monitoring tool – the miniSASS DVD. The DVD should appeal to junior citizens, teachers and members of the public, and is meant to supplement the voluntary monitoring programme, Adopt-a-River.

The key strategic area **Water Use and Waste Management** provided 14 new innovative approaches to support water management and water services.

Wastewater Risk Abatement Plan (W_2RAP)

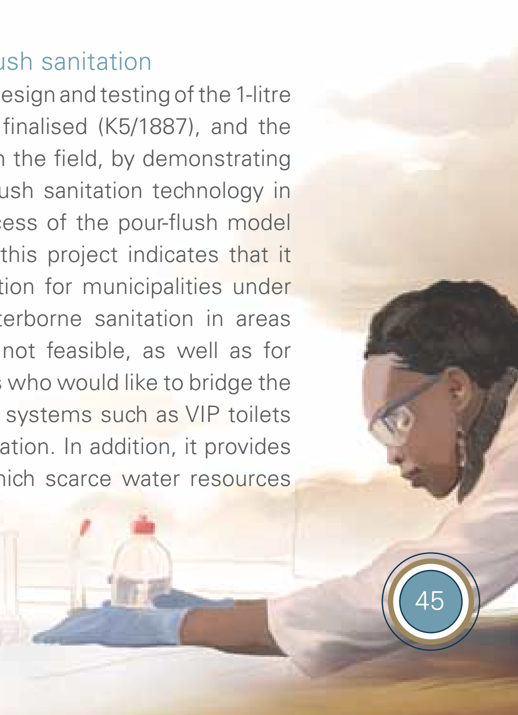
The W_2RAP draws on many of the principles and concepts from other risk management approaches, in particular, the Water Safety Plan, the multi-barrier approach and Hazard Analysis and Critical Control Points (HACCP). The W_2RAP guideline (K8/953) is, however, one of the first initiatives worldwide that plans for and applies a risk-based approach to raise and sustain the level of wastewater treatment performance. The formulation of this guideline document builds on existing good practice in outlining a systematic and transparent approach to ensure consistent compliance and good practice for rendering wastewater services (reticulation, treatment and scientific services) along the value chain. Emphasis is on wastewater planning and management, not on testing, with documentation and communication being a key component of the process. The development of the W_2RAP in South Africa was undertaken collectively by the DWA and the WRC, and pilot trials have been undertaken by the City of Cape Town, Nelson Mandela Bay Municipality and eThekwini Municipality.

A framework to assess the appropriateness of wastewater technology decisions (K8/952)

Specified discharge limits and authorisation requirements are expected to be a primary consideration when treatment technologies are considered by municipalities and their specialist services providers, but there are no hard-and-fast rules to be applied when choosing a suitable treatment system. However, the following factors normally influence the decision as to which treatment system is most appropriate under the circumstances: sensitivity of the receiving water body or land; legal requirements in terms of water use licensing; capacity of the local authority to operate and maintain the system; availability of funding to construct the facility; running-cost recovery and consumers' ability to pay for the ongoing operation and maintenance of the system; availability of reasonably-priced land; projected population growth; opportunities for reuse of the treated effluent or value-added returns and byproducts from the system; proximity of the community to the infrastructure; availability of freshwater for domestic use; acceptance by community. Use of this framework would result in the identification of the actual factors which influence decision-making, rather than simply making the assumption that the discharge limits and authorisation requirements alone would determine the choice of technology.

Demonstrating pour-flush sanitation

In the year under review, design and testing of the 1-litre pour-flush pedestal was finalised (K5/1887), and the technology was piloted in the field, by demonstrating the application of pour-flush sanitation technology in 20 households. The success of the pour-flush model designed and piloted in this project indicates that it may provide a viable option for municipalities under pressure to provide waterborne sanitation in areas where laying sewers is not feasible, as well as for dissatisfied householders who would like to bridge the gap between dry on-site systems such as VIP toilets and full waterborne sanitation. In addition, it provides a sanitation model in which scarce water resources



are used responsibly and sustainably, pointing a way forward for changes in standard sanitation, which currently relies on freely available water. Pour-flush technology shows potential for overcoming one of the thorniest challenges encountered with VIP systems, i.e., removing the sludge from full pits.

A first for using ethnography research to better understand water and sanitation practices

This study aimed to test the viability of an ethnographic participative technique, i.e., the use of digital media in the form of a video camera, to conduct research about water-related issues in rural communities. In addition, its intention was to inform communication and education campaigns aimed at effective water management. Due to the nature of exploratory research, it was predicted that other unexpected outcomes could present themselves. The study responded to the call in developmental discourse for indigenous household water practices and innovations to be taken into consideration in development interventions and solutions for rural water problems. This study has clearly shown that the ethno-visual tool can be used in a participatory non-interventionist manner in rural communities. The study was innovative in that it was non-interventionist, allowing rural people the opportunity to examine their problems from their own perspective. The use of different perspectives, both from insiders and outsiders to the community, broadened the scope of the study. Apart from the film footage, other material collected was graphically and visually provided to the elders in the community, allowing for debate on a level previously unknown to them.

Development and application of a framework for evaluating the effectiveness of hand washing

Information related to the impacts of the different approaches to hygiene education or health and hygiene awareness interventions in South Africa has been limited, and scientific information on the impacts of hand hygiene interventions on changing hand hygiene behaviours even more so. As a result, little was known regarding the most appropriate hygiene promotion interventions for different contexts in South Africa and the effectiveness of health and hygiene (h&h) promotion initiatives were not well-understood. This study showed that present hand-hygiene interventions, which focus on providing basic sanitation services, and the use of disease theory to promote the need for hand hygiene, were

focusing on some, but not all, of the key aspects required to improve hand 'cleanliness' and hand-hygiene techniques. However, this study also showed that measuring the effectiveness of hand-hygiene interventions in South Africa may be more difficult than initially anticipated and may rely on a number of variables, which are not yet clear. What was clear from this study was that hand hygiene in South Africa showed significant differences with what had been reported in international literature, and that there are presently many gaps in the local and international understanding of hand hygiene. The study also found that hand washing with soap did not necessarily lead to improved hand hygiene.

Development of a biosensor to measure EDCs (K5/1999)

Oestrogenic hormones are the most endocrine-disrupting chemicals (EDC), because their disrupting potency can be several thousand times higher than other chemicals such as nonylphenol. This implies that natural and synthetic oestrogens can be biologically reactive even at low nanogram per litre levels. Consequently, the detection of these trace contaminants in municipal water resources, and their elimination, are very important areas of current research interest. Due to the fact that oestrogens enter surface water through human urine, the actual concentration of oestrogenic compounds in municipal wastewater depends on treatment/reclamation plants and also on the population of the catchment area that contributes to the wastewater. In this study, sensor validation tests, including cross reactivity, recovery tests, precision, and reproducibility tests,

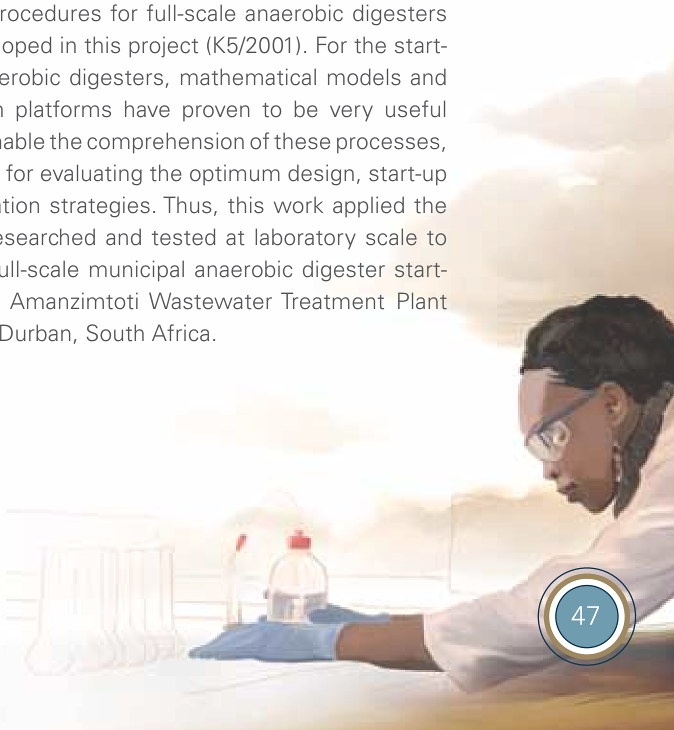
were performed in accordance with the United States Environmental Protection Agency's standard operating procedure for the analysis of steroid hormones in aqueous samples. The ENDOTEK aptasensor analytical parameters show that it is more sensitive than the YES, ELISA, ER-CALUX, DELFIA and the solid-state extraction method. The aptasensor storage stability was investigated over a period of one month, within which only an 18% decrease in the original response was observed. The sensor is suitable for on-site application and responds much faster than the chromatographic and ELISA methods. The aptasensor is suitable for applications in water containing high E2 (17β-estradiol) concentrations or very low E2 concentrations. Not only is the sensor able to determine the levels of E2 reported for various water systems in South Africa, it is also suitable for the determination of E2 levels in food and serum. The ENDOTEK sensor will also be suitable for measuring deviation from acceptable daily intake (ADI) of E2 through all sources. The ADI limit for E2 is 0.05 mg/kg body weight, as determined by the Food and Agriculture Organisation of the United Nations. For someone weighing 100 kg, the intake limit will be 0.5 pg/ml, which is within the analytical detection range of the aptasensor.

Development of a guideline for Water Sensitive Urban Design (K5/1826)

Water Sensitive Urban Design and Sustainable Drainage Systems (SuDS) offer an alternative approach to conventional drainage practices by attempting to manage surface water drainage systems holistically, in line with the ideals of sustainable development. They achieve this by mimicking the natural hydrological cycle, often through a number of sequential interventions in the form of a 'treatment train'. South Africa, and urban drainage practices in particular, require a shift from fragmented 'service provision' to 'holism' – non-linear and organic thinking, or 'systems thinking'. This places emphasis on management seeking to understand the relationships between the various components of the urban drainage system. These guidelines, which are a first in the sector, were designed to assist practitioners with the design, operation and maintenance of Sustainable Drainage Systems (SuDS) in South Africa and are seen as a work in progress as science meets practice.

Predicting start-up procedures for anaerobic digesters

The use of steady-state anaerobic models to predict start-up procedures for full-scale anaerobic digesters was developed in this project (K5/2001). For the start-up of anaerobic digesters, mathematical models and simulation platforms have proven to be very useful tools to enable the comprehension of these processes, as well as for evaluating the optimum design, start-up and operation strategies. Thus, this work applied the models researched and tested at laboratory scale to the first full-scale municipal anaerobic digester start-up at the Amanzimtoti Wastewater Treatment Plant (WWTP), Durban, South Africa.



Developing nanotechnology solutions for drinking water

Nickel (II) ions occur widely in the environment due to their widespread industrial use. Currently, there is no instant detector for nickel. A WRC project has developed a colorimetric probe for the determination of nickel (II) ions in water (K5/1991). The synthesis of glutathione-stabilised silver/copper nanoparticles (GSH-Ag/Cu alloy NPs) in polymer matrix and colorimetric assay of heavy metal ions was reported. The nanocomposite was fabricated into nanofibres by electrospinning. The freshly synthesised GSH-Ag/Cu alloy NPs are dark green in colour due to their intense surface plasmon absorption band. In the presence of Ni2+, the green GSH-Ag/Cu alloy NP fibres were discoloured. Initial metal screening studies have been conducted and the results indicate that this probe is selective towards Ni2+ ions.

Colorimetric probe for the detection of oestrogens in water

This project (K5/1991) presented a second innovative solution for the detection of oestrogens in water. A one-step method has been developed for the synthesis and incorporation of gold nanoparticles into electrospun polymer nanofibres for the development of a colorimetric probe which can be used to detect oestrogens in water. Different colours were attained with different concentrations of the analyte when polystyrene was used. This result leads to great opportunities of developing as well as employing the probe at lower concentrations of the analyte in wastewater from dairy farming effluents. Very low detection limits (ng/ml) are required for determination of oestrogens. In this study, oestrogens were detected with concentrations ranging from 10−11 to 10−9 mol/l in surface waters and dairy-farm effluents.

Applying social franchising for pit emptying

In this project, the principles of social franchising were applied to empty 456 household pit latrines in the Amathole District Municipality (ADM). The WRC, Eastern Cape DoE, Irish Aid and CSIR celebrated achievements in the piloting and application of social franchising principles in the water services environment. A seminar on 22 March 2012, World Water Day, captured these achievements; over the past 3 years up to 400 schools in the Butterworth district have had their sanitation facilities serviced and nearly 456 household VIPs were serviced in the ADM region. This is part of ongoing research building on K5/1952.

Implementation of the first conduit hydropower facility in South Africa at Elardus Park Reservoir, City of Tshwane Metro

The WRC and University of Pretoria (K5/2095) have conducted research on extracting available energy from existing and newly-installed water supply and distribution systems. This research culminated in a partnership between the WRC, University of Pretoria and Tshwane Municipality to pilot the first conduit hydropower system. The launch of this partnership project occurred on 29 November 2011. The Elardus Park Reservoir project was awarded second place in the African Energy Awards.

Web-enabled Water Safety Plan (WSP) tool

The WRC, through Project K5/1993 'Web-enablement of a water safety plan and incorporation of existing similar supply system assessment tool', established a spreadsheet tool which integrated aspects of the WSP into the WRC Water Supply System Assessment Tool, tested it with stakeholders and then developed a Web-enabled water safety tool. This transfer of the Water Safety Plan from a paper-based platform to a Web-enabled platform is not only innovative to South Africa but is also a global first. Therefore, on completion of the project, the South African water sector will have both a Web-enabled and spreadsheet-based version of the Water Safety Plan Status Checklist tool and a Water Safety Plan tool.

The development of nanocomposite polysulphone (PSF) membranes with reduced fouling properties for use in the water sector

Project K5/2006 has developed a PVA/PSF hydrogel material using N-hydroxy-succinimide as cross linker. The novel hydrogel composite is stable at room temperature with a well-defined porosity and homogeneous dispersion. The novel hydrogel-modified polysulphone membrane has reduced hydrophobicity which is expected to reduce fouling on membranes and could have wider application in ultrafiltration and water treatment. The electrochemical characterisation, atomic force microscopy and solid-state NMR evidence will be highlighted as novel aspects of the hydrogel characterisation.

The key strategic area **Water Use in Agriculture** provided three new innovative approaches to support water management and optimise the use of water in agriculture.

Nutritional value and water use of indigenous crops for improved rural livelihoods (K5/1579)

This project has created new knowledge regarding the nutritional status of South Africans and the links to agriculture and water. It has also generated innovative approaches on the cultivation and agronomic practices for African leafy vegetable production. Furthermore, the project has generated comprehensive new knowledge regarding the highly beneficial aspects of African leafy vegetables in addressing important micronutrient deficiencies in poor rural communities.

Development of a comprehensive learning package for education on the application of water harvesting and conservation (WH&C) (K5/1776)

The project has succeeded in filling a gap that existed by providing comprehensive learning material on the subject of water harvesting and conservation (WH&C). The WH&C materials can be used as reference material for existing courses, and/or establishing a new short course or skills programme using the entire set of development materials. The learning materials, as they have been developed, comprise 30 credits, which ties in well with the Quality Council for Trade and Occupations (QCTO) occupationally-directed short courses. According to AgriSETA these are typically set at 25 to 30 credits. The two WH&C facilitation and technical courses were written as an integrated package and are ideally run as a single course (totalling 30 credits), which fits in well with the short-course structure. The learning material is contained in four WRC reports.

Modelling non-point source (NPS) pollution in agriculture from field to catchment scale (K5/1516)

Models were developed and/or adapted to predict nutrient and sediment behaviour at field and catchment scales. Guidelines for pesticide handling were developed and approaches developed to assess economic trade-offs related to the feasibility of introducing agricultural NPS pollution control measures at field- and catchment-scales. This project created new knowledge to deal with non-point source pollution issues at four levels of investigation, namely:

- Fundamental research outputs covering nitrogen, phosphorus, sediments and selected pesticides
- Applied and predictive research outputs covering nitrogen, phosphorus, sediments and selected pesticides
- Integrative and interface tools outputs covering nitrogen, phosphorus and sediments (i.e. not pesticides)
- Management support tools covering nitrogen, phosphorus and sediments

Utilisation of funds by the various KSAs

The percentage utilisation of research project funds by the KSAs during 2011/12 (Fig. 6) indicates that about 45% (in comparison with about 51% for 2010/11) was invested in projects that focused on water resources (including water-linked ecosystems) and about 55% (compared with 49% for 2010/11) 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 as well as accrued for research projects during the financial year under review. The allocation of about 50% of the fund to issues related to resource management and 50% to issues related to water utilisation was a strategic allocation based on the medium- to long-term needs for research. Figure 6 shows the percentage of funds utilised for the different key strategic areas. Table 3 shows the planned versus utilised funds for the year under review, compared to the previous financial year.

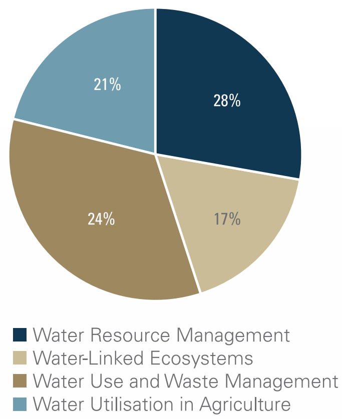


Figure 6: Percentage of funds utilised for the different KSAs in 2011/12

Table 3: Distribution of research project funds among KSAs: Planned vs. utilised funds (2010/11 data in brackets)

Key strategic area (KSA)	Planned percentage allocation of funds	Percentage of funds utilised for research projects
Water Resource Management	26 (28)	28 (31)
Water-Linked Ecosystems	14 (13)	17 (20)
Water Use and Waste Management	33 (36)	34 (29)
Water Utilisation in Agriculture	27 (23)	21 (20)

The actual utilisation of funds (as a percentage of total funds) by the KSAs closely agreed with the planned allocation, and the deviations observed did not exceed 6%. The overall investment in research projects (knowledge creation) was about R110.5 m. This was substantially more than what was reported in the previous year, with an increase of 32% (R83.8 m. for 2010/11).

Total investment in the support of knowledge creation, sharing and dissemination amounted to R140.9 m. This represents an increase of 27% from the previous year (R110.7m. total investment was reported in 2010/11). This investment included about R3.2 m. for the Water Information Network (WIN-SA), R1.7 m. for the Framework for Education and Training in Water (FETWater), as well as other income leveraged for projects during the year under review. Table 4 provides the business efficiency indicators in terms of the budgeted and actual utilisation of research funding. The investment in research projects expressed as a percentage of total expenditure was higher than the budgeted ratio and also higher than that of the previous year. The investment in research support expressed as a percentage of total expenditure was slightly higher than the budgeted ratio and also slightly higher than that of the previous year. The ratio addressing funding of the creation of new knowledge (research projects only) was 67%, 5% higher than that for 2010/11 and 4% higher than the planned ratio of 63%. The ratio for research support was 75%, compared to 73% in 2010/11, and was higher than the planned ratio of 74%.

Table 4: Research funding: Business efficiency indicators (budgeted and actual)

	2011/12 (budg-eted*)	2011/12 (actual)	2010/11 (actual)
Research project funding as percentage of total expenditure**	63%	67%	62%
Research support (research projects and support and technology transfer) as percentage of total expenditure	74%	75%	73%

* *Not including transfer of unutilised research funds*

** *Expenditure does not include provisions for bad debts and leave, bad debt write-offs, pension valuations and non-cash amounts*

Leveraging income for the creation, sharing and dissemination of water-centred knowledge

During the year under review the WRC continued to leverage levy income by striving to obtain funds from other sources to support water research. During 2011/12 this drive was fairly successful, but substantial amounts were rolled over into 2012/13. The WRC income originating from sources other than the levy for 2011/12 amounted to R23.6 m. Leveraged income included funds allocated to a number of KSAs for direct support of research projects and funds provided for capacity building, knowledge sharing and dissemination (e.g. WIN-SA and FETWater). 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 for other knowledge-sharing projects. Table 5 presents income indicators for the year under review, compared to the previous financial year. Sources of income other than the levy for 2011/12 amounted to about 17% of the total income.

Table 5: Income indicators for the year under review compared to the previous financial year

Indicator	Budget	2011/12 Year-end (actual)
Levies as percentage of total income	86%	83%
Other sources of income as percentage of total income	14%	17%
Leveraged income as a percentage of other income*	80%	79%

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

BUILDING CAPACITY

The WRC aims at providing South Africa with future researchers as well as a source of skilled human capital for other institutions within the water sector. This is done by encouraging project leaders to include students on their projects, enabling them to participate in water research through the various projects supported by the WRC. During the year under review, the WRC continued to place strong emphasis on building research capacity in South Africa as well as supporting a number of related capacity-building initiatives. In many areas of research supported by the WRC, it is evident that students who participated in earlier WRC projects are now leading WRC-funded research projects and serving as members of steering committees as well as reviewers of new proposals.

Capacity-building trends

In the year under review, the WRC gathered demographic information on the students that participated in WRC-funded projects. Figure 7 presents the cumulative number of participating students over the past five financial years, i.e. from 2007/08 to 2011/12. Cumulatively, 2 885 students actively participated in WRC-funded projects over the past 5 years. During the 2011/12 financial year, 506 students were involved in WRC projects. The trend could be perceived as a slight decline in student numbers over the past five years. However, the apparent decline could also be attributed to the improvement of WRC processes and tools leading to increased accuracy of accounting for capacity building, i.e. student numbers.

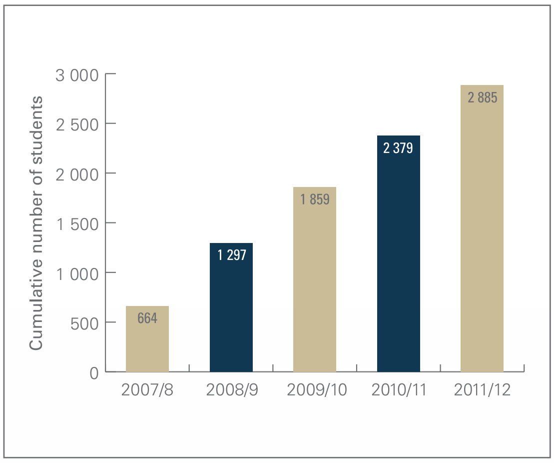


Figure 7: Cumulative number of students involved in WRC-funded projects over the past 5 years

Student demographics

During the year under review, the WRC gathered more comprehensive demographic data for the students working on WRC-funded projects. Of the 506 students supported by WRC-funded projects in 2011/12, 210 or 42% were female (Fig. 8a), which is encouraging as most WRC projects fall within the engineering or science category of research where the involvement of females in general remains low. Figure 8b shows the distribution of the students according to race.

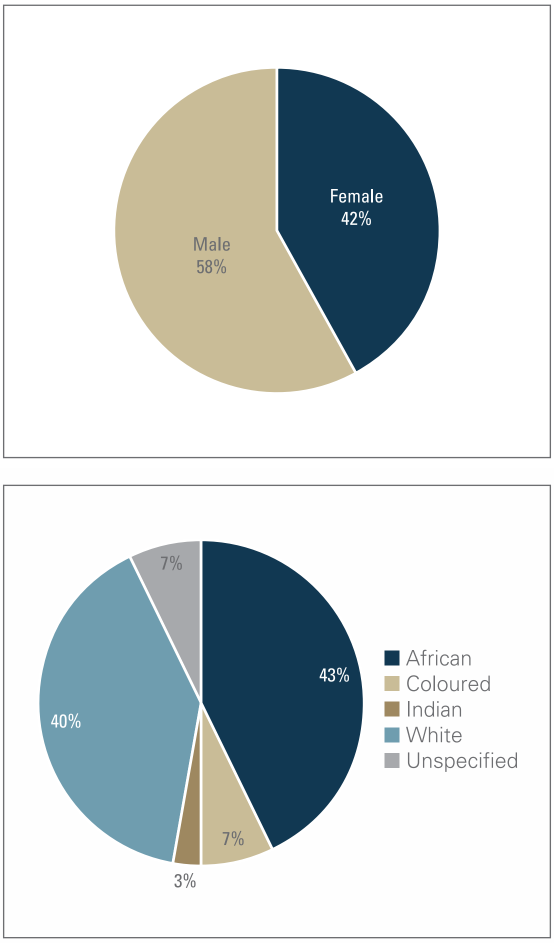


Figure 8: Student demographics according to (a) gender and (b) race

Figure 9 shows the degrees for which the students were enrolled. The large number of master's (252 students) and doctoral (142 students) candidates provides a critical mass for the next generation of academics and researchers in the water sector. The involvement of BTech students is encouraging as this indicates the involvement of universities of technology in water research.

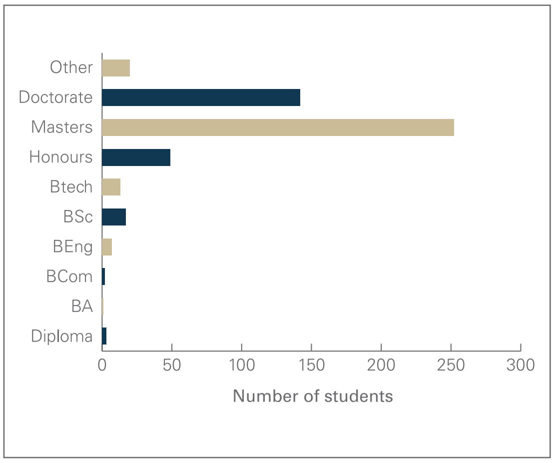


Figure 9: Degrees for which students participating in WRC-funded projects were enrolled in 2011/12

Figure 10 shows the country of origin of the students who participated in WRC projects in the year under review. South African students represented 76% of the total number of students, whereas 11% of the students were from other SADC countries. Approximately 92% of the students were from the African continent.

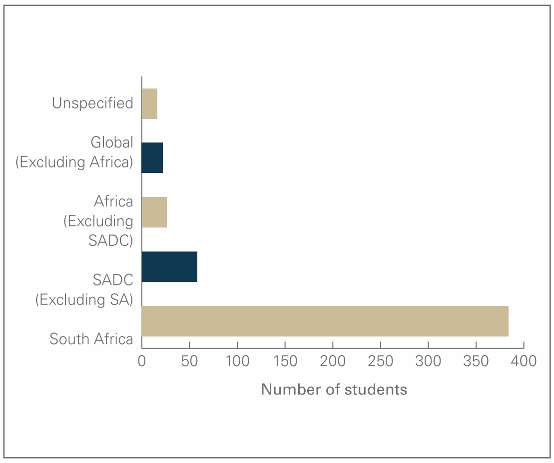


Figure 10: Country of origin of students who participated in WRC-funded projects in 2011/12

Of the 506 students, 384 reported South Africa as their country of origin. Figure 11 gives the demographic overview of the South African students. Seventy percent (70%) of the South African students were from previously disadvantaged groups (designated groups), whereas 53% of the total number of students (506) were from previously disadvantaged groups. Figure 11 also presents a breakdown of the students according to the designated groups. African students (139) were the majority group, followed by White female (80), Coloured (34) and Indian (15) students.

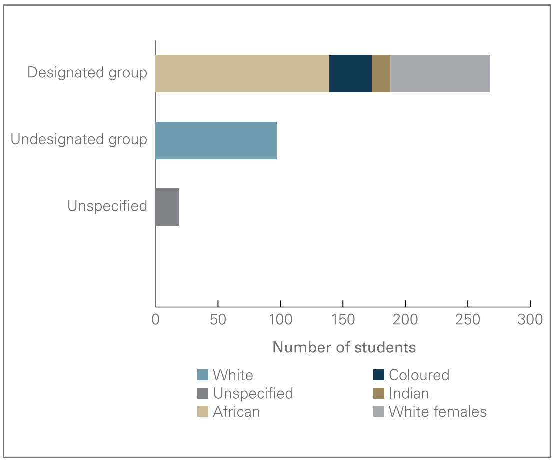


Figure 11: Demographic overview of the South African students who participated in WRC-funded projects in 2011/12

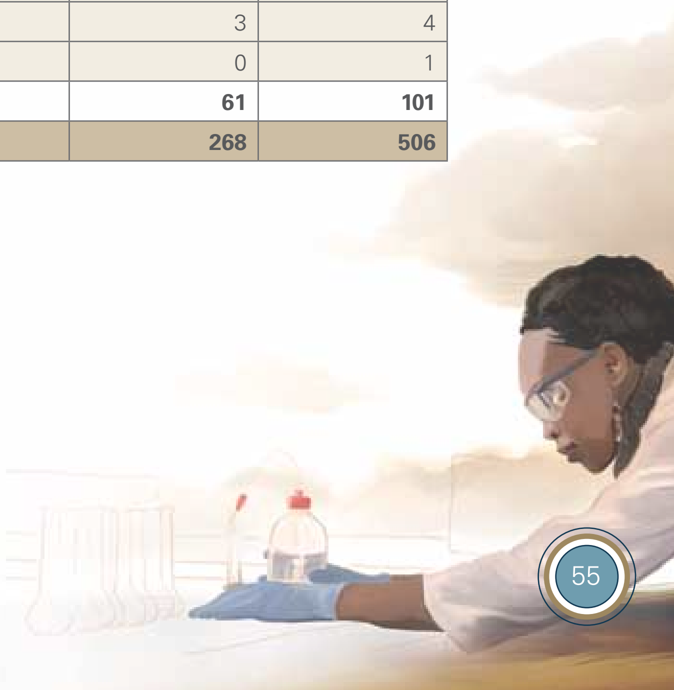
Capacity building by lead organisations in 2011/12

Table 6 reflects the number of students involved in WRC-funded projects, as reported for the various lead organisations contracted by the WRC, in the 2011/12 financial year.

Table 6: Number of students and number of previously-disadvantaged students (PDI) involved in WRC-funded projects per lead organisation in 2011/12

Institution name	Total PDI	Total students
Higher-education institutions		
Cape Peninsula University of Technology	8	15
Nelson Mandela Metropolitan University	2	8
North-West University	3	9
Rhodes University	19	32
Tshwane University of Technology	12	12
University of Cape Town	11	35
University of Johannesburg	4	6
University of Limpopo	0	2
University of Pretoria	19	34
University of South Africa	6	7
University of Stellenbosch	14	46
University of the Free State	12	30
University of the Western Cape	31	34
University of the Witwatersrand	5	15
University of Venda	1	2
University of KwaZulu-Natal	31	66
Subtotal	**178**	**353**
Science councils and state agencies		
Agricultural Research Council	6	14
Council for Scientific and Industrial Research	16	28
Council for Geoscience	2	5
South African Weather Service	1	1
Umgeni Water	4	4
Subtotal	**29**	**52**

Non-governmental and private institutions		
Africa Remediation Technology	1	1
Aquagreen Consulting	1	2
ASSET Research	3	10
ATL-HYDRO	1	1
Aurecon Group	1	2
BioAssets	0	1
Blue-Green Technologies cc	1	1
Centre for Environmental Economics and Policy in Africa	3	3
Counterpoint Development	1	2
DH Environmental Consulting	0	1
Duncan Hay and Associates	1	1
Emanti Management	1	3
Golder Associates Africa	4	9
GroundTruth	0	1
Hydrosoft Institute	17	18
Institute of Natural Resources	2	2
Muondli Consulting and Projects	1	1
National Institute of Occupational Health	0	2
PDG	1	2
Pegasys International	0	3
Pegram and Associates	1	2
Prime Africa Consultants (previously CIC International)	5	7
Sigma Beta	5	8
Sinelwati Scientific Research & Management	1	1
The Freshwater Consulting Group	0	1
The Narrative Lab	0	1
Umhlaba Consulting Group	7	8
Umvoto Africa	0	1
Virtual Consulting	0	1
Water for Africa	3	4
WSM Leshika Consulting	0	1
Subtotal	**61**	**101**
TOTAL	**268**	**506**



Capacity-building initiatives

In addition to its support for the training of students, the WRC initiated and supported a number of national capacity-building initiatives. These included support to national and local government as well as the development of new training material for different levels of learners and for academic institutions. The WRC continued to support the South African Youth Water Prize Competition and the Aqua Enduro Schools Competition. Career guides were distributed to secondary schools such as the Mamolemane Secondary School situated in Polokwane, Limpopo Province. The WRC assisted the Tshwane University of Technology (TUT) to review its Water Care programme. Other significant interventions included:

Water sector skills

The WRC managed a project entitled 'Integrated water sector skills intervention map based on a sector skills gap analysis' on behalf of the DWA. To date, no comprehensive, integrated plan exists that strategically outlines ways in which to build capacity and grow skills for both water services and water resource management. This project is aimed at developing an integrated water sector skills intervention map based on the findings of a quantitative and qualitative sector-wide skills audit.

Occupational qualifications for water-process controllers

The WRC participated in the first LGSETA pre-scoping meeting for the occupational qualification related to water on 5 October 2011. The purpose was to determine and define the curriculum scope for water-related occupational qualifications for the local government sector in the context of the Quality Council for Trades and Occupations (QCTO), which was established in terms of revised implementation of the National Qualifications Framework. The WRC also participated in a three-day workshop, held from 6-8 December 2011, entitled: 'Understanding occupational profiles as the basis for skills planning and development in the water and wastewater treatment sector'. WISA, together with the Tshwane University of Technology and UNESCO-IHE, hosted a workshop which focused on the development of specific occupational profiles and related training requirements which can form the basis for improved skills planning, career paths and course development.

Techno Girls programme

The WRC is pleased to be one of the institutions participating in the Techno Girls programme, which was set up by President Jacob Zuma in 2009, through the Department for Women, Children and People with Disabilities, as a way of speeding up the achievement of gender equality and empowerment of women in South Africa. The WRC participated in the launch of the Techno Girls programme on 4 November 2011 at the Sandton Convention Centre. During the launch the WRC pledged to support at least four girl learners with access to the world of work, to enable them to take up scarce-skills careers required by the South African economy. The programme maintains an exclusive focus on careers in the science-related fields. During their tenure at the WRC, during the school holidays, the girls will be exposed to various career paths and options through job shadowing of role models. The learners will commence their visits to the WRC in the 2012/13 financial year.

WRC 101 for project leaders

In the 2009/10 financial year the WRC developed an informative one-day course/workshop for aspiring and new project leaders to understand the WRC research cycle. The course shows participants the research priorities of the WRC and the fund allocation for each of the priorities; how to prepare a comprehensive proposal, with tips provided to improve the chances of success; and how to manage the technical, administrative and financial aspects of a WRC project. It also provides an understanding of the contractual and financial audit requirements and also the resources available to enhance the success of the project. Four regional courses were held in the year under review: Gauteng (26 May 2011 – approximately 80 people attended), Eastern Cape (30 May 2011 – approximately 40 people attended), KwaZulu-Natal (6 June 2010 – 30 people attended) and Western Cape (15 June 2010 – approximately 50 people attended).

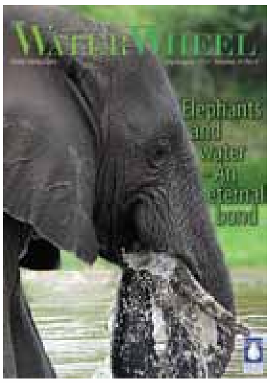
Regional Southern African Young Water Professionals initiative

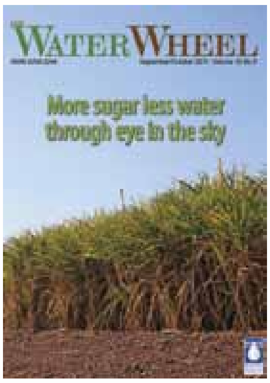
The WRC supports this joint initiative of the International Water Association (IWA) and the Water Institute of Southern Africa (WISA). The 2nd Regional Conference of the Southern African Young Water Professionals (SA YWP) was held at the CSIR International Convention Centre, Pretoria, and was the largest YWP conference held by the IWA to date, with over 400 registrations representing 10 countries. Research managers from the WRC were involved in planning the event and the technical programme. A WRC director delivered a plenary address on 4 July 2011 at the opening session. A WRC research manager currently serves as the Vice-President of the Southern African Young Water Professionals and will take up the position of President in May 2012.

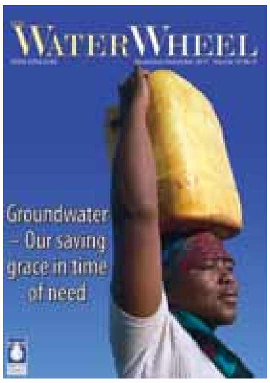
ENHANCING KNOWLEDGE DISSEMINATION

The WRC aims to constantly improve its contribution towards knowledge as well as to enhance the sharing and dissemination of WRC-funded research findings. This is linked to Government Outcomes/Outputs related to building skills, by addressing the building of future research capacity and improving knowledge dissemination. The WRC strives to improve its contribution towards the water-centred knowledge base in South Africa by enhancing the WRC knowledge-sharing activities and positioning.

In the year under review, the WRC enhanced public understanding of water research through the publication of *The Water Wheel*.







The WRC published six issues as well as a Special Supplement of The Water Wheel in the year under review.

- The May/June 2011 (Volume 10, No. 3) issue featured an article entitled 'Maintenance, skills still impede infrastructure services', and covered 13 new WRC reports in the 'New from the WRC' section.
- The July/August 2011 (Volume 10 No. 4) edition featured an article on the link between water and elephant management in nature reserves on the cover, and published information on 15 new WRC reports.
- The September/October 2011 (Volume 10 No. 5) edition featured a new WRC project on remote sensing using satellite technology in Mpumalanga on the cover, and covered 20 new WRC reports. The September issue also featured a Special Supplement celebrating the WRC's 40th anniversary.
- The November/December 2011 (Volume 10 No. 6) edition featured an article entitled 'Groundwater – from "inferior" to "superior"', and published information on 6 new WRC reports.
- The January/February 2012 (Volume 11 No. 1) edition featured an article entitled 'Water quality – The changing face of Rietvlei Dam', and published information on 8 new WRC reports.
- The March/April 2012 (Volume 11 No. 2) edition featured an article entitled 'Aquaculture in South Africa: From fingerling to prize catch', and published information on 13 new WRC reports.

Technical and policy briefs

This knowledge tool attempts to communicate, in a clear and brief format, the outcome of various research studies to the water sector, with special emphasis on non-technical professionals, policy- and decision-makers. For selected finalised research projects, 1-2 page briefing notes are produced, which are short communiqués highlighting research outcomes and sharing pertinent messages and recommendations. Another 36 briefs were produced during the year under review (for easy reference, the number in brackets refers to the report or project number; all technical and policy briefs and reports are available electronically on the WRC website: www.wrc.org.za):

Technical briefs

1. Guide towards the development of conservation plans for threatened fish species (K5/1677)
2. Understanding hydroclimatic variability (K5/1747)
3. Light-weight, moveable superstructures for VIP toilets (K5/1781)
4. Mercury levels in SA water resources (K5/1754)
5. Study shows WRC to be major funder of estuarine research (Report No. KV 257/10)
6. Sewerage system planning (Report No. 1828/1/11)
7. Potential impact of coal-mining on water in the Waterberg (Report No. 1830/1/10)
8. Enabling and constraining factors of ER implementation in the Lowveld (Report No. TT 477/10)
9. Guidelines on greywater reuse (Report No. 1639/1/10)
10. Madumbe crop impact on wetland vegetation (Report No. KV 260/10)
11. Cleaner production in the mining industry (K5/1553)
12. Development of a practical methodology for assessing the potential impacts of climate change on the yield characteristics of reservoirs (K8-870)
13. Deriving conservation targets for rivers (K5/1796)
14. Developing a method for determining the environmental water requirements for non-perennial systems (K5/1587)
15. Groundwater management framework (K5/1917)
16. Use of stable isotope analysis to describe aquatic foodwebs in the Kruger National Park (K8-890)
17. A review of studies on the Mfolozi Estuary and associated floodplain, with emphasis on information required by management for future reconnection of the river to the St Lucia system (K8-930)
18. Household on-site water as supplementary resource to potable municipal supply (K5/1819)
19. Sediment quality guidelines (K8-793)
20. Sediment yield prediction map (K5/1765)
21. Strategic Adaptive Management: A framework for implementing integrated water resource management (K8-861)

Policy briefs

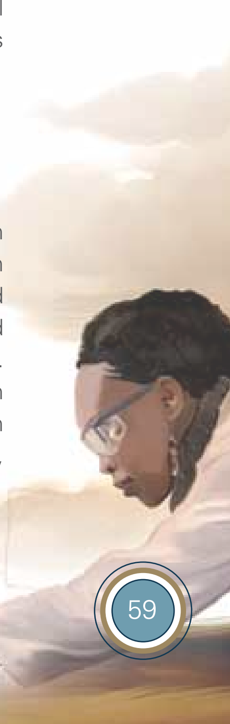
1. Towards improved management of oestrogen activity in treated drinking water (K5/1749)
2. Light-weight, moveable superstructures for VIP toilets (K5/1781)
3. National survey of mercury levels in SA water (K5/1754)
4. Study shows WRC to be major funder of estuarine research (Report No. KV 257/10)
5. Towards sustainable water services provision (Report No.1812/1/10)
6. Potential impact of coal-mining on water in the Waterberg (Report No. 1830/1/10)
7. Sewerage system planning (Report No. 1828/1/11)
8. Corporate water risk in South Africa – Implications for growth and development (K8-927)
9. Knowing, caring & acting: Making use of socio-cultural perspectives to support biophysical conservation (K5/1800)
10. The concept of public trusteeship as embedded in South Africa's National Water Act (K8-942)
11. The valuation of estuary services in South Africa specifically regarding changes to estuary services (K5/1413)

Four (4) additional Ministerial Briefs were prepared on request from the Minister of Water and Environmental Affairs:

1. WRC and climate change, finding solutions for tomorrow's challenges today
2. WRC and desalination, towards enough water for all
3. WRC and mine-water, sustainability addressing SA's mining legacy
4. Fracking in South Africa: State-of-the-art

Improved dissemination of water research through Water SA

Water SA is the WRC's accredited scientific journal which contains original research articles and review articles on all aspects of water science, technology, engineering and policy. *Water SA* has been in publication since 1975 and includes articles by both local and international authors. The journal is issued quarterly (four issues per year). In the year under review, the WRC published four issues in Volume 37 (three regular issues and one special edition), and one issue in Volume 38.



Knowledge-sharing events and workshops

The WRC held a number of knowledge-sharing events in the year under review, including technical field visits and technical workshops aimed at enhancing knowledge transfer. Many of these were in collaboration with strategic partners in order to enhance research impact and knowledge uptake. Examples of technical workshops, seminars and launches held during the year under review were:

1. South African/French Water Research Partnership for Capacity Building, 23 May 2011, Gauteng
2. Climate Change Task Team Workshop, 8 April 2011, Gauteng
3. River Rehabilitation – Technologies, Methods and Policies, 28 June 2011, KwaZulu-Natal
4. Energy from Conduits workshop, 11-12 May 2011, Gauteng
5. Integrated Meter Management Training Events, 12 October 2011 (Durban), 19 October 2011 (Cape Town), 26 October 2011 (Gauteng)
6. Role of Aquatic Ecosystems in People's Livelihoods, 29 September 2011, Eastern Cape
7. Biomimicry Workshop, 14-15 July 2011, Gauteng
8. Pits, Pets and Faecal Sludge Management Dialogue, AfricaSan 19-21 July 2011, Rwanda
9. Community Led Total Sanitation in South Africa, National Seminar, 18 August 2011, Eastern Cape
10. Improving Knowledge Dissemination using the Electronic Water Knowledge Hub – Envisioning Workshop, 26 September 2011, Gauteng
11. Internal Workshop: Increasing Use of WRC products, 10 October 2011, Gauteng
12. Mine Water Management – workshop with the Department of Mineral Resources, 1 December 2011, Gauteng
13. Launch of the *Atlas of Freshwater Ecosystem Priority Areas in South Africa*, 14 November 2011, Gauteng
14. Launch of the Pierre van Ryneveld Hydropower Reservoir, 29 November 2011, Gauteng.
15. 4th Training Course on Advanced Earth Observation Methods in Water Management, 5-9 December 2012, KwaZulu-Natal
16. Ecosystems and Livelihoods, 15 March 2012, Limpopo
17. The Importance of Water Quality Monitoring and Application of MiniSASS Kits, 26 March 2012, KwaZulu-Natal
18. Green Drop and Wastewater Risk Abatement Plan, 30 March 2012, Western Cape
19. WRC/DST Innovation Technologies Showcase, 20 March 2012, Gauteng
20. Sustainable Rural Water Supply, 6 March 2012, Gauteng
21. Direction of Hydrology Research in the Age of Global Change and Inauguration of Water Resources of South Africa 2012 Study, 6 March 2012, Gauteng

Other knowledge-sharing events

Exhibitions

As part of its knowledge-sharing and dissemination activities the WRC participated in a number of exhibitions at conferences, symposia and workshops, using these to disseminate information in the form of reports and other publications. Exhibitions in which the WRC participated included:

- Budget Vote, 14 April 2011, Old Assembly Chambers, Parliament, Cape Town
- 3rd Municipal Water Quality Conference, 27-30 June 2011, Cape Town ICC,
- 2nd Regional Southern African Conference of Young Water Professionals, 3-5 July 2011, CSIR International Convention Centre, Pretoria
- Water Sector Leadership Group (WSLG), 21-22 July 2011, Protea Hotel, Stellenbosch
- SALGA Western Cape Conference, 3-4 August 2011, Diaz Strand Hotel, Mossel Bay
- Biennial Conference of the Ground Water Division: 2011, 18-21 September 2011, CSIR International Convention Centre
- IMESA Conference, 26-28 October 2011, Birchwood Hotel, Johannesburg
- South African National Committee on Large Dams Biennial Conference, 10 November 2011, Midrand
- Conference of the Parties (COP17), 28 November - 9 December 2011, ICC Expo, Durban
- Western Cape Water Quality Summit 2012, 8 March 2012, Kronenburg, Paarl
- Joint exhibition with Department of Water Affairs and Lesotho Highlands Water Project at World Water Forum, 12-17 March 2012, Marseille

Internal open day

The WRC staff visited the Alrode plant of the South African Breweries (SAB) on 28 October 2011. SAB have implemented some groundbreaking innovations in water purification and waste reduction. Forty staff members attended the open day and were shown various aspects of the beer-making and bottling process.

40-Year Celebration Conference

In an effort to enhance sector awareness of the scope of WRC research and impact, and in line with its communication strategy, the WRC decided to host a conference capitalising on the fact that the organisation celebrated its 40th year of existence in 2011. The WRC celebrated '40 years of excellence' with a technical conference held on 31 August and 1 September 2011 at Emperors Palace, Johannesburg. The conference attracted 397 delegates, and over 130 expert scientists presented and co-authored papers which reflected on existing research knowledge and knowledge gaps particularly related to the following themes:

- Water security in a water-scarce country
- Sustainability of the water ecosystem and energy nexus
- Water quality
- Water-use efficiency (water demand/water conservation)
- Water technology

The event showcased the significant contribution of the WRC and its researchers to knowledge over the past 40 years. During the event, the 40-year celebration book, *WRC – 40 Years of Excellence*, was launched. The book highlights the impact of the WRC over the past four decades. A special edition of *Water SA* was published (Vol. 37 No. 5) with peer-reviewed papers which emanated from the proceedings of the 40-year conference.

LEADING WATER-CENTRED KNOWLEDGE

The WRC serves South Africa as its water-centred knowledge hub. This requires the WRC’s staff members to lead, facilitate and contribute to various national, African and global initiatives, networks and other activities that contribute to both knowledge generation and its dissemination and transfer.

Strategic membership in key national networks/projects

The WRC is a patron member of the Water Institute of Southern Africa (WISA), and a member of the Water Sector Leadership Group, the Committee of Heads of Organisations of Research and Technology (COHORT) and the International Water Association (IWA-SA). The WRC is the Chair of the DWA Climate Change Task Team and a partner in the COP 17: Nairobi Work Programme. The WRC is represented on the Executive Committee of DWA’s ‘Adopt-a-River’ programme and River Health Programme. In the year under review, the WRC was actively involved in the Working Group of the DWA programme on Institutional Reform and Realignment, the Inter-Ministerial Committee, and the Section 5 Committee on Acid Mine Drainage (Human Rights Commission) The WRC also served as: member of the Global Water Research Coalition (GWRC) task groups on Water Footprint, Biosensors, and Brine Desalination; member of the GWRC/WERF Research Collaboration on Energy Topics; advisory member of the Provincial Drought Committee; member and partner to the Nairobi Work Programme (NWP) under the UNFCCC; Chair of the River Basin Working Group in the GEF International Waters Science Synthesis.

Leadership positions

WRC staff members represented the WRC in various leadership positions. These positions included:
Council Members of WISA; member of the IWA Board of Directors, Chair of the Small Wastewater Treatment Works Division Divisions of WISA; Immediate-Past President and Vice-President of the IWA WISA Young Water Professionals; member of the IWA Strategic Council; Chair of the Ground Water Division (GWD) of the Geological Society of South Africa; member of the Western Cape Provincial Drought Management Committee; member of the Board of the Institute of Water Research, Rhodes University; member of the Board of Sci-Bono Discovery Centre; member of the South African Mercury Association (SAMA); member of the Steering Committee of the Working for Wetlands programme; member of the National Advisory Committee on Ramsar Site Management (DEA); member of Executive Committee of the South African National Committee on Irrigation and Drainage (SANCID); Chair of the TIGER Regional Capacity Building Facility; member of the Global Water Partnership Southern Africa Regional Technical Advisory Group; member of the RAMSAR Science and Technical Review Panel Focal Point representing the African Region; member of the global team and Africa Task Team Leader of EU-CLARA Africa Capacity Linked Project; member of the IWA/USEPA Excellence in Drinking Water Quality Award Programme; member of Global Judging Panel of the IWA Project Innovation Awards; member of the review panel of the African Regional Centre for Water and Sanitation (CREPA); member of the Advisory Board of the International Centre for Water Economics and Governance in Africa (IWEGA); member of the Management Committee of the Southern African Regional Irrigation Association (SARIA); Co-Chair of the IWA Groundwater Restoration and Management Specialist Group; Co-Chair of the River Basin Working Group in the in the GEF International Water Science Synthesis; member of the Scientific Advisory Committee of the GEF International Waters Science Conference 2012; manager of SAFeWater; member of the EPA Task Group: Guidelines for Water Reuse; member of the Editorial Board for IWA Publishing; Associate Editor for *Water Science and Technology* and *Water Science and Technology: Water Supply.*

Enhancing leadership and uptake of science

The WRC engages in national, continental and international initiatives to enhance knowledge uptake as well as to understand the research needs of the water sector. The section that follows highlights selected national, African and international initiatives undertaken in the year under review.

National initiatives

Institutional reform and realignment: Research

The Department of Water Affairs are leading three major initiatives in the water sector: (1) a legislative review which includes the review of the National Water Act (Act 36 of 1998), the National Water Services

Act (Act 108 of 1997) and the Water Research Act (Act 34 of 1971); (2) the development of the National Water Resource Strategy II; and (3) the Institutional Realignment and Reform project. The WRC is actively involved in the working group of the DWA programme on Institutional Reform and Realignment. The WRC participated in the Water Sector Consultation Workshop on the Review of the National Water Resource Strategy (NWRS) and the Institutional Re-alignment Projects (11 and 12 May 2011). A WRC staff member also served on the institutional task team that focuses on Water Boards. The WRC was actively involved in the working group focusing on Research and Innovation. The terms of reference for the working group are to review and recommend institutional arrangements concerning research funding, research service provision, and research implementation across the water sector; to provide guidance on the alignment of water research to national priorities and policies; to ensure clear support for moving research towards being used; to recommend any modalities or processes which will enhance water research co-ordination, implementation and outputs; to communicate the outcomes of the above activities widely, ensuring their inclusion in the chapter on 'Research and Innovation' within the NWRS and in the broader institutional realignment and reform project, and engaging with their implications for the National System of Innovation; and to ensure that institutional arrangements support the development of a national water research community of practice that catalyses adaptive integrated water resource management. The working group was established on 21 April 2011 and follow-up meetings were held throughout the year. Comments on the 'Research and Innovation' chapter of the National Water Resource Strategy II were provided to DWA in September 2011. The CEO and the Director: Water-Centred Knowledge attended a high-level round table discussion on the legislative review on 13 December 2012, which was also attended by Ms Bridgette Mabandla, Chairperson of the Business Process Review Committee.

Climate Change Task Team

The WRC, as Chair of the DWA Climate Change Task Team, facilitated discussions on the development of a climate change strategy. The Water Services Directorate requested the WRC to assist in the development of their climate change response strategy.

Silver Drop system

This system is largely based on the completed WRC project 'Groundwater Management Framework', which outlines the activities required by various authorities, but mainly the water services authorities, to ensure integrated and sustainable groundwater management. A scoring system allows for tracking progress in implementing the Groundwater Management (GWM) Framework and for rewarding successful and sustainable groundwater management at municipal level. The scoring system will be based on a number of criteria, requirements and indicators that are linked to the different aspects of the Groundwater Management Framework. The work will be conceptualised by the WRC and the outcomes will either be managed by DWA or be incorporated within the Blue Drop System.

Reformulating the WISA Management and Institutional Division

The Water Institute of Southern Africa (WISA) is the largest network of water professionals in South Africa and has a number of Technical Divisions that allow for professional interaction and networking in those fields. In the year under review, the WRC initiated interactions with WISA to create new networks for some fields that have not been fully articulated in the current Technical Divisions. The request was to broaden the mandate of the existing WISA Management and Institutional Division to include governance. In response to this request, the Management and Institutional Division will include several dedicated themes with allocated champions. Among these themes are: 'Legal, economics and finance of water' and 'Governance and implementation drivers and barriers / successes and failures'. The themes are embryonic at this stage and could be strengthened in the near future.

Re-launch of the WRC/SALGA Benchmarking Partnership

A project on benchmarking of water services was re-launched in partnership with the South African Local Government Association (SALGA) with joint funding from SALGA and the WRC. The three-year project, which commenced in April 2011, builds on the learning from the previous benchmarking initiative, and, in particular, aims to use water services benchmarking to strive for continual performance improvement, while building on the experiences of peers, to make the most efficient use of available resources to improve service delivery and customer services.

Towards formalising the DST/WRC partnership

Opportunities to partner were discussed at a meeting held on 13 January 2012. This was followed by a meeting on 17 February 2012 to discuss centres of

excellence (CoE) for the water and wastewater sector. The outcome of that meeting was a terms of reference that was drafted by the WRC for a gap analysis study to feed into a framework for the CoEs.

Towards a memorandum of understanding with the Technology Innovation Agency (TIA)

The agreement is aimed at establishing a strategic partnership to enable effective conversion of research in the water sector into products and services. TIA and WRC will thus join forces in the development of a pipeline of credible water-related technologies and other innovations, utilising their combined resources and expertise in R&D, technology innovation and commercialisation, through funding and technical co-operation. This agreement is in its final draft form and being considered by the TIA legal team.

Multi-partner Working Group on the Water-Energy-Food Security Nexus

The degree to which the interconnectedness of water, energy and food production cycles translates into the interdependence of water, energy and food pricing has caused much debate among researchers and policymakers alike. The WWF and the WRC, in partnership with the National Agricultural Marketing Council (NAMC) and the University of Pretoria, has initiated a collaborative research consortium that aims to interrogate this question and investigate how energy and water costs influence food costs, and whether energy inflation is the primary cause of food inflation or whether there are other factors at play as well. For water and energy-scarce regions such as Southern Africa, these questions are critically important if the trade-offs in the water-energy-food nexus for better informed decision-making are to be effectively addressed. In so doing, this project explores the multi-levelled complexity of the water-energy-food nexus as an example of the region's ability to cope with the growing challenges of water, energy and food security.

Progress on the WRC/ESKOM bilateral agreement

The WRC and Eskom entered into a strategic research partnership through the signing of a Memorandum of Agreement and the formation of a Joint Research Committee in November 2010. In the year under review the partners put the administrative mechanisms in place and initiated a joint five-year programme to manage water-related projects from 2012 to 2016. A workshop was held in February 2012 to choose the first projects to be supported by joint funding.

Network on Irrigation Research and Extension for Smallholder Agriculture

The Network on Irrigation Research and Extension for Smallholder Agriculture (NIRESA), managed by the WRC, was established to facilitate interaction between researchers at universities and science councils on the one side and extension officers in provincial departments on the other. Particular attention is given to available knowledge and practical requirements of smallholder irrigation farming and schemes. Members of the Network meet annually and the site visits are rotated between all provinces. Members of NIRESA held their annual meeting from 9 to 11 November 2011 at the Orange-Riet Water User Association and the Oppermansgronde community in the Free State Province.

GWD – International Association of Hydrogeologists International Conference

The Ground Water Division (GWD) of the Geological Society of South Africa, chaired by a WRC representative, hosted the GWD-International Association of Hydrogeologists International Conference in Pretoria, from 19-21 September 2011. A WRC research manager was also the Chair of the Conference Committee. WRC projects were well represented in the scientific programme and the exhibition.

COP 17

The WRC held four side events/workshops during the 2011 United Nations Climate Change Conference, COP 17 (17th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC)), held from 28 November to 9 December 2011, Durban. The first workshop, held on 29 November 2011, focused on downscaling of coupled climate models, application of climate models in the water sector, application of soil moisture techniques, flash flood forecasting and adaptive water management strategies. The second workshop (held in collaboration with the University of Cape Town) focused on climate change adaptation, water management and agriculture in the Berg River catchment. The third workshop (held in collaboration with the University of KwaZulu-Natal) focused on climate change adaptation and water governance. The fourth side event (held in collaboration with Umgeni Water) focused on the potential impacts of a changing climate on hydrology and water security of the Mgeni system. All of these events were widely attended by international and national communities. On 6 December 2011 a WRC representative participated in the panel at the African Ministers Council on Water (AMCOW) and Global Water

Partnership (GWP) events on water as a stand-alone item on the UNFCCC agenda. A WRC research manager captured comments made by heads of state in the High Level Segment at COP 17. He also negotiated and made inputs on South Africa's behalf on UNFCCC Agenda Item 6, 'Research and Systems Observation'. The research manager also attended and contributed to the Nairobi Work Programme sessions; the WRC is a recognised partner of the Nairobi Work Programme.

WISA Mine Water Division Symposium

A WRC representative served as the chairman of the organising committee of the WISA Mine Water Division symposium, Sustainable Water 2030: A Mining Perspective, 3-4 October 2011. The programme was composed entirely of invited speakers and covered the topics of regulatory issues, the Inter-Ministerial Committee on Acid Mine Drainage, water use in mining, and water management. The topics were presented by representatives from the mining industry and supporting consulting companies, DWA, WRC, researchers and NPC. Six WRC-funded projects were presented.

African initiatives

Hosting WATERAID

The WRC is in the process of finalising hosting arrangements with WATERAID. This arrangement will see WATERAID establishing a regional office in South Africa and at the WRC. This will provide the opportunity for WATERAID to glean information from the products of the WRC and WIN-SA and to promote these resources to the benefit of the region and its activities.

EcoSanRes – SEI

The previous partnership between WRC and SEI was established in the context of the SIDA-financed programme 'Ecological Sanitation Research Knowledge Node' carried out by the EcoSanRes programme (managed by SEI from 2006 to 2011), in which the WRC was selected to host one of eight knowledge and capacity development nodes on sustainable sanitation around the world. These initiatives are coming to an end but the parties agreed to continue the partnership to ensure sustainable sanitation development, as all of the parties recognise that the majority of the countries in the Southern African Development Community are facing major challenges in achieving the MDGs and that the multiple and profound benefits of sustainable sanitation solutions for many of the MDGs needs to be recognised.

CLARA: Capacity-Linked water supply and sanitation improvement for Africa's peri-urban and Rural Areas (EU FP7 Project)

In the year under review, the WRC reported on progress at the second meeting in Ouagadougou, Burkina Faso, and the third meeting in Durban, South Africa. The WRC confirmed the appointment of researchers to conduct the study and that eThekwini Municipality had agreed that their peri-urban or rural-area-based management locations could be used as a pilot for the study, which will include building of local capacity to plan for water and sanitation using a resource-orientated approach. As a result, ONEP (a Moroccan Water Authority) showed interest in signing a bilateral agreement with the WRC to facilitate knowledge sharing and technical visits. In addition the Ethiopian representatives approached the WRC to discuss the possibility of facilitating technical tours so that information can be shared on sanitation and water pilot projects occurring in South Africa.

IWA/USEPA Excellence in Drinking Water Quality Award Programme

An award scheme on Excellence in Drinking Water Quality was established as part of the IWA East Africa Water Safety Plan Programme funded by the USEPA. The scheme will recognise the achievements of water utilities in improving and maintaining high standards of drinking water quality in low- and middle-income countries. A separate award category is set up for East Africa, because of the East Africa Programme. The award ceremony is planned for the IWA World Water Congress in Busan in September 2012.

International Centre for Water Economics and Governance in Africa (IWEGA)

The third Advisory Board (AB) meeting of IWEGA was held in Maputo, Mozambique, on 14 June 2011, at Eduardo Mondlane University. The board meeting was preceded by a workshop on 13 June 2011 at the Kaya Kwanga Lodge with the theme 'Water economics and governance in Africa: Perspective and visions'. Presentations were made by members of the board; the topic addressed by Dr Gerhard Backeberg was 'Research innovations for agricultural water management: Process, case studies and lessons'. In addition to board members, this workshop was attended by various government officials and university staff from Mozambique. The proceedings (summary and conclusions) of the workshop have been published as *IWEGA Policy Brief No. 1*.

Dryland systems regional planning

The International Centre for Agricultural Research in the Dry Areas (ICARDA) invited the WRC to participate in the Dryland Systems Regional Planning Working Meeting which was held in Nairobi, Kenya, from 27-20 June 2011. The Working Meeting focused on identifying two benchmark areas in each of the programme's target regions (West African Sahel and Dry Savannas, Eastern and Southern Africa, North Africa and West Asia, Central Asia and South Asia). Within these benchmark areas, action sites are to be identified. The invited organisations were requested to collate information on proposed benchmark areas and potential action sites. For South Africa, this information can be provided through various WRC-initiated and funded research projects on rainwater harvesting and conservation being undertaken by the Agricultural Research Council and University of Fort Hare.

Global Initiatives

Including good science in the GEF development investments

The WRC served as the Chair of the River Basin Working Group in the GEF International Waters Science Synthesis process. The Group was responsible for reviewing at least 50 GEF projects related to river basins, with a development investment worth at least $100 m. over the past 10 years. The aim of the exercise was to evaluate the value of science in GEF investments and to recommend future incorporation of 'good' science as a criterion in future GEF development investments.

International Waters Science Synthesis

Two synthesis reports developed in this project, 'Critical emerging science issues and research needs for targeted intervention in the international waters (IW) focal area' and 'Application of science for adaptive management and development and use of indicators to support IW projects', are being edited for publication by the United Nations University. The WRC has hence been appointed as a member of the Scientific Advisory Committee for a conference to showcase all of these findings. The conference is to be held in September 2012 with the title 'Setting the International Waters Science Agenda for the next decade'.

Scientific co-operation with France

The Department of Science and Technology (DST) of South Africa and the Ministry of Foreign Affairs of France, within the framework of the South African research agreement on scientific co-operation, have provided financial support for a research network within projects carried out by scientists of the two countries. The WRC was identified as the focal point to support and implement the initiative. The aim of the partnership was to enhance capacity exchange and sharing between South Africa and France in the area of water research. The project was finalised in July 2011. It is believed that the progress made by the three projects is commendable and has proven to be value for money, from the numerous visits, publications, reports, presentations, etc., which took place. The proposed plans for the remainder of the projects intend to strengthen the sharing of information and human resources for capacity building. The research fields remain relevant to South Africa and much further research is still warranted. South African scientists will showcase their achievements from this partnership in a major event to be hosted by the French Government in July 2013, where new areas of collaboration will be explored.

The International Commission on Irrigation and Drainage (ICID)

The 62nd International Executive Council (IEC) Meeting and 21st ICID Congress on Irrigation and Drainage took place in Tehran, Iran, from 15-23 October 2011. The WRC participated during Working Group/Task Force Meetings and presented a paper on improved efficiency of irrigation water use. This paper was mainly based on WRC Report No. TT 466/10 entitled 'Water use efficiency from dam wall release to root zone application'. The WRC also chaired the 5th meeting of the Task Force on Financing Water for Agriculture. A WRC representative was elected Chairman of the African Regional Working Group. At the International Executive (IEC) meeting on 22 October 2011, it was announced that South Africa had been awarded the WatSave Prize for Outstanding Technology, for development of SAPWAT, a tool for estimating irrigation water requirements of crops. SAPWAT was developed with funding by the WRC over the past 15 years. At this IEC meeting, A WRC director was elected as Vice President of ICID for the period 2011 to 2014.

Second IWA Development Congress and Exhibition

The IWA Development Congress and Exhibition is the pre-eminent water and sanitation event for the developing world. It is run by the International Water Association (IWA) every second year and has a specific focus on solutions. The first development congress was held in Mexico in 2009. The 2nd IWA Development Congress was held in Kuala Lumpur, Malaysia, from 21-24 November 2011. The WRC delivered two papers and attended the IWA Strategic Council Meeting. The conference was also used as a platform to engage with role players to position the WRC in global dialogues on climate change, as well as exploring new partnerships, such as a partnership with the National Water Services Commission of Malaysia.

Sixth World Water Forum

The World Water Forum, WWF, is the world's largest meeting around water. WWF6 comprised of 140 ministerial delegations, representatives from more than 180 countries, over 800 speakers, 25 000 participants, and over 250 sessions and panels, regional trialogues organised among ministers, parliamentarians and local/regional authorities, and high-level round table discussions. The WRC played an active role in the technical programme as well as fulfilling a supportive role to the DWA Ministerial delegation. The WRC was invited to present a paper at the Women Leadership in Water and Sanitation: Women's Preconference to World Water Forum 6 (10-11 March 2012). This presentation was based on the WIN-SA project on 'Menstrual hygiene management in the water sector: Supporting the sanitary dignity campaign for women and girls' the WRC also presented the summary and way forward of the side-session: 'Strategic Direction 3. Keep the planet blue'.

KEY PERFORMANCE AREAS (KPAs)

The Board and Management of the WRC have agreed upon certain performance areas and indicators set for the period of three years, i.e. from 2011/12 to 2013/14. These are directly linked to the Mandate, Mission and Vision of the organisation. The KPAs are based on the strategic context and the challenges identified above, as well as specific strategic risk areas as identified by the Board and Management. The KPAs address both internal and external issues. These KPAs were developed with the aim of assisting the WRC in serving the country in accordance to its mandate, supporting Government objectives as presented in Government's Outcomes while supporting the organisation's strive toward excellence, i.e., functioning as a relevant and effective water-centred knowledge hub. The WRC identified four key areas of performance, including knowledge generation, knowledge dissemination and capacity building, financial perspectives, and support systems and processes.

Knowledge Generation

The objectives and indicators presented in this KPA reflect on the core business of the WRC, i.e., supporting knowledge generation by funding relevant research. This is directly linked to Government's Outcomes.

The WRC aims to continue to provide South Africa with knowledge that will support Government delivery. The WRC, through the provision of such knowledge, also aims to enhance the activities of the water sector in a manner that will support economic growth and sustainable development and improve quality of life for all South Africans. Another key objective of WRC-funded research is sustaining the country's water resources and natural environment and protecting South Africa's rich biodiversity.

The WRC focuses its research funding on four key strategic areas aimed at improving knowledge for decision making and implementation. The four areas address the improvement of water management, enhancement of knowledge on the health of aquatic ecosystems and the protection of our biodiversity, providing knowledge on water use and waste management (including domestic rural and urban water supply and sanitation) and supporting productive use of water for agriculture. Table 7 provides an overview of the number of targeted research projects (new and finalised) and new innovations for the year under review. New innovations will provide new technologies, processes, methodologies and approaches that could support the addressing of South Africa's water issues, if appropriately deployed along the impact value chain.

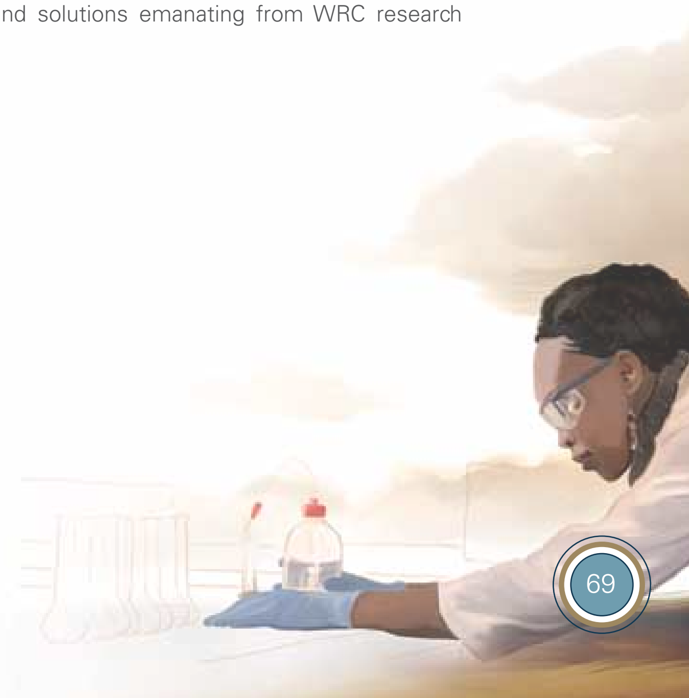
Table 7: Achievements against the Knowledge Generation indicators

Objective	Indicators	Target 2011/12	Achieved 2011/12
Improve knowledge on water resource management	To increase the cumulative knowledge by initiating new research projects addressing water management	31	31
	To provide the country with supportive knowledge via finalised projects	13	32*
	To search for new innovative approaches to support water management	2	2
Enhance the knowledge on healthy ecosystems and preserve biodiversity	To increase the cumulative knowledge by initiating new research projects addressing ecosystem health and biodiversity	6	6 + supplement
	To provide the country with supportive knowledge via finalised projects	5	14*
	To search for new innovative approaches to support ecosystem management	2	3*
Improve the knowledge base on water use and waste management, addressing the domestic, mining and industrial use of water	To increase the cumulative knowledge by initiating new research projects addressing water use and waste management	26	30*
	To provide the country with supportive knowledge via finalised projects	28	38*
	To search for new innovative approaches to water use and waste management	7	14*
Improve the knowledge on productive water utilisation in agriculture	To increase the cumulative knowledge by initiating new research projects addressing productive water utilisation in agriculture	6	6
	To provide the country with supportive knowledge via finalised projects	12	12
	To search for new innovative approaches to support productive utilisation of water in agriculture	3	3

Notes on the variance:

* Fast-tracking the finalisation of the projects that were completed but not finalized from the previous years.

\# Improved/better opportunities for serendipitous innovations and solutions emanating from WRC research projects.



Knowledge Dissemination and Capacity Building

This KPA aims to improve the WRC's contribution towards capacity building as well as to enhance the sharing and dissemination of WRC-funded research findings, i.e., knowledge-sharing and dissemination functions. This KPA is linked to Government Outcomes/Outputs related to building skills, by addressing the building of future research capacity and improving knowledge dissemination.

- **Improvement of the WRC's contribution towards the water-centred knowledge base** in South Africa, including capacity building by increasing the number of students supported through research projects funded by the WRC
- **Enhancing the WRC knowledge-sharing activities and positioning** through knowledge dissemination and sharing (measured against the number of knowledge-sharing events, including workshops as well as publications such as *The Water Wheel* and *Water SA*, and technical and policy briefs)

Table 8 indicates the targeted and achieved Knowledge Dissemination and Capacity Building indicators.

Table 8: Achievements against the Knowledge Dissemination and Capacity Building indicators

Objective	Indicators	Target 2011/12	Achieved 2011/12
Improve knowledge dissemination	To enhance public understanding of water research (measured as volumes/cumulative number of issues of *The Water Wheel*)	6	6
	To cumulatively increase the numbers of technical and policy briefs	30	36*
	To improve the dissemination of water research (measured as volumes/cumulative number of issues of *Water SA*)	4	5 #
	To engage the sector in knowledge-sharing events (number of workshops)	20	21*
Enhance research capacity	To increase the number (cumulative) of students supported by research projects	400	506 ‡

Notes on the variance:

* This is related to a mid-year policy decision to actively advise on national policy decisions.

‡ Increased student interest.

\# *Water SA* special edition for the WRC 40 year celebration.

Financial Perspectives

The objective of this KPA is to improve the financial practices, management and performance of the WRC. This is translated into a number of quantitative indicators addressing growth and sustainability and effective management of funds, as presented below. The overarching objectives have been translated into a number of indicators as follows:

- **Improving financial performance**
  - Income growth (income growth is measured as meeting the budgetary target)
  - Research ratio (measured as research funding and support as a percentage of total income)
  - Cash-flow management (measured against availability of cash for effective operation)
- **Improving financial management**
  - High-quality budget planning and reporting (measured as the percentage deviation between actual and budget at year-end)
  - Audit results (measured as a percentage of the previous year's internal audit queries addressed and a clean vs. qualified audit)
  - Roll-over of research funds (measured as the deviation from the budgetary figure for roll-over of research project funds)

Table 9 indicates the targeted and achieved Financial Perspectives indicators.

Table 9: Achievements against the indicators related to Financial Perspectives

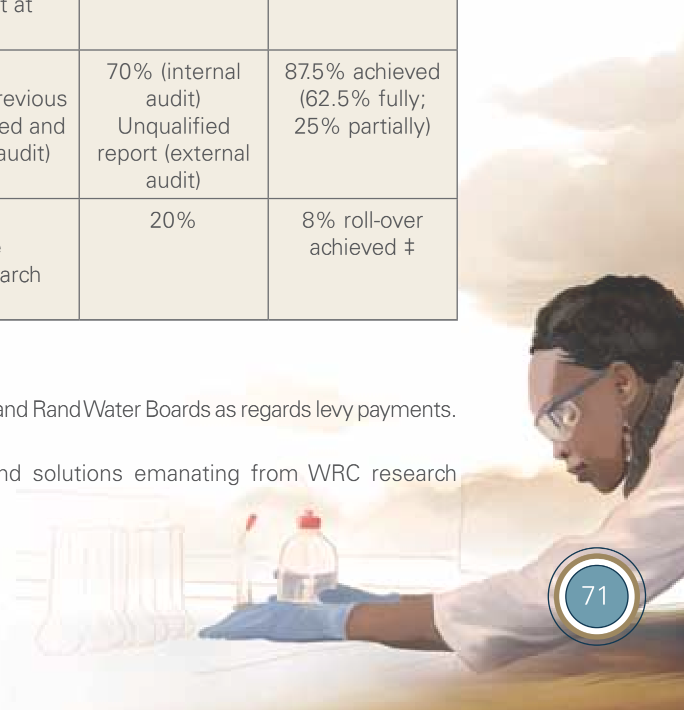
Objectives	Indicators	Target 2011/12	Achieved 2011/12
Improved financial performance	Maintain income growth (income growth is measured as meeting the budgetary target of 10% of income)	10%	13% achieved*
	Maintain high level of research ratio (measured as research funding and support as percentage of total income)	74% (revised budget)	75% achieved
	Improve cash-flow management (measured against availability of cash for effective operation)	R25 m.	More than R25 m. cash available – achieved R90 m., which is i.r.o. research project commitments*
Enhance effective financial management	Improve quality budget planning and reporting (measured as the percentage deviation between actual and budget at year-end)	10%	6% achieved #
	Improve response to audit results (measured as a percentage of the previous year's internal audit queries addressed and an unqualified vs. qualified external audit)	70% (internal audit) Unqualified report (external audit)	87.5% achieved (62.5% fully; 25% partially)
	Decrease roll-over of research funds (measured as the deviation from the budgetary figure for roll-over of research project funds)	20%	8% roll-over achieved ‡

Notes on the variance:

* Improved cash-flow through better co-operation with DWA, Umgeni and Rand Water Boards as regards levy payments.

\# Improved financial discipline.

‡ Improved/better opportunities for serendipitous innovations and solutions emanating from WRC research projects.



Support Systems and Processes

The objective of this KPA is to improve and strengthen the WRC with regard to its support systems and processes. The WRC continued to place 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. This KPA is closely linked to information technology related risks as well as human resource related risks such as inadequately-skilled staff.

Table 10 indicates the targeted and achieved Support Systems and Processes indicators.

Table 10: Achievements against the indicators related to Support Systems and Processes

Objective	Indicators	Target 2012	Achieved 2011/12
Improve the system for fund management	To expand Fund Management System to include short-term projects	To conduct a pilot consisting of 10% of short-term projects	Pilot fully implemented
Improve stakeholder relationships	Enhance WRC relationship with the research community (number of WRC 101 courses)	2	4*
Improve human resource management	Improve equity (measured by percentage of new appointments being EE)	90% of new appointments are EE	83% #
	Enhance staff skills by training (measured against in-house and external training courses (cumulative))	2 in-house training courses 5 external training courses	3 in-house, 12 external training courses completed ‡

Notes on the variance:

* Many new entrants requiring the WRC 101 workshops on the annual calls.

‡ Increased budget availability due to rebates from SETA levy.

\# Recruit process for one individual was completed in the 2012/13 financial year.

HUMAN RESOURCES

Figures 12 and 13 indicate the WRC staff composition in 2011/12 by race and gender, respectively.

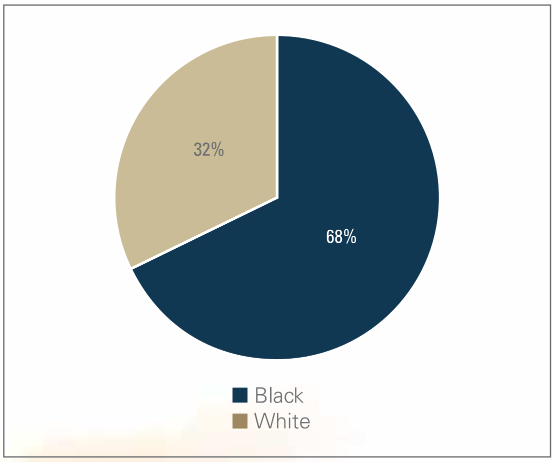


Figure 12: Staff composition by race

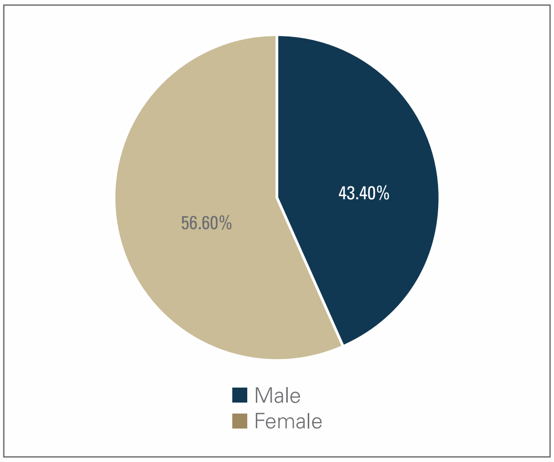


Figure 13: Staff composition by gender

BOARD APPROVAL

The Annual financial statements of the WRC and wholly-owned company for the year ended 31 March 2012, which appear on pages 80 to 153 of this report, were approved by the WRC Board at its meeting held on 26 July 2012. 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:

Barbara Schreiner
WRC Board Chairperson

Mr Dhesigen Naidoo
WRC Chief Executive Officer

REPORT OF THE AUDITOR-GENERAL ON WRC

REPORT OF THE AUDITOR-GENERAL TO PARLIAMENT ON THE CONSOLIDATED AND SEPERATE FINANCIAL STATEMENTS OF THE WATER RESEARCH COMMISSION FOR THE YEAR ENDED 31 MARCH 2012

REPORT ON THE SEPARATE AND CONSOLIDATED FINANCIAL STATEMENTS

Introduction

I have audited the consolidated and separate financial statements of the Water Research Commission and its subsidiaries set out on pages 80 to 125, which comprise the consolidated and separate statement of financial position as at 31 March 2012, the consolidated and separate statement of financial performance, statement of changes in net assets and the cash flow statement for the year then ended, and the notes, comprising a summary of significant accounting policies and other explanatory information.

Accounting authority's responsibility for the consolidated financial statements

The board of directors which constitutes the accounting authority is responsible for the preparation and fair presentation of these consolidated and separate financial statements in accordance with South African Standards of Generally Recognised Accounting Practice (SA Standards of GRAP) and the requirements of the Public Finance Management Act of South Africa, 1999 (Act No.1 of 1999), the Companies Act of South Africa, 2008 (Act No. 71 of 2008), and for such internal control as the accounting authority determines is necessary to enable the preparation of consolidated and separate financial statements that are free from material misstatement, whether due to fraud or error.

Auditor-General's responsibility

My responsibility is to express an opinion on these consolidated and separate financial statements based on my audit. I conducted my audit in accordance with the Public Audit Act of South Africa, 2004 (Act No. 25 of 2004) (PAA), the General Notice issued in terms thereof and International Standards on Auditing. Those standards require that I comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated and separate financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated and separate financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the consolidated and separate financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the consolidated and separate financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated and separate financial statements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Opinion

In my opinion, the consolidated and separate financial statements present fairly, in all material respects, the financial position of the Water Research Commission and its subsidiaries as at 31 March 2012, and their financial performance and cash flows for the year then ended in accordance with South African Standards of Generally Recognised Accounting Practice (SA Standards of GRAP) and the requirements of the Public Finance Management Act of South Africa, 1999 (Act No.1 of 1999) and the Companies Act of South Africa, 2008 (Act No. 71 of 2008).

Additional matter

I draw attention to the matter below. My opinion is not modified in respect of this matter.

Unaudited supplementary schedules

The supplementary information set out on pages 126 and 128 does not form part of the financial statements and is presented as additional information. I have not audited this schedule and, accordingly, I do not express an opinion thereon.

REPORT ON OTHER LEGAL AND REGULATORY REQUIREMENTS

In accordance with the PAA and the General Notice issued in terms thereof, I report the following findings relevant to performance against predetermined objectives, compliance with laws and regulations and internal control, but not for the purpose of expressing an opinion.

Predetermined objectives

I performed procedures to obtain evidence about the usefulness and reliability of the information in the Report of Pre-determined Objectives as set out on pages 67 to 72 of the annual report.

The reported performance against predetermined objectives was evaluated against the overall criteria of usefulness and reliability. The usefulness of information in the annual performance report relates to whether it is presented in accordance with the National Treasury annual reporting principles and whether the reported performance is consistent with the planned objectives. The usefulness of information further relates to whether indicators and targets are measurable (i.e. well defined, verifiable, specific, measurable and time bound) and relevant as required by the National Treasury Framework for managing programme performance information.

The reliability of the information in respect of the selected objectives is assessed to determine whether it adequately reflects the facts (i.e. whether it is valid, accurate and complete).

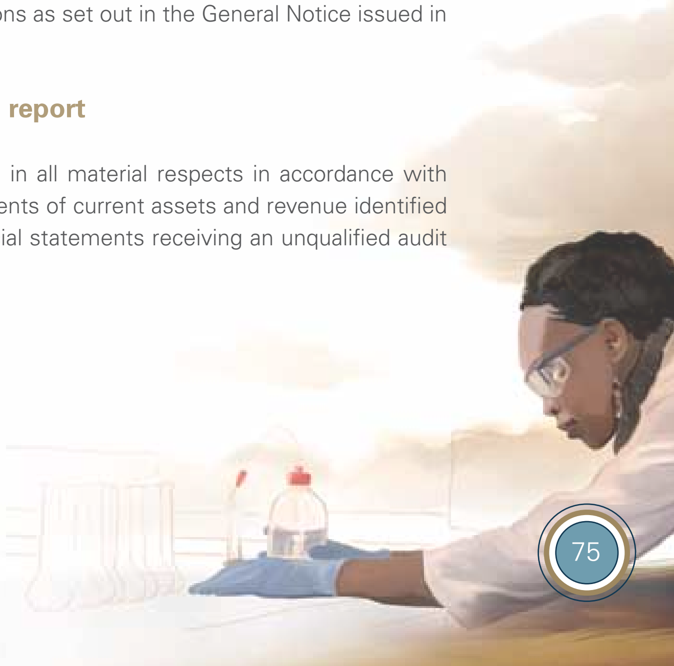
There were no material findings on the Report of Pre-determined Objectives concerning the usefulness and reliability of the information.

Compliance with laws and regulations

I performed procedures to obtain evidence that the entity has complied with applicable laws and regulations regarding financial matters, financial management and other related matters. My findings on material non-compliance with specific matters in key applicable laws and regulations as set out in the General Notice issued in terms of the PAA are as follows:

Annual Financial Statements, performance and annual report

The financial statements submitted for auditing were not prepared in all material respects in accordance with the requirements of section 55(2) of the PFMA. Material misstatements of current assets and revenue identified by the auditors were subsequently corrected, resulting in the financial statements receiving an unqualified audit opinion.



Procurement and Contract Management

Goods and services with a transaction value below R500 000 were procured without obtaining the required price quotations, as required by Treasury Regulation 16A6.1.

Contracts and quotations were awarded to suppliers whose tax matters had not been declared by the South African Revenue Services to be in order as required by Treasury Regulations 16A9.1 (d) and the Preferential Procurement Regulations.

Expenditure Management

The accounting authority did not take effective steps to prevent irregular expenditure, as required by sections 51(1)(b)(ii) of the Public Finance Management Act.

Internal control

I considered internal control relevant to my audit of the financial statements and compliance with laws and regulations. The matters reported below under the fundamentals of internal control are limited to the significant deficiencies that resulted in the findings on compliance with laws and regulations included in this report.

Leadership

The accounting authority did not retain adequate oversight responsibility or delegate these to senior management to prevent irregular expenditure.

The accounting authority did not adequately implement a procurement and contract management checklist.

Financial and performance management

The accounting authority did not adequately review the financial statements to ensure that they are prepared in all material respects in accordance with the requirements of SA Standards of GRAP.

Auditor-General

Pretoria
31 July 2012

AUDITOR-GENERAL
SOUTH AFRICA
Auditing to build public confidence

REPORT OF THE AUDIT COMMITTEE

REPORT OF THE AUDIT COMMITTEE AS REQUIRED BY TREASURY REGULATIONS 27.1.7 AND 27.1.10 OF THE PUBLIC FINANCE MANAGEMENT ACT, ACT 1 OF 1999, AS AMENDED BY ACT 29 OF 1999

The Audit Committee reports that it has adopted formal terms of reference as its Audit Committee Charter and that it has discharged all of its responsibilities for the year, in compliance with the charter.

The Audit Committee is satisfied that an adequate system of internal control is in place to reduce significant risks faced by the organisation to an acceptable level, and that these controls have been effective during the period under review. The system is designed to manage, rather than eliminate the risk of failure and to maximise opportunities to achieve business objectives. This can provide only reasonable but not absolute assurance.

The Audit Committee is satisfied that the internal audit function has addressed the high risks pertinent to the entity in its audit.

The Audit Committee has:

- Reviewed the audited annual financial statements
- Reviewed accounting policies
- Reviewed the Auditor-General's management letter and management's response thereto and is comfortable that management will address the findings adequately
- Reviewed adjustments resulting from the audit.

The Audit Committee concurs and accepts the Auditor-General's conclusions on the annual financial statements, and is of the opinion that the audited annual financial statements be accepted and read together with the report of the Auditor-General.

The Audit Committee met with the Auditor General and were assured that there were no unresolved issues of concern.

Mr N Mhlongo
Chairperson

WATER RESEARCH COMMISSION

Consolidated Financial Statements for the year ended 31 March 2012

Statement of Financial Position

		Group		WRC	
Figures in Rand	**Note(s)**	**2012**	**2011**	**2012**	**2011**
Assets					
Current Assets					
Loans to group companies	6	-	-	1,020,000	1,020,000
Operating lease asset		191,386	32,059	-	-
Trade and other receivables	10	32,267,809	23,472,672	32,673,376	23,898,715
Other receivables		9,858	15,910	-	-
Cash and cash equivalents	11	93,039,613	96,758,201	91,134,628	95,074,551
		125,508,666	**120,278,842**	**124,828,004**	**119,993,266**
Non-Current Assets					
Property, plant and equipment	3	11,064,709	11,836,728	2,373,187	3,145,206
Intangible assets	4	2,518,886	2,437,623	2,518,886	2,437,623
Investments in controlled entities	5	-	-	755,939	755,939
Loans to group companies	6	-	-	17,394,926	15,880,002
Other financial assets	7	7,521,848	6,594,108	7,521,848	6,594,108
		21,105,443	**20,868,459**	**30,564,786**	**28,812,878**
Total Assets		**146,614,109**	**141,147,301**	**155,392,790**	**148,806,144**
Liabilities					
Current Liabilities					
Finance lease obligation	12	382,928	569,102	382,928	569,102
Trade and other payables	14	47,162,236	38,371,900	46,986,842	38,300,978
Accruals – leave and bonus	13	3,430,662	2,941,756	3,430,662	2,941,756
Trade and other payables – Non-exchange transactions		29,266	27,397	-	-
		51,005,092	**41,910,155**	**50,800,432**	**41,811,836**
Non-Current Liabilities					
Finance lease obligation	12	363,981	746,909	363,981	746,909
Operating lease liability		-	-	103,468	162,978
Retirement benefit obligation	9	3,561,176	3,954,648	3,561,176	3,954,648
		3,925,157	**4,701,557**	**4,028,625**	**4,864,535**
Total Liabilities		**54,930,249**	**46,611,712**	**54,829,057**	**46,676,371**
Net Assets		**91,683,860**	**94,535,589**	**100,563,733**	**102,129,773**
Net Assets					
Reserves					
Available for sale financial asset fair value reserve		25,346,803	24,403,948	25,346,803	24,403,948
Accumulated surplus		66,337,057	70,131,641	75,216,930	77,725,825
Total Net Assets		**91,683,860**	**94,535,589**	**100,563,733**	**102,129,773**

Statement of Financial Performance

		Group		WRC	
Figures in Rand	**Note(s)**	**2012**	**2011**	**2012**	**2011**
Revenue	16	175,723,413	156,007,641	175,156,390	155,508,026
Other income		774,606	1,562,299	1,090,452	1,911,653
Operating expenses		(184,323,310)	(167,404,452)	(185,306,187)	(168,507,081)
Operating deficit	**17**	**(7,825,291)**	**(9,834,512)**	**(9,059,345)**	**(11,087,402)**
Investment revenue	18	4,229,683	3,846,708	6,749,424	6,170,638
Finance costs	19	(198,972)	(246,604)	(198,972)	(246,604)
Deficit for the year		**(3,794,580)**	**(6,234,408)**	**(2,508,893)**	**(5,163,368)**

Statement of Changes in Net Assets

Figures in Rand	Available for sale financial asset fair value reserve	Accumulated surplus	Total net assets
Group			
Opening balance as previously reported	22,349,339	76,312,705	98,662,044
Adjustments			
Prior year adjustments	-	53,344	53,344
Balance at 01 April 2010 as restated	**22,349,339**	**76,366,049**	**98,715,388**
Changes in net assets			
Fair value of available for sale financial assets	2,054,609	-	2,054,609
Net income (losses) recognised directly in net assets	2,054,609	-	2,054,609
Deficit for the year	-	(6,234,408)	(6,234,408)
Total recognised income and expenses for the year	2,054,609	(6,234,408)	(4,179,799)
Total changes	2,054,609	(6,234,408)	(4,179,799)
Opening balance as previously reported	24,403,948	66,866,643	91,270,591
Adjustments			
Prior year adjustments	-	3,264,994	3,264,994
Balance at 01 April 2011 as restated	**24,403,948**	**70,131,637**	**94,535,585**
Changes in net assets			
Fair value of available for sale financial assets	942,855	-	942,855
Net income (losses) recognised directly in net assets	942,855	-	942,855
Deficit for the year	-	(3,794,580)	(3,794,580)
Total recognised income and expenses for the year	942,855	(3,794,580)	(2,851,725)
Total changes	942,855	(3,794,580)	(2,851,725)
Balance at 31 March 2012	**25,346,803**	**66,337,057**	**91,683,860**
Note(s)			
WRC			
Balance at 01 April 2010	**22,349,339**	**82,889,193**	**105,238,532**
Changes in net assets			
Deficit for the year	-	(5,163,368)	(5,163,368)
Fair value of available for sale financial assets	2,054,609	-	2,054,609
Total changes	2,054,609	(5,163,368)	(3,108,759)
Opening balance as previously reported	24,403,948	74,479,859	98,883,807
Adjustments			
Prior year adjustments	-	3,245,964	3,245,964
Balance at 01 April 2011 as restated	**24,403,948**	**77,725,823**	**102,129,771**
Changes in net assets			
Fair value of available for sale financial assets	942,855	-	942,855
Net income (losses) recognised directly in net assets	942,855	-	942,855
Deficit for the year	-	(2,508,893)	(2,508,893)
Total recognised income and expenses for the year	942,855	(2,508,893)	(1,566,038)
Total changes	942,855	(2,508,893)	(1,566,038)
Balance at 31 March 2012	**25,346,803**	**75,216,930**	**100,563,733**
Note(s)			

Cash Flow Statement

		Group		WRC	
Figures in Rand	**Note(s)**	**2012**	**2011**	**2012**	**2011**
Cash flows from operating activities					
Receipts					
Cash receipts from customers		167,878,965	171,503,169	168,029,689	171,815,094
Interest income		3,836,741	3,846,708	6,363,089	5,703,973
		171,715,706	175,349,877	174,392,778	177,519,067
Payments					
Cash paid to suppliers and employees		(174,241,129)	(190,751,022)	(175,624,612)	(191,758,436)
Finance cost		(198,972)	(246,604)	(198,972)	(246,604)
		(174,440,101)	(190,997,626)	(175,823,584)	(192,005,040)
Net cash flows from operating activities	**22**	**(2,724,395)**	**(15,647,749)**	**(1,430,806)**	**(14,485,973)**
Cash flows from investing activities					
Purchase of property, plant and equipment	3	(45,755)	(716,364)	(45,755)	(716,364)
Purchase of other intangible assets	4	(394,451)	(104,945)	(394,451)	(104,945)
Loans to economic entities repaid		-	-	(1,514,924)	(1,311,201)
Proceeds from sale of financial assets		(927,740)	42,148,707	(927,740)	42,148,707
Non-cash flow movement in reserves		942,855	2,054,609	942,855	2,054,609
Net cash flows from investing activities		**(425,091)**	**43,382,007**	**(1,940,015)**	**42,070,806**
Cash flows from financing activities					
Finance lease payments		(569,102)	79,689	(569,102)	79,689
Net increase/(decrease) in cash and cash equivalents		**(3,718,588)**	**27,813,947**	**(3,939,923)**	**27,664,522**
Cash and cash equivalents at the beginning of the year		96,758,201	68,944,254	95,074,551	67,410,029
Cash and cash equivalents at the end of the year	**11**	**93,039,613**	**96,758,201**	**91,134,628**	**95,074,551**

Accounting Policies

1. Presentation of Financial Statements

The financial statements have been prepared in accordance with the Standards of Generally Recognised Accounting Practice (GRAP) including any interpretations, guidelines and directives issued by the Accounting Standards Board.

These financial statements have been prepared on an accrual basis of accounting and are in accordance with historical cost convention unless specified otherwise. They are presented in South African Rand.

A summary of the significant accounting policies, which have been consistently applied, are disclosed below.

These accounting policies are consistent with the previous period.

1.1 Consolidation

Basis of consolidation
Consolidated annual financial statements are the financial statements of the group presented as those of a single entity.

The consolidated financial statements incorporate the financial statements of the WRC and all controlled entity, including special purpose entities, which are controlled by the WRC.

Control exists when the WRC has the power to govern the financial and operating policies of another entity so as to obtain benefits from its activities.

The results of controlled entities, are included in the consolidated financial statements from the effective date of acquisition or date when control commences to the effective date of disposal or date when control ceases. The difference between the proceeds from the disposal of the controlled entity and its carrying amount as of the date of disposal, including the cumulative amount of any exchange differences that relate to the controlled entity recognised in net assets in accordance with the Standard of GRAP on The Effects of Changes in Foreign Exchange Rates, is recognised in the consolidated statement of financial performance as the surplus or deficit on the disposal of the controlled entity.

An investment in an entity is accounted for in accordance with the Standard of GRAP on Financial Instruments: Recognition and Measurement from the date that it ceases to be a controlled entity, unless it becomes an associate or a jointly controlled entity, in which case it is accounted for as such. The carrying amount of the investment at the date that the entity ceases to be a controlled entity is regarded as cost on initial measurement of a financial asset in accordance with the Standard of GRAP on Financial Instruments: Recognition and Measurement.

The financial statements of the WRC and its controlled entities used in the preparation of the consolidated financial statements are prepared as of the same reporting date.

When the reporting dates of the WRC and a controlled entity are different, the controlled entity prepares, for consolidation purposes, additional financial statements as of the same date as the WRC unless it is impracticable to do so. When the financial statements of a controlled entity used in the preparation of consolidated financial statements are prepared as of a reporting date different from that of the WRC, adjustments are made for the effects of significant transactions or events that occur between that date and the date of the WRC's financial statements. In any case, the difference between the reporting date of the controlled entity and that of the WRC shall be no more than three months. The length of the reporting periods and any difference in the reporting dates is the same from period to period.

Adjustments are made when necessary to the financial statements of the controlled entities to bring their accounting policies in line with those of the WRC.

All intra-entity transactions, balances, revenues and expenses are eliminated in full on consolidation.

Accounting Policies

Minority interests in the net assets of the group are identified and recognised separately from the WRC's interest therein, and are recognised within net assets. Losses applicable to the minority in a consolidated controlled entity may exceed the minority interest in the controlled entity's net assets. The excess, and any further losses applicable to the minority, are allocated against the majority interest except to the extent that the minority has a binding obligation to, and is able to, make an additional investment to cover the losses. If the controlled entity subsequently reports surpluses, such surpluses are allocated to the majority interest until the minority's share of losses previously absorbed by the majority has been recovered.

Minority interests in the surplus or deficit of the group is separately disclosed.

1.2 Significant judgements and sources of estimation uncertainty

In preparing the financial statements, management is required to make estimates and assumptions that affect the amounts represented in the financial statements and related disclosures. Use of available information and the application of judgement is inherent in the formation of estimates. Actual results in the future could differ from these estimates which may be material to the financial statements. Significant judgements include:

Trade receivables/Held to maturity investments and/or loans and receivables
The group assesses its trade receivables, held to maturity investments and loans and receivables for impairment at the end of each reporting period. In determining whether an impairment loss should be recorded in surplus or deficit, the surplus makes judgements as to whether there is observable data indicating a measurable decrease in the estimated future cash flows from a financial asset.

The impairment for trade receivables, held to maturity investments and loans and receivables is calculated on a portfolio basis, based on historical loss ratios, adjusted for national and industry-specific economic conditions and other indicators present at the reporting date that correlate with defaults on the portfolio. These annual loss ratios are applied to loan balances in the portfolio and scaled to the estimated loss emergence period.

Available-for-sale financial assets
The determination of the impairment of available-for-sale financial assets require significant judgement. In making this judgment, the group evaluates, among other factors, the duration and extent to which the fair value of an investment is less than its cost; and the financial health of and near-term business outlook for the investee, including factors such as industry and sector performance, changes in technology and operational and financing cash flow.

Fair value estimation
The fair value of financial instruments traded in active markets (such as trading and available-for-sale securities) is based on quoted market prices at the end of the reporting period. The quoted market price used for financial assets held by the group is the current bid price.

The fair value of financial instruments that are not traded in an active market (for example, over-the-counter derivatives) is determined by using valuation techniques. The group uses a variety of methods and makes assumptions that are based on market conditions existing at the end of each reporting period. Quoted market prices or dealer quotes for similar instruments are used for long-term debt. Other techniques, such as estimated discounted cash flows, are used to determine fair value for the remaining financial instruments. The fair value of interest rate swaps is calculated as the present value of the estimated future cash flows. The fair value of forward foreign exchange contracts is determined using quoted forward exchange rates at the end of the reporting period.

The carrying value less impairment provision of trade receivables and payables are assumed to approximate their fair values. The fair value of financial liabilities for disclosure purposes is estimated by discounting the future contractual cash flows at the current market interest rate that is available to the group for similar financial instruments.

Accounting Policies

Impairment testing

The recoverable amounts of cash-generating units and individual assets have been determined based on the higher of value-in-use calculations and fair values less costs to sell. These calculations require the use of estimates and assumptions. It is reasonably possible that the assumption may change which may then impact our estimations and may then require a material adjustment to the carrying value of goodwill and tangible assets.

The group reviews and tests the carrying value of assets when events or changes in circumstances suggest that the carrying amount may not be recoverable. In addition, goodwill is tested on an annual basis for impairment. Assets are grouped at the lowest level for which identifiable cash flows are largely independent of cash flows of other assets and liabilities. If there are indications that impairment may have occurred, estimates are prepared of expected future cash flows for each group of assets. Expected future cash flows used to determine the value in use of tangible assets are inherently uncertain and could materially change over time.

Useful lives and residual values

The entity re-assesses the useful lives and residual values of property, plant and equipment on an annual basis. In re-assessing the useful lives and residual values of property, plant and equipment management considers the condition and uses of the individual assets, to determine the remaining period over which the asset can and will be used.

Post-retirement benefits

The present value of the post retirement obligation depends on a number of factors that are determined on an actuarial basis using a number of assumptions. The assumptions used in determining the net cost (income) include the discount rate. Any changes in these assumptions will impact on the carrying amount of post-retirement obligations.

The group determines the appropriate discount rate at the end of each year. This is the interest rate that should be used to determine the present value of estimated future cash outflows expected to be required to settle the pension obligations. In determining the appropriate discount rate, the group considers the interest rates of high-quality corporate bonds that are denominated in the currency in which the benefits will be paid, and that have terms to maturity approximating the terms of the related pension liability.

Other key assumptions for pension obligations are based on current market conditions. Additional information is disclosed in Note 9.

Effective interest rate

The group used the prime interest rate to discount future cash flows.

Allowance for doubtful debts

On debtors an impairment loss is recognised in surplus and deficit when there is objective evidence that it is impaired. The impairment is measured as the difference between the debtors carrying amount and the present value of estimated future cash flows discounted at the effective interest rate, computed at initial recognition.

1.3 Property, plant and equipment

Property, plant and equipment are tangible non-current assets (including infrastructure assets) that are held for use in the production or supply of goods or services, rental to others, or for administrative purposes, and are expected to be used during more than one period. Items of property, plant and equipment are initially recognised as assets on acquisition date and are initially recorded at cost. The cost of an item of property, plant and equipment is the purchase price and other costs attributable to bring the asset to the location and condition necessary for it to be capable of operating in the manner intended by the entity. Trade discounts and rebates are deducted in arriving at the cost. The cost, if any, also includes the necessary costs of dismantling and removing the asset and restoring the site on which it is located.

Accounting Policies

The cost of an item of property, plant and equipment is recognised as an asset when:

- it is probable that future economic benefits or service potential associated with the item will flow to the entity; and
- the cost of the item can be measured reliably.

Where an asset is acquired at no cost, or for a nominal cost, its cost is its fair value as at date of acquisition.

Where an item of property, plant and equipment is acquired in exchange for a non-monetary asset or monetary assets, or a combination of monetary and non-monetary assets, the asset acquired is initially measured at fair value (the cost). If the acquired item's fair value was not determinable, it's deemed cost is the carrying amount of the asset(s) given up.

When significant components of an item of property, plant and equipment have different useful lives, they are accounted for as separate items (major components) of property, plant and equipment.

Costs include costs incurred initially to acquire or construct an item of property, plant and equipment and costs incurred subsequently to add to, replace part of, or service it. If a replacement cost is recognised in the carrying amount of an item of property, plant and equipment, the carrying amount of the replaced part is derecognised.

The initial estimate of the costs of dismantling and removing the item and restoring the site on which it is located is also included in the cost of property, plant and equipment, where the entity is obligated to incur such expenditure, and where the obligation arises as a result of acquiring the asset or using it for purposes other than the production of inventories.

Recognition of costs in the carrying amount of an item of property, plant and equipment ceases when the item is in the location and condition necessary for it to be capable of operating in the manner intended by management.

Major spare parts and stand-by equipment which are expected to be used for more than one period are included in property, plant and equipment. In addition, spare parts and stand-by equipment which can only be used in connection with an item of property, plant and equipment are accounted for as property, plant and equipment.

Major inspection costs which are a condition of continuing use of an item of property, plant and equipment and which meet the recognition criteria above are included as a replacement in the cost of the item of property, plant and equipment. Any remaining inspection costs from the previous inspection are derecognised.

Property, plant and equipment is carried at cost less accumulated depreciation and any impairment losses.

Property, plant and equipment are depreciated on the straight line basis over their expected useful lives to their estimated residual value.

The useful lives of items of property, plant and equipment have been assessed as follows:

Item	**Average useful life**
Furniture and fixtures	12 – 37 years
Motor vehicles	Kilometres travelled as a proportion of expected useful live
Office equipment	4 – 37 years
IT equipment	5 – 16 years
Finance lease assets	Years according to the lease term

The residual value, and the useful life and depreciation method of each asset are reviewed at the end of each reporting date. If the expectations differ from previous estimates, the change is accounted for as a change in accounting estimate.

Each part of an item of property, plant and equipment with a cost that is significant in relation to the total cost of the item is depreciated separately.

Accounting Policies

Items of property, plant and equipment are derecognised when the asset is disposed of or when there are no further economic benefits or service potential expected from the use of the asset.

The gain or loss arising from the derecognition of an item of property, plant and equipment is included in surplus or deficit when the item is derecognised. The gain or loss arising from the derecognition of an item of property, plant and equipment is determined as the difference between the net disposal proceeds, if any, and the carrying amount of the item.

Buildings are not currently depreciated as the residual value is estimated to be higher that the carrying value. The depreciation charge is zero when the residual value is estimated to be higher than the carrying amount. The residual value and the useful life of each asset are reviewed at each financial period.

1.4 Intangible assets

An asset is identified as an intangible asset when it:
- is capable of being separated or divided from an entity and sold, transferred, licensed, rented or exchanged, either individually or together with a related contract, assets or liability; or
- arises from contractual rights or other legal rights, regardless whether those rights are transferable or separate from the group or from other rights and obligations.

An intangible asset is recognised when:
- it is probable that the expected future economic benefits or service potential that are attributable to the asset will flow to the group; and
- the cost or fair value of the asset can be measured reliably.

Intangible assets are initially recognised at cost.

An intangible asset acquired at no or nominal cost, the cost shall be its fair value as at the date of acquisition.

Expenditure on research (or on the research phase of an internal project) is recognised as an expense when it is incurred.

An intangible asset arising from development (or from the development phase of an internal project) is recognised when:
- it is technically feasible to complete the asset so that it will be available for use or sale.
- there is an intention to complete and use or sell it.
- there is an ability to use or sell it.
- it will generate probable future economic benefits or service potential.
- there are available technical, financial and other resources to complete the development and to use or sell the asset.
- the expenditure attributable to the asset during its development can be measured reliably.

Intangible assets are carried at cost less any accumulated amortisation and any impairment losses.

An intangible asset is regarded as having an indefinite useful life when, based on all relevant factors, there is no foreseeable limit to the period over which the asset is expected to generate net cash inflows or service potential. Amortisation is not provided for these intangible assets, but they are tested for impairment annually and whenever there is an indication that the asset may be impaired. For all other intangible assets amortisation is provided on a straight line basis over their useful life.

The amortisation period and the amortisation method for intangible assets are reviewed at each reporting date.

Reassessing the useful life of an intangible asset with a finite useful life after it was classified as indefinite is an indicator that the asset may be impaired. As a result the asset is tested for impairment and the remaining carrying amount is amortised over its useful life.

Accounting Policies

Internally generated brands, mastheads, publishing titles, customer lists and items similar in substance are not recognised as intangible assets.

Amortisation is provided to write down the intangible assets, on a straight-line basis, to their residual values as follows:

Item	Useful life
Computer software, other	10 years

Intangible assets are derecognised:
- on disposal; or
- when no future economic benefits or service potential are expected from its use or disposal.

1.5 Investments in controlled entities

WRC financial statements
In the entity's separate financial statements, investments in controlled entities are carried at cost less any accumulated impairment.

The cost of an investment in controlled entity is the aggregate of:
- the fair value, at the date of exchange, of assets given, liabilities incurred or assumed, and equity instruments issued by the entity; plus
- any costs directly attributable to the purchase of the controlled entity.

An adjustment to the cost of a business combination contingent on future events is included in the cost of the combination if the adjustment is probable and can be measured reliably.

1.6 Financial instruments

Classification
The group classifies financial assets and financial liabilities into the following categories:
- Financial assets at fair value through surplus or deficit – designated
- Loans and receivables
- Financial liabilities at fair value through surplus or deficit – designated

Classification depends on the purpose for which the financial instruments were obtained / incurred and takes place at initial recognition. Classification is re-assessed on an annual basis, except for derivatives and financial assets designated as at fair value through surplus or deficit, which shall not be classified out of the fair value through surplus or deficit category.

Initial recognition and measurement
Financial instruments are recognised initially when the group becomes a party to the contractual provisions of the instruments.

The group classifies financial instruments, or their component parts, on initial recognition as a financial asset, a financial liability or an equity instrument in accordance with the substance of the contractual arrangement.

Financial instruments are measured initially at fair value, except for equity investments for which a fair value is not determinable, which are measured at cost and are classified as available-for-sale financial assets.

For financial instruments which are not at fair value through surplus or deficit, transaction costs are included in the initial measurement of the instrument.

Transaction costs on financial instruments at fair value through surplus or deficit are recognised in surplus or deficit.

Accounting Policies

Subsequent measurement
Financial instruments at fair value through surplus or deficit are subsequently measured at fair value, with gains and losses arising from changes in fair value being included in surplus or deficit for the period.

Net gains or losses on the financial instruments at fair value through surplus or deficit include dividends and interest.

Dividend income is recognised in surplus or deficit as part of other income when the group's right to receive payment is established.

Loans and receivables are subsequently measured at amortised cost, using the effective interest method, less accumulated impairment losses.

Fair value determination
The fair values of quoted investments are based on current bid prices. If the market for a financial asset is not active (and for unlisted securities), the group establishes fair value by using valuation techniques. These include the use of recent arm's length transactions, reference to other instruments that are substantially the same, discounted cash flow analysis, and option pricing models making maximum use of market inputs and relying as little as possible on entity-specific inputs.

Impairment of financial assets
At each end of the reporting period the group assesses all financial assets, other than those at fair value through surplus or deficit, to determine whether there is objective evidence that a financial asset or group of financial assets has been impaired.

For amounts due to the group, significant financial difficulties of the debtor, probability that the debtor will enter bankruptcy and default of payments are all considered indicators of impairment.

In the case of equity securities classified as available-for-sale, a significant or prolonged decline in the fair value of the security below its cost is considered an indicator of impairment. If any such evidence exists for available-for-sale financial assets, the cumulative loss – measured as the difference between the acquisition cost and current fair value, less any impairment loss on that financial asset previously recognised in surplus or deficit – is removed from equity as a reclassification adjustment and recognised in surplus or deficit.

Impairment losses are recognised in surplus or deficit.

Impairment losses are reversed when an increase in the financial asset's recoverable amount can be related objectively to an event occurring after the impairment was recognised, subject to the restriction that the carrying amount of the financial asset at the date that the impairment is reversed shall not exceed what the carrying amount would have been had the impairment not been recognised.

Reversals of impairment losses are recognised in surplus or deficit except for equity investments classified as available-for-sale.

Impairment losses are also not subsequently reversed for available for sale equity investments which are held at cost because fair value was not determinable.

Where financial assets are impaired through use of an allowance account, the amount of the loss is recognised in surplus or deficit within operating expenses. When such assets are written off, the write off is made against the relevant allowance account. Subsequent recoveries of amounts previously written off are credited against operating expenses.

Financial instruments designated as available-for-sale
These financial assets are non-derivatives that are either designated in this category or not classified elsewhere. These other financial assets include investments made by the Water Research Commission invested in Old Mutual and Momentum Wealth.

Investments are recognised and derecognised on a trade date basis where the purchase or sale of an investment is under a contract whose terms require delivery of the investment within the timeframe established by the market concerned.

Accounting Policies

These investments are measured initially and subsequently at fair value. Gains and losses arising from changes in fair value are recognised directly in net assets until the security is disposed of or is determined to be impaired.

Loans to (from) economic entities
These include loans to and from controlling entities, fellow controlled entities, controlled entities, joint ventures and associates and are recognised initially at fair value plus direct transaction costs.

Loans to economic entities are classified as loans and receivables.

Loans from economic entities are classified as financial liabilities measured at amortised cost.

Loans to shareholders, directors, managers and employees
These financial assets are classified as loans and receivables.

Trade and other receivables
Trade receivables are measured at initial recognition at fair value, and are subsequently measured at amortised cost using the effective interest rate method. Appropriate allowances for estimated irrecoverable amounts are recognised in surplus or deficit when there is objective evidence that the asset is impaired. Significant financial difficulties of the debtor, probability that the debtor will enter bankruptcy or financial reorganisation, and default or delinquency in payments (more than 30 days overdue) are considered indicators that the trade receivable is impaired. The allowance recognised is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows discounted at the effective interest rate computed at initial recognition.

The carrying amount of the asset is reduced through the use of an allowance account, and the amount of the deficit is recognised in surplus or deficit within operating expenses. When a trade receivable is uncollectible, it is written off against the allowance account for trade receivables. Subsequent recoveries of amounts previously written off are credited against operating expenses in surplus or deficit.

Trade and other receivables are classified as loans and receivables.

Trade and other payables
Trade payables are initially measured at fair value, and are subsequently measured at amortised cost, using the effective interest rate method.

Cash and cash equivalents
Cash and cash equivalents comprise cash on hand and demand deposits, and other short-term highly liquid investments that are readily convertible to a known amount of cash and are subject to an insignificant risk of changes in value. These are initially and subsequently recorded at fair value.

Derecognition
Financial assets

A financial asset is derecognised where:
- the rights to receive cash from the asset have expired.
- the entity retains the right to receive cash flows from the asset, but has assumed an obligation to pay them in full without material delay to a third party under a 'pass through' arrangement; or
- the entity has transferred its rights to receive cash flows from the asset and either
  - has transferred substantially all the risks and rewards of the asset, or
  - has neither transferred nor retained substantialy all the risks and rewards of the asset, but has transferred control of the asset.

Accounting Policies

Where the group has transferred its right to receive cash flows from an asset and has neither transferred nor retained substantially all the risks and rewards of the asset nor transferred control the asset, the asset is recognised to the extent of the entity's continuing involvement in the asset. Continuing involvement that takes the form of a gaurantee over the transferred asset is measured at the lower of original carrying amount of the asset and the maximum amount of consideration that the entity could be required to repay. Where continuing involvement takes the form of a written and/or purchased option on the transferred asset, the extent of the entity's involvement is the amount of the transferred asset that the entity may repurchase, except that in the case of a written put option on an asset measured at fair value, the extent of the entity's contuining involvement is limited to the lower of the fair value of the transferred asset and the option excercise price.

1.7 Leases

A lease is classified as a finance lease if it transfers substantially all the risks and rewards incidental to ownership. A lease is classified as an operating lease if it does not transfer substantially all the risks and rewards incidental to ownership.

When a lease includes both land and buildings elements, the entity assesses the classification of each element separately.

Finance leases – lessee
Finance leases are recognised as assets and liabilities in the statement of financial position at amounts equal to the fair value of the leased property or, if lower, the present value of the minimum lease payments. The corresponding liability to the lessor is included in the statement of financial position as a finance lease obligation.

The discount rate used in calculating the present value of the minimum lease payments is the interest rate on debt owing to the state.

Minimum lease payments are apportioned between the finance charge and reduction of the outstanding liability. The finance charge is allocated to each period during the lease term so as to produce a constant periodic rate on the remaining balance of the liability.

Any contingent rents are expensed in the period in which they are incurred.

Operating leases – lessee
Operating lease payments are recognised as an expense on a straight-line basis over the lease term. The difference between the amounts recognised as an expense and the contractual payments are recognised as an operating lease asset or liability.

1.8 Impairment of cash-generating assets

Cash-generating assets are those assets held by the group with the primary objective of generating a commercial return. When an asset is deployed in a manner consistent with that adopted by a profit-orientated entity, it generates a commercial return.

Impairment is a loss in the future economic benefits or service potential of an asset, over and above the systematic recognition of the loss of the asset's future economic benefits or service potential through depreciation (amortisation).

Carrying amount is the amount at which an asset is recognised in the statement of financial position after deducting any accumulated depreciation and accumulated impairment losses thereon.

A cash-generating unit is the smallest identifiable group of assets held with the primary objective of generating a commercial return that generates cash inflows from continuing use that are largely independent of the cash inflows from other assets or groups of assets.

Costs of disposal are incremental costs directly attributable to the disposal of an asset, excluding finance costs and income tax expense.

Accounting Policies

Depreciation (Amortisation) is the systematic allocation of the depreciable amount of an asset over its useful life.

Fair value less costs to sell is the amount obtainable from the sale of an asset in an arm's length transaction between knowledgeable, willing parties, less the costs of disposal.

Recoverable amount of an asset or a cash-generating unit is the higher its fair value less costs to sell and its value in use.

Useful life is either:
(a) the period of time over which an asset is expected to be used by the group; or
(b) the number of production or similar units expected to be obtained from the asset by the group.

1.9 Employee benefits

Short-term employee benefits
The cost of short-term employee benefits, (those payable within 12 months after the service is rendered, such as paid vacation leave and sick leave, bonuses, and non-monetary benefits such as medical care), are recognised in the period in which the service is rendered and are not discounted.

The expected cost of compensated absences is recognised as an expense as the employees render services that increase their entitlement or, in the case of non-accumulating absences, when the absence occurs.

The expected cost of surplus sharing and bonus payments is recognised as an expense when there is a legal or constructive obligation to make such payments as a result of past performance.

Defined contribution plans
Payments to defined contribution retirement benefit plans are charged as an expense as they fall due.

Payments made to industry-managed (or state plans) retirement benefit schemes are dealt with as defined contribution plans where the entity's obligation under the schemes is equivalent to those arising in a defined contribution retirement benefit plan.

Defined benefit plans
For defined benefit plans the cost of providing the benefits is determined using the projected credit method.

Actuarial valuations are conducted on an annual basis by independent actuaries separately for each plan.

Consideration is given to any event that could impact the funds up to end of the reporting period where the interim valuation is performed at an earlier date.

Past service costs are recognised immediately to the extent that the benefits are already vested, and are otherwise amortised on a straight-line basis over the average period until the amended benefits become vested.

To the extent that, at the beginning of the financial period, any cumulative unrecognised actuarial gain or loss exceeds ten percent of the greater of the present value of the projected benefit obligation and the fair value of the plan assets (the corridor), that portion is recognised in surplus or deficit over the expected average remaining service lives of participating employees. Actuarial gains or losses within the corridor are not recognised.

Gains or losses on the curtailment or settlement of a defined benefit plan is recognised when the entity is demonstrably committed to curtailment or settlement.

When it is virtually certain that another party will reimburse some or all of the expenditure required to settle a defined benefit obligation, the right to reimbursement is recognised as a separate asset. The asset is measured at fair value. In all other respects, the asset is treated in the same way as plan assets. In surplus or deficit, the expense relating to a defined benefit plan is presented as the net of the amount recognised for a reimbursement.

Accounting Policies

The amount recognised in the statement of financial position represents the present value of the defined benefit obligation as adjusted for unrecognised actuarial gains and losses and unrecognised past service costs, and reduces by the fair value of plan assets.

Any asset is limited to unrecognised actuarial losses and past service costs, plus the present value of available refunds and reduction in future contributions to the plan.

1.10 Provisions and contingencies

Provisions are recognised when:
- the group has a present obligation as a result of a past event;
- it is probable that an outflow of resources embodying economic benefits or service potential will be required to settle the obligation; and
- a reliable estimate can be made of the obligation.

The amount of a provision is the best estimate of the expenditure expected to be required to settle the present obligation at the reporting date.

Where the effect of time value of money is material, the amount of a provision is the present value of the expenditures expected to be required to settle the obligation.

The discount rate is a pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the liability.

Where some or all of the expenditure required to settle a provision is expected to be reimbursed by another party, the reimbursement is recognised when, and only when, it is virtually certain that reimbursement will be received if the group settles the obligation. The reimbursement is treated as a separate asset. The amount recognised for the reimbursement does not exceed the amount of the provision.

Provisions are reviewed at each reporting date and adjusted to reflect the current best estimate. Provisions are reversed if it is no longer probable that an outflow of resources embodying economic benefits or service potential will be required, to settle the obligation.

Where discounting is used, the carrying amount of a provision increases in each period to reflect the passage of time. This increase is recognised as an interest expense.

A provision is used only for expenditures for which the provision was originally recognised.

Provisions are not recognised for future operating deficits.

If an entity has a contract that is onerous, the present obligation (net of recoveries) under the contract is recognised and measured as a provision.

A constructive obligation to restructure arises only when an entity:
- has a detailed formal plan for the restructuring, identifying at least:
  - the activity/operating unit or part of a activity/operating unit concerned;
  - the principal locations affected;
  - the location, function, and approximate number of employees who will be compensated for services being terminated;
  - the expenditures that will be undertaken; and
  - when the plan will be implemented; and
- has raised a valid expectation in those affected that it will carry out the restructuring by starting to implement that plan or announcing its main features to those affected by it.

Accounting Policies

A restructuring provision includes only the direct expenditures arising from the restructuring, which are those that are both:
- necessarily entailed by the restructuring; and
- not associated with the ongoing activities of the group.

No obligation arises as a consequence of the sale or transfer of an operation until the group is committed to the sale or transfer, that is, there is a binding arrangement.

After their initial recognition contingent liabilities recognised in entity combinations that are recognised separately are subsequently measured at the higher of:
- the amount that would be recognised as a provision; and
- the amount initially recognised less cumulative amortisation.

Contingent assets and contingent liabilities are not recognised. Contingencies are disclosed in note 24.

1.11 Revenue from exchange transactions

Revenue is the gross inflow of economic benefits or service potential during the reporting period when those inflows result in an increase in net assets, other than increases relating to contributions from owners.

An exchange transaction is one in which the municipality receives assets or services, or has liabilities extinguished, and directly gives approximately equal value (primarily in the form of goods, services or use of assets) to the other party in exchange.

Fair value is the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction.

Measurement
Revenue is measured at the fair value of the consideration received or receivable, net of trade discounts and volume rebates.

Rendering of services
When the outcome of a transaction involving the rendering of services can be estimated reliably, revenue associated with the transaction is recognised by reference to the stage of completion of the transaction at the reporting date. The outcome of a transaction can be estimated reliably when all the following conditions are satisfied:
- the amount of revenue can be measured reliably;
- it is probable that the economic benefits or service potential associated with the transaction will flow to the group;
- the stage of completion of the transaction at the reporting date can be measured reliably; and
- the costs incurred for the transaction and the costs to complete the transaction can be measured reliably.

When services are performed by an indeterminate number of acts over a specified time frame, revenue is recognised on a straight-line basis over the specified time frame unless there is evidence that some other method better represents the stage of completion. When a specific act is much more significant than any other acts, the recognition of revenue is postponed until the significant act is executed.

When the outcome of the transaction involving the rendering of services cannot be estimated reliably, revenue is recognised only to the extent of the expenses recognised that are recoverable.

Service revenue is recognised by reference to the stage of completion of the transaction at the reporting date. Stage of completion is determined by the proportion that costs incurred to date bear to the total estimated costs of the transaction.

Accounting Policies

1.12 Revenue from non-exchange transactions

Non-exchange transactions are defined as transactions where the entity receives value from another entity without directly giving approximately equal value in exchange.

Revenue is the gross inflow of economic benefits or service potential during the reporting period when those inflows result in an increase in net assets, other than increases relating to contributions from owners.

Fair value is the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction.

The Department of Water Affairs, Rand Water and Umgeni Water Boards collect levy income. The rate of the levy is approved by the Minister of Water and Environmental Affairs on an annual basis. Revenue recognition of levy income represents amounts received from the Department of Water Affairs, Rand Water and Umgeni Water Boards. Provision is made for estimated uncollectable levies by way of an impairment charge.

The Water Research Commission received 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.

Interest is recognised in surplus or deficit using the effective interest rate method.

Revenue from the recovery of unauthorised, irregular, fruitless and wasteful expenditure is based on legislated procedures, including those set out in the Public Finance Management Act (Act No 29 of 1999) and is recognised when the recovery thereof from the responsible board members or officials is virtually certain.

1.13 Borrowing costs

It is inappropriate to capitalise borrowing costs when, and only when, there is clear evidence that it is difficult to link the borrowing requirements of an entity directly to the nature of the expenditure to be funded i.e. capital or current.

Borrowing costs are recognised as an expense in the period in which they are incurred.

1.14 Translation of foreign currencies

Foreign currency transactions
A foreign currency transaction is recorded, on initial recognition in Rands, by applying to the foreign currency amount the spot exchange rate between the functional currency and the foreign currency at the date of the transaction.

At each reporting date:
- foreign currency monetary items are translated using the closing rate;
- non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rate at the date of the transaction; and
- non-monetary items that are measured at fair value in a foreign currency are translated using the exchange rates at the date when the fair value was determined.

Exchange differences arising on the settlement of monetary items or on translating monetary items at rates different from those at which they were translated on initial recognition during the period or in previous financial statements are recognised in surplus or deficit in the period in which they arise.

When a gain or loss on a non-monetary item is recognised directly in net assets, any exchange component of that gain or loss is recognised directly in net assets. When a gain or loss on a non-monetary item is recognised in surplus or deficit, any exchange component of that gain or loss is recognised in surplus or deficit.

Accounting Policies

Cash flows arising from transactions in a foreign currency are recorded in Rands by applying to the foreign currency amount the exchange rate between the Rand and the foreign currency at the date of the cash flow.

1.15 Research and development 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 that the total contract amount is not exceeded.

1.16 Unauthorised expenditure

Unauthorised expenditure means:
- overspending of a vote or a main division within a vote; and
- expenditure not in accordance with the purpose of a vote or, in the case of a main division, not in accordance with the purpose of the main division.

All expenditure relating to unauthorised expenditure is recognised as an expense in the statement of financial performance in the year that the expenditure was incurred. The expenditure is classified in accordance with the nature of the expense, and where recovered, it is subsequently accounted for as revenue in the statement of financial performance.

1.17 Fruitless and wasteful expenditure

Fruitless expenditure means expenditure which was made in vain and would have been avoided had reasonable care been exercised.

All expenditure relating to fruitless and wasteful expenditure is recognised as an expense in the statement of financial performance in the year that the expenditure was incurred. The expenditure is classified in accordance with the nature of the expense, and where recovered, it is subsequently accounted for as revenue in the statement of financial performance.

1.18 Irregular expenditure

Irregular expenditure as defined in section 1 of the PFMA is expenditure other than unauthorised expenditure, incurred in contravention of or that is not in accordance with a requirement of any applicable legislation, including –

(a) this Act; or
(b) the State Tender Board Act, 1968 (Act No. 86 of 1968), or any regulations made in terms of the Act; or
(c) any provincial legislation providing for procurement procedures in that provincial government.

National Treasury practice note no. 4 of 2008/2009 which was issued in terms of sections 76(1) to 76(4) of the PFMA requires the following (effective from 1 April 2008):

Irregular expenditure that was incurred and identified during the current financial year and which was condoned before year-end and/or before finalisation of the financial statements must also be recorded appropriately in the irregular expenditure register. In such an instance, no further action is also required with the exception of updating the note to the financial statements.

Irregular expenditure that was incurred and identified during the current financial year and for which condonement is being awaited at year-end must be recorded in the irregular expenditure register. No further action is required with the exception of updating the note to the financial statements.

Accounting Policies

Where irregular expenditure was incurred in the previous financial year and is only condoned in the following financial year, the register and the disclosure note to the financial statements must be updated with the amount condoned.

Irregular expenditure that was incurred and identified during the current financial year and which was not condoned by the National Treasury or the relevant authority must be recorded appropriately in the irregular expenditure register. If liability for the irregular expenditure can be attributed to a person, a debt account must be created if such a person is liable in law. Immediate steps must thereafter be taken to recover the amount from the person concerned. If recovery is not possible, the accounting officer or accounting authority may write off the amount as debt impairment and disclose such in the relevant note to the financial statements. The irregular expenditure register must also be updated accordingly. If the irregular expenditure has not been condoned and no person is liable in law, the expenditure related thereto must remain against the relevant programme/expenditure item, be disclosed as such in the note to the financial statements and updated accordingly in the irregular expenditure register.

1.19 Conditional grants and receipts

Revenue received from conditional grants, donations and funding are recognised as revenue to the extent that the entity has complied with any of the criteria, conditions or obligations embodied in the agreement. To the extent that the criteria, conditions or obligations have not been met a liability is recognised.

1.20 Budget information

The financial statements and the budget are not on the same basis of accounting therefore a reconciliation between the statement of financial performance and the budget have been included in the financial statements. Refer to note 33.

1.21 Related parties

The group operates in an economic sector currently dominated by entities directly or indirectly owned by the South African Government. As a consequence of the constitutional independence of the three spheres of government in South Africa, only entities within the national sphere of government are considered to be related parties.

Management are those persons responsible for planning, directing and controlling the activities of the group, including those charged with the governance of the group in accordance with legislation, in instances where they are required to perform such functions.

Close members of the family of a person are considered to be those family members who may be expected to influence, or be influenced by, that management in their dealings with the group.

Only transactions with related parties not at arm’s length or not in the ordinary course of business are disclosed.

Notes to the Financial Statements

2. New standards and interpretations

2.1 Standards and interpretations issued, but not yet effective

The group has not applied the following standards and interpretations, which have been published and are mandatory for the group's accounting periods beginning on or after 01 April 2012 or later periods:

Standard/Interpretation:	Effective date: Years beginning on or after	Expected impact:
• GRAP 18: Segment Reporting	01 April 2013	Unlikely material impact
• GRAP 23: Revenue from Non-exchange Transactions	01 April 2012	Unlikely material impact
• GRAP 24: Presentation of Budget Information in the Financial Statements	01 April 2012	Unlikely material impact
• GRAP 21: Impairment of non-cash-generating assets	01 April 2012	Unlikely material impact
• GRAP 26: Impairment of cash-generating assets	01 April 2012	Unlikely material impact
• GRAP 25: Employee benefits	01 April 2013	Unlikey material impact
• GRAP 104: Financial Instruments	01 April 2012	Unlikely material impact
• IGRAP 7: The Limit on a Defined Benefit Asset, Minimum Funding Requirements and their Interaction	01 April 2013	Unlikely material impact
• GRAP 106: Transfers of functions between entities not under common control	01 April 2014	Unlikely material impact
• GRAP 20: Related parties	01 April 2013	Unlikely material impact

3. Property, plant and equipment

Group		2012			2011	
	Cost	Accumulated depreciation and accumulated impairment	Carrying value	Cost	Accumulated depreciation and accumulated impairment	Carrying value
Property	8,691,522	-	8,691,522	8,691,522	-	8,691,522
Furniture and fixtures	1,550,664	(412,463)	1,138,201	1,519,399	(373,317)	1,146,082
Motor vehicles	68,975	(50,734)	18,241	68,975	(49,133)	19,842
Office equipment	808,263	(341,998)	466,265	793,773	(261,802)	531,971
IT equipment	2,583,268	(1,832,788)	750,480	4,061,302	(2,613,991)	1,447,311
Total	**13,702,692**	**(2,637,983)**	**11,064,709**	**15,134,971**	**(3,298,243)**	**11,836,728**

Notes to the Financial Statements

WRC	2012			2011		
	Cost	Accumulated depreciation and accumulated impairment	Carrying value	Cost	Accumulated depreciation and accumulated impairment	Carrying value
Furniture and fixtures	1,550,664	(412,463)	1,138,201	1,519,399	(373,317)	1,146,082
Motor vehicles	68,975	(50,734)	18,241	68,975	(49,133)	19,842
Office equipment	808,263	(341,998)	466,265	793,773	(261,802)	531,971
IT equipment	2,583,268	(1,832,788)	750,480	4,061,302	(2,613,991)	1,447,311
Total	**5,011,170**	**(2,637,983)**	**2,373,187**	**6,443,449**	**(3,298,243)**	**3,145,206**

Reconciliation of property, plant and equipment - Group - 2012

	Opening balance	Additions	Depreciation	Scrapping	Total
Property	8,691,522	-	-	-	8,691,522
Furniture and fixtures	1,146,082	31,265	(39,146)	-	1,138,201
Motor vehicles	19,842	-	(1,601)	-	18,241
Office equipment	531,971	14,490	(80,196)	-	466,265
IT equipment	1,447,311	-	(649,807)	(47,024)	750,480
	11,836,728	**45,755**	**(770,750)**	**(47,024)**	**11,064,709**

Reconciliation of property, plant and equipment - Group - 2011

	Opening balance	Additions	Depreciation	Total
Property	8,691,522	-	-	8,691,522
Furniture and fixtures	1,177,720	8,255	(39,893)	1,146,082
Motor vehicles	21,339	-	(1,497)	19,842
Office equipment	484,716	105,506	(58,251)	531,971
IT equipment	1,537,797	602,603	(693,089)	1,447,311
	11,913,094	**716,364**	**(792,730)**	**11,836,728**

Notes to the Financial Statements

Reconciliation of property, plant and equipment - WRC - 2012

	Opening balance	Additions	Depreciation	Impairment loss	Total
Furniture and fixtures	1,146,082	31,265	(39,146)	-	1,138,201
Motor vehicles	19,842	-	(1,601)	-	18,241
Office equipment	531,971	14,490	(80,196)	-	466,265
IT equipment	1,447,311	-	(649,807)	(47,024)	750,480
	3,145,206	**45,755**	**(770,750)**	**(47,024)**	**2,373,187**

Reconciliation of property, plant and equipment - WRC - 2011

	Opening balance	Additions	Depreciation	Total
Furniture and fixtures	1,177,720	8,255	(39,893)	1,146,082
Motor vehicles	21,339	-	(1,497)	19,842
Office equipment	484,716	105,506	(58,251)	531,971
IT equipment	1,537,797	602,603	(693,089)	1,447,311
	3,221,572	**716,364**	**(792,730)**	**3,145,206**

Pledged as security

None of the assets were or are pledged as security.:

Assets subject to finance lease (Net carrying amount)

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**
IT equipment	693,088	1,196,622	693,088	1,196,622

Notes to the Financial Statements

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**
Details of properties				
Erf 706 Rietfontein, Pretoria, Gauteng				
- Purchase price	615,855	615,855	-	-
- Additions since purchase or valuation	8,075,667	8,075,667	-	-
	8,691,522	**8,691,522**	**-**	**-**
Fair value of property, plant and equipment				
Property	31,500,000	30,000,000	-	-
The property has been valued at R31,500,000 by Reinertsen Valuation Services, as an independent valuer, on the 31st of March 2012.	-	-	-	-
	31,500,000	**30,000,000**	**-**	**-**

A register containing the information required by the Public Finance Management Act is available for inspection at the registered office of the entity.

4. Intangible assets

Group		**2012**			**2011**	
	Cost	**Accumulated amortisation and accumulated impairment**	**Carrying value**	**Cost**	**Accumulated amortisation and accumulated impairment**	**Carrying value**
Computer software, other	3,398,628	(879,742)	2,518,886	3,004,176	(566,553)	2,437,623

Notes to the Financial Statements

WRC	2012			2011		
	Cost	Accumulated amortisation and accumulated impairment	Carrying value	Cost	Accumulated amortisation and accumulated impairment	Carrying value
Computer software, other	3,398,628	(879,742)	2,518,886	3,004,176	(566,553)	2,437,623

Reconciliation of intangible assets - Group - 2012

	Opening balance	Additions	Amortisa-tion	Total
Computer software, other	2,437,623	394,451	(313,188)	2,518,886

Reconciliation of intangible assets - Group - 2011

	Opening balance	Additions	Amortisa-tion	Total
Computer software, other	2,610,199	104,945	(277,521)	2,437,623

Reconciliation of intangible assets - WRC - 2012

	Opening balance	Additions	Amortisa-tion	Total
Computer software, other	2,437,623	394,451	(313,188)	2,518,886

Reconciliation of intangible assets - WRC - 2011

	Opening balance	Additions	Amortisa-tion	Total
Computer software, other	2,610,199	104,945	(277,521)	2,437,623

Pledged as security

None of the intangible assets are pledged as security.

Notes to the Financial Statements

5. Investments in controlled entities

Name of company	Held by	% holding 2012	% holding 2011	Carrying amount 2012	Carrying amount 2011
Erf 706 Rietfontein (Pty) Ltd		100.00%	100.00%	755,939	755,939

The carrying amounts of controlled entities are shown net of impairment losses.

The Commission holds 100% of the shares of Erf 706 Rietfontein (Pty) Ltd, a property company. Erf 706 Rietfontein (Pty) Ltd owns one property which is mainly occupied by the Water Research Commission. As per the valuation performed by Reinertsen Valuation Services, a professional valuer, the open market value of the property is valued at R31,500,000. Management therefore deems the fair value of Erf 706 Rietfontein (Pty) Ltd to be equal to the market value of the property held by Erf 706 Rietfontein (Pty) Ltd less its liabilities.

Controlled entities pledged as security

The investment in subsidiary is not pledged as security.

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**

6. Loans to (from) economic entities

Controlled entities

Erf 706 Rietfontein (Proprietary) Limited	-	-	15,781,022	14,254,570
The unsecured loan bears interest at a nominal rate of 15% and is repayable in equal monthly installments of R60,000 over 15 years.				
Erf 706 Rietfontein (Proprietary) Limited	-	-	2,633,904	2,645,432
The unsecured loan bears interest at prime plus 2% and is repayable within 60 days from receipt of a written demand.				
	-	**-**	**18,414,926**	**16,900,002**
Non-current assets	-	-	17,394,926	15,880,002
Current assets	-	-	1,020,000	1,020,000
	-	**-**	**18,414,926**	**16,900,002**

Notes to the Financial Statements

Credit quality of loans to economic entities

The credit quality of loans to economic entities are of a good quality. The maximum exposure to credit risk at the reporting date is the fair value of the loan mentioned above.

None of the loans to economic entities defaulted during the year under review.

The terms and conditions of the loans were not renegotiated during the period under review.

Fair value of loans to and from economic entities

The fair value of the loan is determined by calculating the present value of future payments by using a discount rate of 15% and prime rate plus 2%. The entity does not hold any collateral as security for the loans.

Loans to economic entities past due but not impaired

Loans to economic entities were not past due at reporting date.

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**

7. Other financial assets

Available-for-sale				
Old Mutual	1,990,858	1,662,436	1,990,858	1,662,436
Momentum Wealth	5,530,990	4,931,672	5,530,990	4,931,672
	7,521,848	**6,594,108**	**7,521,848**	**6,594,108**
Non-current assets				
Available-for-sale	7,521,848	6,594,108	7,521,848	6,594,108

The group has not reclassified any financial assets from cost or amortised cost to fair value, or from fair value to cost or amortised cost during the current or prior year.

There were no gains or losses realised on the disposal of available for sale financial assets in 2012 and 2011, as all the financial assets were disposed of at their redemption date.

Notes to the Financial Statements

8. Financial assets by category

The accounting policies for financial instruments have been applied to the line items below:

Group – 2012

	Loans and receivables	Available-for-sale	Total
Other financial assets	-	7,521,848	7,521,848
Trade and other receivables	32,277,667	-	32,277,667
Cash and cash equivalents	93,039,613	-	93,039,613
	125,317,280	**7,521,848**	**132,839,128**

Group – 2011

	Loans and receivables	Available-for-sale	Total
Other financial assets	-	6,594,108	6,594,108
Trade and other receivables	23,488,582	-	23,488,582
Cash and cash equivalents	96,758,201	-	96,758,201
	120,246,783	**6,594,108**	**126,840,891**

WRC – 2012

	Loans and receivables	Available-for-sale	Total
Loans to economic entities	18,414,926	-	18,414,926
Other financial assets	-	7,521,848	7,521,848
Trade and other receivables	32,673,376	-	32,673,376
Cash and cash equivalents	91,134,628	-	91,134,628
	142,222,930	**7,521,848**	**149,744,778**

WRC – 2011

	Loans and receivables	Available-for-sale	Total
Loans to economic entities	16,900,003	-	16,900,003
Other financial assets	-	6,594,108	6,594,108
Trade and other receivables	23,898,715	-	23,898,715
Cash and cash equivalents	95,074,551	-	95,074,551
	135,873,269	**6,594,108**	**142,467,377**

Notes to the Financial Statements

9. Employee benefit obligations

Pension and provident fund

The Water Research Commission has pension and provident fund schemes covering all employees. Until 31 March 2005 all eligible employees were members of the defined benefit funds administered by ABSA Consultants and Actuaries. As at 01 April 2005 both the pension fund and provident fund converted to a defined contribution fund for current employees. The effect of this is that the WRC has no liability other than the defined contributions payable to the fund on a monthly basis. No liability can arise due to the adverse market conditions. However all pensioners remained entitled to their benefits in terms of the old dispensation. (Refer to note 1.9)

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

These funds are actuarially valued for financial reporting purposes at annual intervals to determine the liability for the entity. The funds were last actuarially valued on 31 March 2012. At that time all funds were certified by the reporting actuary as being in sound financial position subject to the continuation of their current contribution rates. In arriving at this conclusion, the actuary took into consideration certain assumptions at reporting date (expressed as weighted averages).

Medical aid scheme

The Water Research Commission has made provision for a medical aid scheme covering retired members and active employees before 1 April 2008. All eligible employees are members of the defined contribution scheme. The funds are governed by the Medical Schemes Act, 1998 (Act No 131 of 1998).

These funds are actuarially valued at intervals of not more than three years using the projected unit credit method. No plan assets are held by the entity to fund the obligation. The Scheme was last actuarially valued at 31 March 2012. At that time the reporting actuary certified that the vested liability for continuation members will fluctuate depending on mortality rare 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 certain assumptions at reporting date (expressed as weighted averages).

The WRC, like many other institutions in South Africa, carries the legal and related financial obligation to subsidise (100% subsidy level) the medical aid benefit of certain of its current and its pensioned employees in retirement. As such, the WRC's post-retirement medical aid obligation represents a long dated, uncapped and unfunded liability which, if not pro-actively managed by the WRC, represents a significant systematic employee benefit and financial risk to the institution. It is on this basis and in terms of prudent practice, that the management of the WRC initiated a formal strategy in 2008 to manage the long dated, uncapped and unfunded costs and risks associated with its post retirement medical aid liability as follows:

- The WRC, in line with accepted practice, closed the subsidy/benefit to new recruits to the WRC as of 1st of April 2008.
- The WRC, in line with industry and employer trends, employed the professional services of an independent consultant and actuary to value the quantum of the liability fund (i.e. risk ring-fencing) and/or buy-out (i.e. liability capping) the disclosed liability in order to manage the WRC's exposure to the associated costs and risks. In the 2010/2011 financial year, the WRC offered voluntary buy-outs to all in-service members. Members that did not accept the buy-out offer and the pensioners already receiving the benefit have had the liability ring-fenced and out-sourced to a service provider.

Notes to the Financial Statements

The amounts recognised in the statement of financial position are as follows:

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**
Carrying value				
Present value of the defined benefit obligation – partially or wholly funded	(34,879,398)	(34,126,201)	(34,879,398)	(34,126,201)
Fair value of plan assets	31,318,222	30,171,553	31,318,222	30,171,553
	(3,561,176)	**(3,954,648)**	**(3,561,176)**	**(3,954,648)**
Movement for the year – pension fund				
Opening balance	1,556,000	1,297,000	1,556,000	1,297,000
Net expense recognised in the statement of financial performance	126,600	259,000	126,000	259,000
	1,682,600	**1,556,000**	**1,682,000**	**1,556,000**
Net expense recognised in the statement of financial performance – pension fund				
Interest cost	382,000	389,000	382,000	389,000
Actuarial (gains) losses	14,000	161,000	14,000	161,000
Expected return on plan assets	(270,000)	(291,000)	(270,000)	(291,000)
	126,000	**259,000**	**126,000**	**259,000**
Key assumptions used				
Assumptions used at the reporting date:				
Discount rates used	8.40%	9.10%	8.40%	9.10%
Expected rate of return on assets	10.10%	10.30%	10.10%	10.30%
General inflation rates	6.10%	6.30%	6.10%	6.30%
Expected increase in salaries	7.10 %	7.30%	7.10 %	7.30%

The expected rate of return on assets is based on assumptions that the investment returns will exceed general inflation by 4% after allowing for investment related expenses.

Movement for the year – provident fund				
Opening balance	76,000	646,000	76,000	646,000
Net expenses recognised in the statement of financial performance	37,000	(570,000)	37,000	(570,000)
	113,000	**76,000**	**113,000**	**76,000**

Notes to the Financial Statements

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**
Net expense recognised in the statement of financial performance – provident fund				
Interest cost	233,000	247,000	233,000	247,000
Actuarial (gain)/loss	58,000	(565,000)	58,000	(565,000)
Expected return	(254,000)	(252,000)	(254,000)	(252,000)
	37,000	**(570,000)**	**37,000**	**(570,000)**
Assumptions used on last valuations on 31 March 2012				
Discount rate used	8.40%	9.10%	8.40%	9.10%
Expected rate of return on assets	10.10%	10.30%	10.10%	10.30%
General inflation rate	6.10%	6.30%	6.10%	6.30%
Expected increase in salaries	7.10%	7.30%	7.10%	7.30%
Movement for the year – medical aid fund				
Opening balance	2,322,648	30,850,530	2,322,648	30,850,530
Benefits paid	-	(31,726,865)	-	(31,726,865)
Net expense/(gain) recognised in the statement of financial performance – medical aid fund	(556,472)	3,198,893	(556,472)	3,198,893
	1,766,176	**2,322,648**	**1,766,176**	**2,322,648**
Net expense recognised in the statement of financial performance – medical aid fund				
Current service cost	204,928	312,420	204,928	312,420
Interest cost	2,482,913	2,281,872	2,482,913	2,281,872
Expected return	(2,358,112)	604,691	(2,358,112)	604,691
Actuarial (gains)/losses	(886,201)	-	(886,201)	-
	(556,472)	**3,198,983**	**(556,472)**	**3,198,983**
Assumptions used on last valuation 31 March 2012				
Retirement age	65	65	65	65
Early retirement age	55	55	55	55
Percentage married on retirement	90.00%	90.00%	90.00%	90.00%
Investment return	8.30%	9.40%	8.30%	9.40%
Medical aid inflation rate	7.30%	8.40%	7.30%	8.40%

Notes to the Financial Statements

The expected rate of return on assets is based on assumptions that the investment returns will exceed general inflation by 4% after allowing for investment related expenses.

Sensitivity analysis

The assumptions made in the liability calculations are best estimates of future levels of the various factors. These factors in reality may turn out to be different than the assumed values. In order to illustrate the sensitivity of the results to the changes in these inflation, morality and withdrawal assumptions, the liability figure has been recalculated on six additional bases outline in the following table:

Assumption	Past service liability (R)	% Change from best estimate
Base discount rate (8.3% p.a.)	28,095,398	-
1% increase	31,398,453	12%
1% increase	25,336,175	-10%
Base post-retirement mortality (PAm-3/PA90f-1)	28,095,398	
Mortality 10% lower	29,312,206	4%
Mortality 10% higher	27,026,190	-4%

The following table shows the sensitivity of the interest cost and service cost to a change in the medical inflation rate:

Assumption	Interest cost (R)	% change from base	Service cost (R)	% change from base
Base discount rate (8.3%)	2,257,358		188,349	-
1% decrease	1,985,387	-12%	221,430	18%
1% increase	2,529,329	12%	161,353	-14%

The analysis above shows that past service liability is most sensitive to a change in the gap between medical inflation and interest rates. The liability is also sensitive to a change in mortality rates, which is most significant at post-retirement ages. A change in withdrawal rates has an insignificant effect on the liability, as the average age for in service members is within the 45 – 50 age band and withdrawal rates fall to zero after age 50.

The analysis above shows that the sensitivity of the interest cost to a change in the medical inflation rate is similar to the sensitivity of the past service liability, although service cost is more sensitive.

Notes to the Financial Statements

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**

10. Trade and other receivables

Water research levies – non-exchange transactions	30,146,821	22,245,381	30,143,854	22,237,002
Computer loans – non-exchange transactions	-	8,181	-	8,181
Other receivables – non-exchange transactions	2,120,988	1,219,110	2,529,522	1,653,532
	32,267,809	**23,472,672**	**32,673,376**	**23,898,715**

Trade and other receivables pledged as security

No trade and other receivables were pledged as security for any financial liability.

Credit quality of trade and other receivables

None of the trade and other receivables defaulted during the year under review. Management considers that all of the above financial assets are of good credit quality. The maximum exposure to credit risk at the reporting date is the fair value of each class of receivable mentioned above.

Trade receivables

None of the financial assets that are fully performing have been renegotiated in the last year.

Trade and other receivables past due but not impaired

Trade and other receivables are all considered for impairment. At 31 March 2012, R 0 (2011: R168,168) were past due but not impaired.

The ageing of amounts past due but not impaired is as follows:

1 month past due	-	176,083	-	167,705
2 months past due	-	463	-	463

Trade and other receivables impaired

Group

As of 31 March 2012, trade and other receivables of R (113,441) (2011: R348,639) were (reversed)/impaired and provided for.

The amount of the provision was R (18,894,455) as of 31 March 2012 (2011: R19,007,896).

WRC

As of 31 March 2012, trade and other receivables of R (171,177) (2011: R300,137) were (reversed)/impaired and provided for.

The amount of the provision was R (18,788,217) as of 31 March 2012 (2011: R18,959,394).

Notes to the Financial Statements

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**
The ageing of these loans is as follows:				
Current – Gross	17,878,717	23,296,127	18,178,046	23,730,547
1 Month past due – Gross	7,083,306	181,115	7,083,306	172,497
2 Months past due – Gross	7,126,318	480	7,126,318	480
3 Months past due – Gross	19,073,923	19,002,848	19,073,923	18,954,585
Current impaired amount	-	-	-	-
1 Month past due – Impaired amount	(13,603)	(5,032)	(13,603)	(4,792)
2 Months past due – Impaired amount	(828)	(17)	(828)	(17)
3 Months past due – Impaired amount	(18,880,024)	(19,002,849)	(18,773,786)	(18,954,585)

Reconciliation of provision for impairment of trade and other receivables

Opening balance	19,007,896	18,659,257	18,959,394	18,659,257
Provision for impairment	(113,441)	348,639	(171,177)	300,137
	18,894,455	**19,007,896**	**18,788,217**	**18,959,394**

The creation and release of provision for impaired receivables have been included in operating expenses in surplus or deficit. Amounts charged to the allowance account are generally written off when there is no expectation of recovering additional cash.

The maximum exposure to credit risk at the reporting date is the fair value of each class of loan mentioned above. The group does not hold any collateral as security.

11. Cash and cash equivalents

Cash and cash equivalents consist of:

Cash on hand	1,879	374	1,879	374
Bank balances	51,296,426	79,770,417	49,391,441	78,086,767
Short-term deposits	41,741,308	16,987,410	41,741,308	16,987,410
	93,039,613	**96,758,201**	**91,134,628**	**95,074,551**

Credit quality of cash at bank and short-term deposits, excluding cash on hand

Management considers that all of the above cash and cash equivalents categories are of good quality. The maximum exposure to credit risk at the reporting date is the fair value of each class of cash and cash equivalents mentioned above. All cash and cash equivalents held be the entity are available for use. The cash and cash equivalents were not pledged as security for financial liabilities.

Notes to the Financial Statements

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**
12. Finance lease obligation				
Minimum lease payments due				
- within one year	480,153	746,718	480,153	746,718
- in second to fifth year inclusive	400,689	883,586	400,689	883,586
	880,842	1,630,304	880,842	1,630,304
less: future finance charges	(133,933)	(314,293)	(133,933)	(314,293)
Present value of minimum lease payments	**746,909**	**1,316,011**	**746,909**	**1,316,011**
Present value of minimum lease payments due				
- within one year	382,928	569,102	382,928	569,102
- in second to fifth year inclusive	363,981	746,909	363,981	746,909
	746,909	**1,316,011**	**746,909**	**1,316,011**
Non-current liabilities	363,981	746,909	363,981	746,909
Current liabilities	382,928	569,102	382,928	569,102
	746,909	**1,316,011**	**746,909**	**1,316,011**

It is group policy to lease certain equipment under finance leases.

The average lease term was 3 years and the average effective borrowing rate was 14% (2011: 14%).

Interest rates are fixed at the contract date. All leases have fixed repayments and no arrangements have been entered into for contingent rent.

Defaults and breaches

The entity did not default on any interest or capital portions on any of the finance leases. None of the finance leases were re-negotiated during the year under review.

Notes to the Financial Statements

13. Accruals – leave and bonus

Reconciliation of accruals – leave and bonus – Group – 2012

	Opening Balance	Additions	Utilised during the year	Total
Accruals for leave	2,700,484	536,306	-	3,236,790
Accruals for bonus	241,272	-	(47,400)	193,872
	2,941,756	**536,306**	**(47,400)**	**3,430,662**

Reconciliation of accruals – leave and bonus – Group – 2011

	Opening Balance	Additions	Utilised during the year	Total
Accruals for leave	2,352,517	347,967	-	2,700,484
Accruals for bonus	257,921	-	(16,649)	241,272
	2,610,438	**347,967**	**(16,649)**	**2,941,756**

Reconciliation of accruals – leave and bonus – WRC – 2012

	Opening Balance	Additions	Utilised during the year	Total
Accruals for leave	2,700,484	536,306	-	3,236,790
Accruals for bonus	241,272	-	(47,400)	193,872
	2,941,756	**536,306**	**(47,400)**	**3,430,662**

Reconciliation of accruals – leave and bonus – WRC – 2011

	Opening Balance	Additions	Utilised during the year	Total
Accruals for leave	2,352,517	347,967	-	2,700,484
Accruals for bonus	257,921	-	(16,649)	241,272
	2,610,438	**347,967**	**(16,649)**	**2,941,756**

Notes to the Financial Statements

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**

14. Trade and other payables

Trade payables – exchange transactions	47,162,236	38,371,900	46,986,842	38,300,978

The entity did not default on interest or capital on any trade and other payables. None of the items attached to the trade and other payables were re-negotiated during the period under review.

15. Financial liabilities by category

The accounting policies for financial instruments have been applied to the line items below:

Group – 2012

	Financial liabilities at amortised cost	Total
Trade and other payables	47,191,502	47,191,502
Finance lease obligation	746,909	746,909
Accruals	3,430,662	3,430,662
	51,369,073	**51,369,073**

Group – 2011

	Financial liabilities at amortised cost	Total
Trade and other payables	38,399,297	38,399,297
Finance lease obligation	1,316,011	1,316,011
Accruals	2,941,756	2,941,756
	42,657,064	**42,657,064**

Notes to the Financial Statements

WRC – 2012

	Financial liabilities at amortised cost	Total
Trade and other payables	46,986,843	46,986,843
Finance lease obligations	746,909	746,909
Accruals	3,430,662	3,430,662
	51,164,414	**51,164,414**

WRC – 2011

	Financial liabilities at amortised cost	Total
Trade and other payables	38,300,979	38,300,979
Finance lease obligation	1,316,011	1,316,011
Accruals	2,941,756	2,941,756
	42,558,746	**42,558,746**

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**

16. Revenue

Water research levies – non-exchange transactions	151,986,157	141,140,699	151,986,157	141,140,699
Rental of facilities & equipment	560,086	491,281	-	-
Leverage income – non-exchange transactions	23,570,109	14,846,281	23,556,568	14,833,992
Fair value adjustment	(392,939)	(470,620)	(386,335)	(466,665)
	175,723,413	**156,007,641**	**175,156,390**	**155,508,026**

Notes to the Financial Statements

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**

17. Operating deficit

Operating deficit for the year is stated after accounting for the following:

Operating lease charges				
Premises				
• Contractual amounts	92,994	162,978	1,940,642	2,074,207
Equipment				
• Contractual amounts	153,255	174,962	153,255	174,962
	246,249	**337,940**	**2,093,897**	**2,249,169**
Loss on scrapping of assets	47,024	-	47,024	-
Depreciation on property, plant and equipment	1,083,938	1,070,250	1,083,938	1,070,250
Employee costs	33,235,117	32,471,946	33,235,117	32,471,946
Research and development	132,672,184	104,554,448	132,672,184	104,554,448

18. Investment revenue

Interest revenue				
Listed financial assets	628,079	264,174	628,079	264,174
Loan to subsidiary (financial asset – loan and receivable)	-	-	2,534,924	2,331,201
Bank (financial asset – held for trading)	3,208,387	2,814,307	3,199,808	2,810,991
Interest received relating to extended credit terms provided	392,939	470,620	386,335	466,665
Interest received – other	-	296,500	-	296,500
Computer loans (financial asset – loan and receivable)	278	1,107	278	1,107
	4,229,683	**3,846,708**	**6,749,424**	**6,170,638**

19. Finance costs

Finance leases	198,972	246,604	198,972	246,604

20. Taxation

No provision has been made for taxation as the group is exempted from income tax in terms of Section 10(1)(cA)(i) of the Income Tax Act.

21. Auditors' remuneration

Fees	1,394,065	1,339,497	1,394,065	1,339,497

Notes to the Financial Statements

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**

22. Cash used in operations

Deficit	(3,794,580)	(6,234,408)	(2,508,893)	(5,163,368)
Adjustments for:				
Depreciation and amortisation	1,083,938	1,070,250	1,083,938	1,070,250
Loss on scrapping of assets	47,024	-	47,024	-
Debt impairment	(113,441)	348,638	(171,177)	300,137
Movements in operating lease assets and accruals	(159,327)	(11,622)	(59,510)	162,978
Movements in retirement benefit assets and liabilities	(393,472)	(28,838,882)	(393,472)	(28,838,882)
Movements in provisions	488,906	331,318	488,906	331,318
Changes in working capital:				
Trade and other receivables	(8,675,644)	13,941,839	(8,603,484)	13,927,181
Trade and other payables	8,792,201	3,745,118	8,685,862	3,724,413
	(2,724,395)	**(15,647,749)**	**(1,430,806)**	**(14,485,973)**

23. Commitments

Authorised research expenditure not contracted

Research	0	0	0	0

Authorised research expenditure

Already contracted for but not incurred

Research	164,316,579	168,334,009	164,316,579	168,334,009

This committed expenditure relates to research and will be financed from internal sources.

Operating leases – as lessee (expense)

Minimum lease payments due				
- within one year	-	-	2,069,308	1,970,770
- in second to fifth year inclusive	-	-	4,454,185	6,523,494
	-	**-**	**6,523,493**	**8,494,264**

Operating lease payments represent rentals payable by the group for its office properties. No contingent rent is payable.

Notes to the Financial Statements

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**

24. Contingencies

No contingencies existed at year-end of which management were aware.

25. Related parties

Relationships				
Controlled entities – Refer to note 5				
Related party balances				
Loan accounts – Owing (to) by related parties				
Erf 706 (Proprietary) Limited			18,414,926	16,900,003
Related party transactions				
Interest paid to (received from) related parties				
Erf 706 Rietfontein (Proprietary) Limited			2,534,924	2,331,200
Rent paid to (received from) related parties				
Erf 706 Rietfontein (Proprietary) Limited			1,847,648	1,911,229
Administration fees paid to (received from) related parties				
Erf 706 Rietfontein (Proprietary) Limited			(408,534)	(392,712)
Municipal expenses paid to related parties				
Erf 706 Rietfontein (Proprietary) Limited			489,788	460,121

Compensation to directors and other key management, refer to note 26

Notes to the Financial Statements

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**

26. Directors' emoluments

Total Directors' Emoluments

Fees for services as directors	392,305	430,223	392,305	430,223
Basic salary	8,636,650	7,970,790	8,636,650	7,970,790
Bonuses and performance payments	631,838	642,649	631,838	642,649
Travel allowance	341,004	356,004	341,004	356,004
	10,001,797	**9,399,666**	**10,001,797**	**9,399,666**

Executive

2012	**Emolu-ments**	**Bonus and perfor-mance payments**	**Travel allowances**	**Total**
Mr DP Naidoo (Appointed 01/10/2011)	705,250	-	-	705,250
Dr R Kfir – CEO until 30 September 2011	655,768	125,096	40,002	820,866
Mr NB Patel – Chief Financial Officer	1,053,849	73,306	90,000	1,217,155
Dr GR Backeberg	940,760	66,526	-	1,007,286
Mr JN Bhagwan	1,099,056	73,824	90,000	1,262,880
Ms E Karar	1,099,056	73,824	84,000	1,256,880
Ms R Lutchman	1,046,694	73,113	-	1,119,807
Dr HG Snyman	1,023,591	73,469	12,000	1,109,060
Dr MS Liphadzi	1,012,627	72,682	25,002	1,110,311
	8,636,651	**631,840**	**341,004**	**9,609,495**

Notes to the Financial Statements

2011

	Emoluments	Bonus and performance payments	Travel allowances	Total
Dr R Kfir – CEO until 30 September 2011	1,256,539	119,139	80,004	1,455,682
Mr NB Patel – Chief Financial Officer	973,886	76,082	90,000	1,139,968
Dr GR Backeberg	883,812	68,025	-	951,837
Mr JN Bhagwan	980,770	76,620	90,000	1,147,390
Ms E Karar	980,770	76,620	84,000	1,141,390
Ms R Lutchman	953,360	74,478	-	1,027,838
Dr HG Snyman	976,053	76,251	12,000	1,064,304
Dr MS Liphadzi	965,599	75,434	-	1,041,033
	7,970,789	**642,649**	**356,004**	**8,969,442**

Non-executive

2012

	Fees for service as directors	Total
Prof JB Adams Chairperson	282,305	282,305
Mr EPW Cross	16,000	16,000
Ms ZB Mathenjwa	16,000	16,000
Mrs DN Ndaba	28,000	28,000
Mr M Sirenya	20,000	20,000
Adv D Block	8,000	8,000
Ms RNM Maphumulo	4,000	4,000
Mr AN Mhlongo	18,000	18,000
	392,305	**392,305**

Notes to the Financial Statements

2011

	Fees for services as directors	Total
Prof JB Adams Chairperson	272,223	272,223
Mr DP Naidoo	24,000	24,000
Mr EPW Cross	18,000	18,000
Ms ZB Mathenjwa	18,000	18,000
Mrs DN Ndaba	32,000	32,000
Mr M Sirenya	34,000	34,000
Dr DJ Merrey	14,000	14,000
Adv D Block	4,000	4,000
Ms RNM Maphumulo	2,000	2,000
Mr AN Mhlongo	12,000	12,000
	430,223	**430,223**

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**

27. Prior period errors

In the prior period, income from the Department of Water Affairs which accrued to the Commission was erroneously not provided for.

Certain reclassifications were made to receivables and payables during years prior to 2011. The effect of the reclassification is an increase to the accumulated surplus of R53,334 in respect of the opening balance for accumulated surplus.

The correction of the error(s) results in adjustments as follows:

Statement of financial position				
Accounts receivable	-	3,245,964	-	3,245,964
Trade and other receivables	-	27,538	-	-
Retained income	-	(72,374)	-	-
Accounts payable	-	44,830	-	-
Statement of Financial Performance				
Revenue – Water Research Levies	-	3,245,964	-	3,245,964

Notes to the Financial Statements

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**

28. Comparative figures

Certain comparative figures have been reclassified. The research cost and operating lease commitments have been incorrectly disclosed in the prior period. There is no effect on either the statement of financial position or the statement of financial performance as these amounts have not yet being recognised due to the fact that it represents commitments. The note to the annual financial statements have been amended to reflect the correct amounts.

The effects of the amendment are as follows:

Effect to the notes				
Research commitment	-	121,134,218	-	121,134,218
Operating lease commitment	-	1,187,362	-	1,187,362

29. Risk management

Liquidity risk

The group's risk to liquidity is a result of the funds available to cover future commitments. The group manages liquidity risk through an ongoing review of future commitments and credit facilities.

The table below analyses the group's financial liabilities and net settled derivative financial liabilities into relevant maturity groupings based on the remaining period at the statement of financial position to the contractual maturity date. The amounts disclosed in the table are the contractual undiscounted cash flows. Balances due within 12 months equal their carrying balances as the impact of discounting is not significant.

Group

At 31 March 2012	**Less than 1 year**	**Between 1 and 2 years**	**Between 2 and 5 years**	**Over 5 years**
Trade and other payables	47,191,502	-	-	-
Finance leases	480,153	400,689	-	-

At 31 March 2011	**Less than 1 year**	**Between 1 and 2 years**	**Between 2 and 5 years**	**Over 5 years**
Trade and other payables	38,399,297	-	-	-
Finance leases	746,718	382,927	497,915	-

WRC

At 31 March 2012	**Less than 1 year**	**Between 1 and 2 years**	**Between 2 and 5 years**	**Over 5 years**
Trade and other payables	46,986,843	-	-	-
Finance leases	480,153	400,689	-	-

Notes to the Financial Statements

At 31 March 2011	Less than 1 year	Between 1 and 2 years	Between 2 and 5 years	Over 5 years
Trade and other payables	38,300,976	-	-	-
Finance leases	746,718	382,927	497,915	-

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 trusts.

Deposits attract interest at rates that vary with prime. The entity's policy is to manage interest rate risk so that fluctuations in variable rates do not have a material impact on a surplus/(deficit).

At year-end, financial instruments exposed to interest rate risk were as follows: Balances with banks and deposits with the Corporation for Public Deposits.

Credit risk

Credit risk consists mainly of cash deposits, cash equivalents, derivative financial instruments and trade debtors. The entity only deposits cash with major banks with high quality credit standing and limits exposure to any one counter-party.

Financial assets exposed to credit risk at year-end were as follows:

Financial instrument	Group 2012	Group 2011	WRC 2012	WRC 2011
Deposits with banks	1,800	1,800	1,800	1,800
Corporation for Public Deposits	41,739,508	16,985,610	41,739,508	16,985,610
Computer loans	-	8,181	-	8,181
Bank balance	51,296,426	79,770,416	49,391,438	78,086,766

These balances represent the maximum exposure to credit risk.

Foreign exchange risk

The group does not have foreign accounts receivables, foreign accounts payables or derivative market instruments.

The group reviews its foreign currency exposure, including commitments on an ongoing basis. The entity expects its foreign exchange contracts to hedge foreign exchange exposure.

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 held in trusts, cash and deposits.

Post-tax surplus for the year would increase/decrease as a result of gains or losses on equity securities classified as at fair value through surplus or deficit. Other components of equity would increase/decrease as a result of gains or losses on equity securities classified as available-for-sale.

Notes to the Financial Statements

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**

30. Going concern

The financial statements have been prepared on the basis of accounting policies applicable to a going concern. This basis presumes that funds will be available to finance future operations and that the realisation of assets and settlement of liabilities, contingent obligations and commitments will occur in the ordinary course of business.

31. Events after the reporting date

There were no events after reporting date that requires reporting or disclosure in the Annual Financial Statements.

32. Irregular expenditure

	Group 2012	Group 2011	WRC 2012	WRC 2011
Opening balance	-	-	-	-
Add: Irregular Expenditure – current year	5,518,819	-	5,518,819	-
Less: Amounts condoned	-	-	-	-
Less: Amounts recoverable (not condoned)	-	-	-	-
Less: Amounts not recoverable (not condoned)	-	-	-	-
	5,518,819	**-**	**5,518,819**	**-**
Analysis of expenditure awaiting condonation per age classification				
Current year	5,518,819	-	5,518,819	-
Prior years	-	-	-	-
	5,518,819	**-**	**5,518,819**	**-**
Details of irregular expenditure – current year				
Goods/services were procured without inviting at least three written price quotations from prospective suppliers and the deviation was not approved by the accounting officer or his delegated official.	254,503	-	254,503	-
Goods/services were procured from suppliers who did not provide tax clearence certificates to confirm that their tax matters are in order. The majority of these outstanding tax clearance certificates relate to research institutions.	5,264,316	-	5,264,316	-
	5,518,819	**-**	**5,518,819**	**-**

The irregular expenditure disclosed above is not recoverable and condonation will be sought from the Relevant Authority.

Notes to the Financial Statements

33. Reconciliation between budget and statement of financial performance

Reconciliation of budget surplus/deficit with the surplus/deficit in the statement of financial performance:

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**
Net deficit per the statement of financial performance			(2,508,893)	(5,163,368)
Adjusted for:				
Depreciation and amortisation			1,088,637	1,070,250
Levies			(4,664,609)	2,490,763
Interest received			(389,089)	1,783,604
Leverage			(5,384,707)	2,472,541
Miscellaneous			10,535	(1,253,603)
Sub-total			(11,848,126)	1,400,187
Rent			(21,154)	70,863
Electricity			147,514	62,312
Telephone & fax			(162,515)	(89,183)
Postal and courier			(77,506)	(10,947)
Building maintenance			156,011	139,663
PC Consumables			(48,861)	(44,533)
PC software, licenses			(493,336)	59,530
S&T local			220,412	188,201
S&T International			(240,087)	(126,484)
WRC Vehicle expense			(6,167)	(7,048)
Consultancies, Professional			(632,075)	(194,873)
Entertainment and refreshments			15,427	(21,820)
Books, educational material			11,990	(8,040)
Membership and subscriptions			(68,359)	30,611
Promotions and publicity			37,103	(42,320)
Printing and publishing, stationery and other			341,086	(1,663,318)
Discretionary fund			(14,331)	(30,279)
Patent registrations			(135,287)	291,824
Employee cost			1,318,571	12,627,876
Recruitment			252,046	314,204
Staff training			(68,662)	(147,955)
Research costs			12,360,901	(10,229,037)
Insurance			(44,224)	(81,980)
Collection services			-	(299,020)
Bank charges			(36,494)	(24,722)
Interest paid			20,473	76,604
Audit fees			111,620	118,121
Other variances			622,153	1,320,662
Net surplus/(deficit) (excluding capital expenditure)			1,718,449	4,068,845

Notes to the Financial Statements

The budget is approved on a cash basis by nature classification. The approved budget covers the fiscal period from 01 April 2011 to 31 March 2012. The budget detail included is only for the Water Research Commission and not for Erf 706 Rietfontein (Pty) Ltd.

The financial statements differ from the budget, which is approved on the cash basis.

The amounts in the financial statements were recast from the accrual basis to the cash basis to be on the same basis as the final approved budget.

A reconciliation between the actual amounts on a comparable basis as presented in the Statement of Budget and Actual Amounts and the actual amounts in the Statement of Financial Performance for the period ended 31 March 2012 is presented above. The Financial Statements and budget documents are prepared for the same period.

	Group		WRC	
Figures in Rand	**2012**	**2011**	**2012**	**2011**

34. Defined contribution plans

Employee contributions	1,294,529	1,137,729	1,294,529	1,137,729
Employer contributions	2,203,964	1,969,400	2,203,964	1,969,400
	3,498,493	**3,107,129**	**3,498,493**	**3,107,129**

The above contributions have been included as part of the personnel cost expense.

Detailed Statement of Financial Performance

		Group		WRC	
Figures in Rand	**Note(s)**	**2012**	**2011**	**2012**	**2011**
Revenue					
Water Research Levies – Non-exchange transactions		151,986,157	141,140,699	151,986,157	141,140,699
Rental of facilities and equipment		560,086	491,281	-	-
Leverage income – non-exchange transactions		23,570,109	14,846,281	23,556,568	14,833,992
Fair value adjustment		(392,939)	(470,620)	(386,335)	(466,665)
Administration and management fees received		-	-	408,534	392,712
Discount received		-	4,770	-	4,770
Other income – Exchange transactions		774,606	1,557,529	681,918	1,514,171
Interest received – investment – non-exchange	18	4,229,683	3,550,208	6,749,424	5,874,138
Interest received – other – non-exchange	18	-	296,500	-	296,500
Total Revenue		**180,727,702**	**161,416,648**	**182,996,266**	**163,590,317**
Expenditure					
Personnel		(33,235,117)	(32,471,946)	(33,235,117)	(32,471,946)
Administration		(75,671)	(285,923)	(75,671)	(285,923)
Depreciation and amortisation		(1,083,938)	(1,070,250)	(1,083,938)	(1,070,250)
Loss on scrapping of assets		(47,024)	-	(47,024)	-
Finance costs	19	(198,972)	(246,604)	(198,972)	(246,604)
Debt impairment		113,441	(348,638)	171,177	(300,137)
Repairs and maintenance		(524,947)	(555,549)	(379,318)	(355,326)
Auditors remuneration		(1,394,065)	(1,339,497)	(1,394,065)	(1,339,497)
Bank charges		(53,794)	(61,446)	(49,378)	(57,061)
Consumables		(11,506)	(13,236)	(11,506)	(13,236)
Current year movement of retirement benefit obligation		-	(12,454,845)	-	(12,454,845)
Discretionary fund		(46,447)	(28,404)	(46,447)	(28,404)
Entertainment		(213,246)	(189,889)	(213,246)	(189,889)
IT Expenses		(818,945)	(1,130,798)	(818,945)	(1,130,798)
Insurance		(204,495)	(152,909)	(158,615)	(111,200)
Lease rentals on operating leases		(246,250)	(337,940)	(2,093,897)	(2,249,169)
Motor vehicle expenses		(6,639)	(5,114)	(6,639)	(5,114)
Patent registrations		(394,713)	(791,824)	(394,713)	(791,824)
Postage		(148,810)	(207,204)	(148,810)	(207,204)
Price variance		-	3,007	-	1,569
Printing and stationery		(6,113,347)	(3,788,386)	(6,113,347)	(3,788,386)
Professional fees		(942,460)	(1,670,059)	(942,460)	(1,670,059)
Promotions		(219,075)	(135,493)	(219,075)	(135,493)
Recruitment costs		(327,046)	(393,179)	(327,046)	(393,179)
Research costs		(132,672,184)	(104,554,448)	(132,672,184)	(104,554,448)
Staff welfare		(15,184)	(18,268)	(15,184)	(18,268)
Secretarial fees		(5,964)	(2,080)	-	-
Security		(322,994)	(308,882)	-	-
Subscriptions		(408,151)	(495,305)	(408,151)	(495,305)
Telephone and fax		(555,058)	(607,584)	(550,849)	(600,057)
Training		(181,590)	(91,520)	(181,590)	(91,520)
Travel local		(2,778,780)	(2,634,402)	(2,778,780)	(2,634,402)
Travel overseas		(545,830)	(605,589)	(545,830)	(605,589)
Utilities		(843,481)	(656,852)	(565,539)	(460,121)
Total Expenditure		**(184,522,282)**	**(167,651,056)**	**(185,505,159)**	**(168,753,685)**
Deficit for the year		**(3,794,580)**	**(6,234,408)**	**(2,508,893)**	**(5,163,368)**

REPORT OF THE AUDITOR-GENERAL ON ERF

REPORT OF THE AUDITOR-GENERAL TO PARLIAMENT ON THE FINANCIAL STATEMENTS OF ERF SEWE-NUL-SES RIETFONTEIN (PROPRIETARY) LIMITED FOR THE YEAR ENDED 31 MARCH 2012

REPORT ON THE FINANCIAL STATEMENTS

Introduction

I have audited the financial statements of the Erf Sewe-Nul-Ses Rietfontein (Proprietary) Limited set out on pages 134 to 153, which comprise the statement of financial position as at 31 March 2012, the statement of financial performance, statement of changes in net assets and the statement of cash flows for the year then ended, and the notes, comprising a summary of significant accounting policies and other explanatory information.

Accounting authority's responsibility for the financial statements

The board of directors which constitutes the accounting authority is responsible for the preparation and fair presentation of these financial statements in accordance with South African Standards of Generally Recognised Accounting Practice (SA Standards of GRAP) and the requirements of the Public Finance Management Act of South Africa, 1999 (Act No.1 of 1999), the Companies Act of South Africa, 2008 (Act No. 71 of 2008) and for such internal control as the accounting authority determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor-General's responsibility

My responsibility is to express an opinion on these financial statements based on my audit. I conducted my audit in accordance with the Public Audit Act of South Africa, 2004 (Act No. 25 of 2004) (PAA), the General Notice issued in terms thereof and International Standards on Auditing. Those standards require that I comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Opinion

In my opinion, the financial statements present fairly, in all material respects, the financial position of the Erf Sewe-Nul-Ses Rietfontein (Proprietary) Limited as at 31 March 2012, and its financial performance and cash flows for the year then ended in accordance with South African Standards of Generally Recognised Accounting Practice (SA Standards of GRAP) and the requirements of the Public Finance Management Act of South Africa, 1999 (Act No.1 of 1999) and the Companies Act of South Africa, 2008 (Act No. 71 of 2008).

REPORT ON OTHER LEGAL AND REGULATORY REQUIREMENTS

In accordance with the PAA and the General Notice issued in terms thereof, I report the following findings relevant to performance against predetermined objectives, compliance with laws and regulations and internal control, but not for the purpose of expressing an opinion.

Predetermined objectives

No matters identified to report.

Compliance with laws and regulations

No matters identified to report.

Internal control

No matters identified to report.

Auditor-General

Pretoria
31 July 2012

AUDITOR-GENERAL
SOUTH AFRICA

Auditing to build public confidence

DIRECTORS' ERF REPORT

Financial Statements

Erf Sewe-Nul-Ses Rietfontein (Pty) Ltd

Approval of Financial Statements

The Directors' Report and Financial Statements set out on pages 132 to 153 were approved by the Board of Directors and were signed on its behalf by:

Ms B Schreiner
Chairperson

Mr DP Naidoo
WRC Chief Executive Officer

General Information

Directors
Mr DP Naidoo
Prof JB Adams

Registered office
301 Watko Building
491, 18th Avenue
Rietfontein
Pretoria

Registration number
1984/003566/07

Main business purpose
The main business of the company is to own the immovable property known as Erf 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.

Directors' Report

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 statements of financial position, financial performance, changes in net assets and cash flows 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 or circumstances occurred.

Specific matters

a) The main aim of the company is that of owning immovable property known as Erf 706 Rietfontein, including all permanent improvements, and to use the property for the purpose of promoting the operations of Water Research Commission.
b) No shares were allotted or issued by the company for the year ending 31 March 2012.
c) No dividends were paid or declared during the accounting period and we have no recommendations to make in respect of dividends (2011-RNil).
d) The Directors and certain members of staff of Water Research Commission, for whom and administration fee is paid to the Water Research Commission, managed the business of the company. No third person was involved in managing the company.
e) The names of Directors are shown below. No changes have taken place in the appointments during the accounting period. The company's secretary is Mr D de Lange.
   - Mr DP Naidoo
   - Prof JB Adams

The company is wholly owned by the Water Research Commission.

ERF SEWE NUL SES RIETFONTEIN (PROPRIETARY) LIMITED

Financial Statements for the year ended 31 March 2012

Statement of Financial Position

	Note(s)	2012 R	2011 R
ASSETS			
Current Assets			
Operating lease asset	5	294,853	195,037
Trade and other receivables	6	2,966	8,385
Other receivables – non exchange-transactions	6	9,858	15,910
Cash and cash equivalents	7	1,904,985	1,683,650
		2,212,662	**1,902,982**
Non-Current Assets			
Investment property	3	8,691,522	8,691,522
Total Assets		**10,904,184**	**10,594,504**
LIABILITIES			
Current Liabilities			
Other financial liabilities	9	1,020,000	1,020,000
Trade and other payables	10	583,925	505,350
Other payables – non-exchange transactions	10	29,266	27,397
		1,633,191	**1,552,747**
Non-Current Liabilities			
Other financial liabilities	9	17,394,927	15,880,003
Total Liabilities		**19,028,118**	**17,432,750**
Net Assets		**(8,123,934)**	**(6,838,246)**
NET ASSETS			
Share capital	7	1	1
Accumulated surplus/(deficit)		(8,123,935)	(6,838,247)
Total Net Assets		**(8,123,934)**	**(6,838,246)**

Statement of Financial Performance

	Note(s)	2012 R	2011 R
Revenue	12	2,997,147	2,914,323
Operating expenses		(1,763,093)	(1,661,433)
Operating surplus		**1,234,054**	**1,252,890**
Investment revenue	13	15,183	7,271
Finance costs	14	(2,534,924)	(2,331,201)
Deficit for the year		**(1,285,687)**	**(1,071,040)**

Statement of Changes in Net Assets

		Share capital	Accumulated surplus/ (deficit)	Total net assets
		R	R	R
Opening balance as previously reported		1	(5,816,820)	(5,816,819)
Adjustments				
Prior year adjustments		-	49,613	49,613
Balance at 01 April 2010 as restated (refer to note 18)		**1**	**(5,767,207)**	**(5,767,206)**
Changes in net assets				
Deficit for the year		-	(1,071,040)	(1,071,040)
Total changes		-	(1,071,040)	(1,071,040)
Opening balance as previously reported		1	(6,879,351)	(6,879,350)
Adjustments				
Prior year adjustments		-	41,103	41,103
Balance at 01 April 2011 as restated (refer to note 18)		**1**	**(6,838,248)**	**(6,838,247)**
Changes in net assets				
Deficit for the year		-	(1,285,687)	(1,285,687)
Total changes		-	(1,285,687)	(1,285,687)
Balance at 31 March 2012		**1**	**(8,123,935)**	**(8,123,934)**
Note(s)	8			

Statement of Cash Flows

	Note(s)	2012 R	2011 R
CASH FLOWS FROM OPERATING ACTIVITIES			
Receipts			
Cash receipts from customers		2,851,056	2,714,979
Interest income		15,183	3,316
		2,866,239	2,718,295
Payments			
Cash paid to suppliers and employees		(1,624,904)	(1,164,940)
Net cash flows from operating activities	**16**	**1,241,335**	**1,553,356**
CASH FLOWS FROM FINANCING ACTIVITIES			
Repayments of other financial liabilities		(1,020,000)	(1,020,000)
Net cash flows from financing activities		**(1,020,000)**	**(1,020,000)**
Net increase/(decrease) in cash and cash equivalents		**221,335**	**533,356**
Cash and cash equivalents at the beginning of the year		1,683,650	1,150,294
Cash and cash equivalents at the end of the year	**7**	**1,904,985**	**1,683,650**

Accounting Policies

1. Presentation of Annual Financial Statements

The annual financial statements have been prepared in accordance with the effective Standards of Generally Recognised Accounting Practice (GRAP) including any interpretations, guidelines and directives issued by the Accounting Standards Board.

These annual financial statements have been prepared on an accrual basis of accounting and are in accordance with historical cost convention unless specified otherwise. They are presented in South African Rand.

A summary of the significant accounting policies, which have been consistently applied, are disclosed below.

These accounting policies are consistent with the previous period.

1.1 Investment property

Investment property is property (land or a building – or part of a building – or both) held to earn rentals or for capital appreciation or both, rather than for:
- use in the production or supply of goods or services or for
- administrative purposes, or
- sale in the ordinary course of operations.

Owner-occupied property is property held for use in the production or supply of goods or services or for administrative purposes. Investment property is recognised as an asset when, it is probable that the future economic benefits or service potential that are associated with the investment property will flow to the entity, and the cost or fair value of the investment property can be measured reliably.

Investment property is initially recognised at cost. Transaction costs are included in the initial measurement.

Where investment property is acquired at no cost or for a nominal cost, its cost is its fair value as at the date of acquisition.

Costs include costs incurred initially and costs incurred subsequently to add to, or to replace a part of, or service a property. If a replacement part is recognised in the carrying amount of the investment property, the carrying amount of the replaced part is derecognised.

Investment property is subsequently carried at cost less accumulated depreciation and impairment losses.

Compensation from third parties for investment property that was impaired, lost or given up is recognised in surplus or deficit when the compensation becomes receivable.

Accounting Policies

1.2 Financial instruments

Initial recognition and measurement
Financial instruments are recognised initially when the entity becomes a party to the contractual provisions of the instruments.

The entity classifies financial instruments, or their component parts, on initial recognition as a financial asset, a financial liability or an equity instrument in accordance with the substance of the contractual arrangement.

Financial instruments are measured initially at fair value, except for equity investments for which a fair value is not determinable, which are measured at cost and are classified as available-for-sale financial assets.

For financial instruments which are not at fair value through surplus or deficit, transaction costs are included in the initial measurement of the instrument.

Transaction costs on financial instruments at fair value through surplus or deficit are recognised in surplus or deficit.

Subsequent measurement

Fair value determination
The fair values of quoted investments are based on current bid prices. If the market for a financial asset is not active (and for unlisted securities), the entity establishes fair value by using valuation techniques. These include the use of recent arm's length transactions, reference to other instruments that are substantially the same, discounted cash flow analysis, and option pricing models making maximum use of market inputs and relying as little as possible on entity-specific inputs.

Trade and other receivables
Trade receivables are measured at initial recognition at fair value, and are subsequently measured at amortised cost using the effective interest rate method. Appropriate allowances for estimated irrecoverable amounts are recognised in surplus or deficit when there is objective evidence that the asset is impaired. Significant financial difficulties of the debtor, probability that the debtor will enter bankruptcy or financial reorganisation, and default or delinquency in payments (more than 30 days overdue) are considered indicators that the trade receivable is impaired. The allowance recognised is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows discounted at the effective interest rate computed at initial recognition.

The carrying amount of the asset is reduced through the use of an allowance account, and the amount of the deficit is recognised in surplus or deficit within operating expenses. When a trade receivable is uncollectible, it is written off against the allowance account for trade receivables. Subsequent recoveries of amounts previously written off are credited against operating expenses in surplus or deficit.

Trade and other receivables are classified as loans and receivables.

Trade and other payables
Trade payables are initially measured at fair value, and are subsequently measured at amortised cost, using the effective interest rate method.

Cash and cash equivalents
Cash and cash equivalents comprise cash on hand and demand deposits, and other short-term highly liquid investments that are readily convertible to a known amount of cash and are subject to an insignificant risk of changes in value. These are initially and subsequently recorded at fair value.

Accounting Policies

1.3 Impairment of cash-generating assets

Cash-generating assets are those assets held by the entity with the primary objective of generating a commercial return. When an asset is deployed in a manner consistent with that adopted by a profit-orientated entity, it generates a commercial return.

Impairment is a loss in the future economic benefits or service potential of an asset, over and above the systematic recognition of the loss of the asset's future economic benefits or service potential through depreciation (amortisation).

Carrying amount is the amount at which an asset is recognised in the statement of financial position after deducting any accumulated depreciation and accumulated impairment losses thereon.

A cash-generating unit is the smallest identifiable group of assets held with the primary objective of generating a commercial return that generates cash inflows from continuing use that are largely independent of the cash inflows from other assets or groups of assets.

Costs of disposal are incremental costs directly attributable to the disposal of an asset, excluding finance costs and income tax expense.

Depreciation (Amortisation) is the systematic allocation of the depreciable amount of an asset over its useful life.

Fair value less costs to sell is the amount obtainable from the sale of an asset in an arm's length transaction between knowledgeable, willing parties, less the costs of disposal.

Recoverable amount of an asset or a cash-generating unit is the higher of its fair value less costs to sell and its value in use.

Useful life is either:
(a) the period of time over which an asset is expected to be used by the entity; or
(b) the number of production or similar units expected to be obtained from the asset by the entity.

1.4 Share capital

An equity instrument is any contract that evidences a residual interest in the assets of an entity after deducting all of its liabilities.

1.5 Revenue from exchange transactions

Revenue is the gross infow of economic beneits or service potential during the reporting period when those inflows result in an increase in net assets, other than increases relating to contributions from owners.

Revenue from the sale of goods is recognised when all the following conditions have been satisfied:
- the company has transferred to the buyer the significant risks and rewards of ownership of the goods;
- the company retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold;
- the amount of revenue can be measured reliably;
- it is probable that the economic benefits associated with the transaction will flow to the company; and
- the costs incurred or to be incurred in respect of the transaction can be measured reliably.

Accounting Policies

When the outcome of a transaction involving the rendering of services can be estimated reliably, revenue associated with the transaction is recognised by reference to the stage of completion of the transaction at the end of the reporting period. The outcome of a transaction can be estimated reliably when all the following conditions are satisfied:

- the amount of revenue can be measured reliably;
- it is probable that the economic benefits associated with the transaction will flow to the company;
- the stage of completion of the transaction at the end of the reporting period can be measured reliably; and
- the costs incurred for the transaction and the costs to complete the transaction can be measured reliably.

When the outcome of the transaction involving the rendering of services cannot be estimated reliably, revenue shall be recognised only to the extent of the expenses recognised that are recoverable.

Revenue from exchange transactions refers to revenue that accrued to the entity directly in return for services rendered/goods sold, the value of which approximates the considerations received or receivable.

Revenue is measured at the fair value of the consideration received or receivable and represents the amounts receivable for goods and services provided in the normal course of business, net trade discounts and volume rebates, and value added tax.

Measurement
Revenue is measured at the fair value of the consideration received or receivable, net of trade discounts and volume rebates.

Sale of goods
Revenue from the sale of goods is recognised when all the following conditions have been satisfied:

- the entity has transferred to the purchaser the significant risks and rewards of ownership of the goods;
- the entity retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold;
- the amount of revenue can be measured reliably;
- it is probable that the economic benefits or service potential associated with the transaction will flow to the entity; and
- the costs incurred or to be incurred in respect of the transaction can be measured reliably.

Interest, rental income, royalties and dividends
Revenue arising from the use by others of entity assets yielding interest, royalties and dividends is recognised when:

- It is probable that the economic benefits or service potential associated with the transaction will flow to the entity, and
- The amount of the revenue can be measured reliably.

Interest is recognised, in surplus or deficit, using the effective interest rate method.

Rental income is recognised on the accrual basis in accordance with the substance of the relevant agreements

1.6 Borrowing costs

It is inappropriate to capitalise borrowing costs when, and only when, there is clear evidence that it is difficult to link the borrowing requirements of an entity directly to the nature of the expenditure to be funded i.e. capital or current.

Borrowing costs are recognised as an expense in the period in which they are incurred.

1.7 Related parties

The entitiy follows the guidance of IPSAS 20 to identify related party relationships, transactions and balances and the disclosures on those identified.

Notes to the Financial Statements

2. New Standards and Interpretations

2.1 Standards and interpretations issued, but not yet effective

The entity has not applied the following standards and interpretations, which have been published and are mandatory for the entity's accounting periods beginning on or after 01 April 2012 or later periods:

Standard/Interpretation:	Effective date: Years beginning on or after	Expected impact:
• GRAP 18: Segment Reporting	01 April 2013	Unlikely material impact
• GRAP 23: Revenue from Non-exchange Transactions	01 April 2012	Unlikely material impact
• GRAP 24: Presentation of Budget Information in the Financial Statements	01 April 2012	Unlikely material impact
• GRAP 21: Impairment of non-cash-generating assets	01 April 2012	Unlikely material impact
• GRAP 26: Impairment of cash-generating assets	01 April 2012	Unlikley material impact
• GRAP 25: Employee benefits	01 April 2013	Unlikey material impact
• GRAP 104: Financial Instruments	01 April 2012	Unlikely material impact
• IGRAP 7: The Limit on a Defined Benefit Asset, Minimum Funding Requirements and their Interaction	01 April 2013	Unlikely material impact
• GRAP 106: Transfers of functions between entities not under common control	01 April 2014	Unlikely material impact
• GRAP 20: Related parties	01 April 2013	Unlikely material impact

Notes to the Financial Statements

3. Investment Property

	2012			2011		
	Cost	Accumulated depreciation and accumulated impairment	Carrying value	Cost	Accumulated depreciation and accumulated impairment	Carrying value
Investment property	8,691,522	-	8,691,522	8,691,522	-	8,691,522

	2012 R	2011 R
Fair value of investment properties	31,500,000	30,000,000
Details of property		
ERF 706 RIETFONTEIN, PRETORIA		
– Purchase price	615,855	615,855
– Additions since purchase	8,075,667	8,075,667
	8,691,522	**8,691,522**

Details of valuation

The property has been revalued at R31,500,000 (2011: R30,000,000) by Reinertsen International Valuation Services, as an independent valuer on 31 March 2012.

Amounts recognised in surplus and deficit for the year.

Rental revenue from investment property	2,407,734	2,402,510
Direct operating expenses from rental generating property	763,999	653,367

Notes to the Financial Statements

4. Financial Assets by Category

The accounting policies for financial instruments have been applied to the line items below:

2012

	Loans and receivables	Total
Trade and other receivables	12,824	12,824
Cash and cash equivalents	1,904,985	1,904,985
	1,917,809	**1,917,809**

2011

	Loans and receivables	Total
Trade and other receivables	24,295	24,295
Cash and cash equivalents	1,683,650	1,683,650
	1,707,945	**1,707,945**

	2012 R	2011 R

5. Operating Lease Asset

Minimum lease receipts due		
Within 12 months	2,152,289	2,072,667
Between 12 – 60 months	6,002,256	8,154,545
	8,154,545	**10,227,212**

The company enters into lease agreements between 2 and 5 years. Rentals are payable per month and escalates by between 5 and 11 percent per annum.

No contingent rent is receivable.

Notes to the Financial Statements

	2012 R	2011 R

6. Trade and Other Receivables

Trade receivables – exchange transactions	2,966	8,385
Trade receivables – non-exchange transactions	9,858	15,910
	12,824	**24,295**

Trade and other receivables pledged as security

No trade and other receivables were pledged as security for any financial liability.

Credit quality of trade and other receivables

Management considers that all the above financial assets are of good credit quality. The maximum exposure to credit risk at the reporting date is the fair value of each class of receivables mentioned above.

None of the financial assets that are fully performing have been renegotiated in the last year.

Trade and other receivables past due but not impaired

Trade and other receivables are all considered for impairment. At 31 March 2012, R NIL (2011: R8,383) were past due but not impaired.

1 month past due	-	8,383

Trade and other receivables impaired

As of 31 March 2012, trade and other receivables of R57,736 (2011: R48,501) were impaired and provided for.

The amount of the provision was R106,237 as of 31 March 2012 (2011: R48,501).

Reconciliation of provision for impairment of trade and other receivables

Opening balance	48,501	-
Provision for impairment	57,736	48,501
	106,237	**48,501**

The maximum exposure to credit risk at the reporting date is the fair value of each class of loan mentioned above.

Notes to the Financial Statements

	2012 R	2011 R

7. Cash and Cash Equivalents

Cash and cash equivalents consist of:

	2012 R	2011 R
Bank balances	1,904,985	1,683,650

Credit quality of cash at bank and short-term deposits, excluding cash on hand

Management considers that the above cash and cash equivalents category are of good faith. The maximum exposure to credit risk at the reporting date is the fair value of cash and cash equivalents mentioned above.

Cash and cash equivalents pledged as collateral

The cash and cash equivalents was not pledged as security for any financial liabilities.

8. Share Capital

	2012 R	2011 R
Authorised		
4,000 Ordinary shares of R1 each	4,000	4,000
Issued		
1 Ordinary share of R1 each	1	1

100% of the shares are owned by the Water Research Commission.

9. Other Financial Liabilities

Water Research Commission – Held at amortisation cost

	2012 R	2011 R
Loan Nr. 1	15,781,023	14,254,571
The unsecured loan bears interest at 15% (2011 – 15%) and is repayable in equal monthly installments of not less than R60,000 a month over 15 years.		
Loan Nr. 2	2,633,904	2,645,432
The unsecured loan bears interest at prime plus 2% with no fixed terms of repayment.		
	18,414,927	**16,900,003**

Notes to the Financial Statements

	2012 R	2011 R
Non-current liabilities		
At amortised cost	17,394,927	15,880,003
Current liabilities		
At amortised cost	1,020,000	1,020,000
	18,414,927	**16,900,003**

10. Trade and Other Payables

	2012 R	2011 R
Trade payables – exchange transactions	583,925	505,350
Trade payables – non-exchange transactions	29,266	27,397
	613,191	**532,747**

The entity did not default on interest or capital on any trade and other payables.

None of the terms attached to the trade and other payables were renegotiated in the period under review.

11. Financial Liabilities by Category

The accounting policies for financial instruments have been applied to the line items below:

2012	**Financial liabilities at amortised cost**	**Total**
Loans from shareholders	18,414,927	18,414,927
Trade and other payables	613,191	613,191
	19,028,118	**19,028,118**

2011	**Financial liabilities at amortised cost**	**Total**
Loans from shareholders	16,900,003	16,900,003
Trade and other payables	532,747	532,747
	17,432,750	**17,432,750**

Notes to the Financial Statements

	2012 R	2011 R

12. Revenue

Municipal expense recoveries – exchange transactions	582,476	503,479
Rental received – exchange transactions	2,407,734	2,402,510
Sundry income – exchange transactions	13,541	12,289
Circular 09/06 adjustment	(6,604)	(3,955)
	2,997,147	**2,914,323**

13. Investment Revenue

Interest revenue		
Bank	8,579	3,316
Interest received relating to extended credit terms provided	6,604	3,955
	15,183	**7,271**

14. Finance Costs

Non-current borrowings	2,534,924	2,331,201

15. Taxation

No provision has been made for 2012 tax as the entity has no taxable income.

16. Cash Generated from Operations

Deficit	(1,285,687)	(1,071,040)
Adjustments for:		
Finance costs	2,534,924	2,331,201
Debt impairment	57,736	48,501
Movements in operating lease assets and accruals	(99,816)	(174,600)
Non-cash movement on other financial liabilities	-	3,485
Changes in working capital:		
Trade and other receivables	11,471	14,107
Impairment on trade receivables	(57,736)	(48,501)
Trade and other payables	80,443	450,203
	1,241,335	**1,553,356**

Notes to the Financial Statements

17. Related Parties

Relationships

Holding company – Water Research Commission

Related party balances

	2012 R	2011 R
Loan accounts – Owing (to) by related parties		
Water Research Commission	18,414,927	16,900,003
Related party transactions		
Interest paid to (received from) related parties		
Water Research Commission	2,534,924	2,331,200
Municipal expenses paid to (received from) related parties		
Water Research Commission	(489,788)	(460,121)
Rent paid to (received from) related parties		
Water Research Commission	(1,847,648)	(1,911,229)
Administration fees paid to (received from) related parties		
Water Research Commission	408,534	392,712

Notes to the Financial Statements

	2012 R	2011 R

18. Prior Period Errors

During prior financial years, the entity did not recognise the straight lining of operating leases in accordance with the applicable accounting standards. The error has been corrected retrospectively and comparative figures have been appropriately restated. The entity has furthermore adjusted errors relating to rental deposits and sundry creditors.

The correction of the error(s) results in adjustments as follows:

Statement of financial position		
Operating lease asset	-	139,600
Deposits	-	8,510
Trade and other payables – exchange transactions	-	41,103
Adjustment against opening accumulated deficit	-	(46,797)
Statement of financial performance		
Opening accumulated deficit	-	(2,816)
Rental income	-	(139,600)
Statement of changes in net assets		
Effect of prior period errors on accumulated deficit		
Balance at beginning of the year as previously stated	-	(5,954,459)
Prior period adjustments	-	142,416
Balance at beginning of the year as restated	**-**	**(5,812,043)**

Notes to the Financial Statements

19. Risk Management

Liquidity risk

Prudent liquidity risk management implies maintaining sufficient cash and marketable securities, the availability of funding through an adequate amount of committed credit facilities and the ability to close out market positions. Due to the dynamic nature of the underlying businesses, entity treasury maintains flexibility in funding by maintaining availability under committed credit lines.

The entity's risk to liquidity is a result of the funds available to cover future commitments. The entity manages liquidity risk through an ongoing review of future commitments and credit facilities.

Cash flow forecasts are prepared and adequate utilised borrowing facilities are monitored.

The table below analyses the entity's financial liabilities and net-settled derivative financial liabilities into relevant maturity groupings based on the remaining period at the statement of financial position to the contractual maturity date. The amounts disclosed in the table are the contractual undiscounted cash flows. Balances due within 12 months equal their carrying balances as the impact of discounting is not significant.

At 31 March 2012	Less than 1 year	Between 1 and 2 years	Between 2 and 5 years	Over 5 years
Trade and other payables	613,191	-	-	-
Loan no. 1	720,000	720,000	2,160,000	12,181,023
Loan no. 2	300,000	300,000	900,000	1,133,904

At 31 March 2011	Less than 1 year	Between 1 and 2 years	Between 2 and 5 years	Over 5 years
Trade and other payables	532,747	-	-	-
Loan no. 1	720,000	720,000	2,160,000	10,654,571
Loan no. 2	300,000	300,000	900,000	1,145,432

Notes to the Financial Statements

	2012	2011
	R	R

Interest rate risk

As the entity has no significant interest bearing assets, the entity's income and operating cash flows are substantially independent of changes in market interest rates.

At 31 March 2012, if interest rates on Rand-denominated borrowings had been 2% higher/lower with all other variables held constant, post-tax surplus for the year would have been R52,449 (2011: R52,460) lower/higher, mainly as a result of higher/lower interest expense on floating rate borrowings.

Credit risk

Credit risk consists mainly of cash deposits, cash equivalents, derivative financial instruments and trade debtors. The entity only deposits cash with major banks with high quality credit standing and limits exposure to any one counter-party.

Financial assets exposed to credit risk at year-end were as follows:

Financial instrument	2012	2011
ABSA Bank	1,904,985	1,683,650

20. Contingencies

Legal costs of R15,000 may be incurred in a case against one of the tenants.

21. Going Concern

We draw attention to the fact that at 31 March 2012, the entity had accumulated deficits of R (8,123,935) and that the entity's total liabilities exceed its assets by R (8,123,934).

The annual financial statements have been prepared on the basis of accounting policies applicable to a going concern. This basis presumes that funds will be available to finance future operations and that the realisation of assets and settlement of liabilities, contingent obligations and commitments will occur in the ordinary course of business.

22. Events After the Reporting Date

There were no events after reporting date that require adjustment to or disclosure in the financial statements.

Detailed Income Statement

	Note(s)	2012 R	2011 R
Revenue			
Municipal expense recoveries – exchange transactions		582,476	503,479
Rental income – exchange transactions		2,407,734	2,402,510
Sundry income – exchange transactions		13,541	12,289
Fair value adjustment		(6,604)	(3,955)
	12	**2,997,147**	**2,914,323**
Other income			
Interest received	13	15,183	7,271
Operating expenses			
Administration and management fees		408,534	392,712
Bad debts		57,736	48,501
Bank charges		4,416	4,385
Insurance		45,880	41,709
Municipal services and levies		763,999	653,367
Price variance		-	(1,438)
Rent – meter readings		3,732	3,485
Repairs and maintenance		145,629	200,223
Secretarial fees		5,964	2,080
Security		322,994	308,882
Telephone and fax		4,209	7,527
		1,763,093	**1,661,433**
Operating surplus		**1,249,237**	**1,260,161**
Finance costs	14	(2,534,924)	(2,331,201)
Deficit for the year		**(1,285,687)**	**(1,071,040)**

WRC STAFF

ORGANISATIONAL STRUCTURE

CHIEF EXECUTIVE OFFICER

Personal Assistant

Director Human Resources & Administration

- Building Manager
- Receptionist
- Cleaners (4)
- Admin Support Assistant
- Administrative Co-ordinator
- Compliance & Reporting Officer
- IT Manager
- IT Officer and IT Assistant

Chief Financial Officer

- Group Assistant
- Financial Manager
- Financial Officers (2)
- Creditors & Payroll Officer

Director Water Resource Management

- Group Assistant
- Research Managers (4)
- Co-ordinators (2)

Director Water Use & Waste Management

- Group Assistant
- Research Managers (2)
- Co-ordinators (2)

Director Water – Linked Ecosystems

- Group Assistant
- Research Manager
- Co-ordinator

Director Water Utilisation in Agriculture

- Group Assistant
- Research Manager
- Co-ordinator

Director Water – Centred Knowledge

- Group Assistant
- Scientific Editor
- Intellectual Property Manager
- Design/Multimedia Publisher
- Research Co-ordinator
- Research Managers (2)
- Knowledge Officer
- Printing and Distribution Officer
- PR/Communication Co-ordinator
- Printing and Distribution Support
- Knowledge Dissemination Officer
- Public Understanding of Science Officer