LETTERS TO THE EDITOR

Tackle dam problems now

Danny Walmsley correctly and accurately bemoans the lack of limnological specialization in a country hugely dependent on reservoirs for its very existence (Bring Back Reservoir Limnology, *Water Wheel* January/February 2007).

The immediate needs in this country are not to yet again examine what other people have done, but to roll up our sleeves and actually do something about the problems our dams face! To anyone not familiar with the past 20 years, during which reservoir limnology was downgraded to near non-existence in South Africa, the lack of attention to the functioning and health of our dams must appear stunningly confusing!

While South Africa previously held a globally-recognised leadership position in reservoir and water resources management, now superceded by countries in Latin America and Asia, we currently have virtually no practicing professional limnologists and the Department of Water Affairs & Forestry (DWAF) is totally under-resourced in this capacity – with obvious and negative implications for informed decision-making on issues pertaining to reservoir management.

'Turn-around' rehabilitation plans, such as that prepared for Hartbeespoort Dam in 2004, have yet to be implemented and remain bogged down in ill-informed management processes and wheel-reinvention tactics! All the while pipelines, costing hundreds of millions of rands, are being built to bypass dams simply to bring drinkable water to towns a few kilometers downstream thereof!

Offers to provide DWAF with university-supported, regionally-specific reservoir training programs, formulated by leading international specialists, were declined due to a lack of funds for capacity development.

However, amidst the darkness some isolated bright lights are shining! The Hartbeespoort Dam rehabilitation approach is being used as a text for student training; there are various initiatives setting threshold management limits for nutrient loading in key dams; and the foodweb management initiative is now being expanded to nine additional dams.

However, in the absence of an inter-departmental framework to take these forward to implementation, they will continue to remain mired in indecision and inaction!

Bill Harding and Jeff Thornton, professional limnologists and certified lake managers and Brian Allanson, professional limnologist

Sewage problem understated

The article in the Upfront section of *the Water Wheel* of January/February (Sewage Threatens World's Oceans) is completely understated as regards to South Africa.

In Durban, KwaZulu-Natal, raw untreated sewage sludge is trucked in to the southern wastewater treatment works on the Bluff from other overloaded plants in the area and pumped out to sea by the ton.

Cape Town has a nick name of s..ty city, they pump the whole wastewater flow to sea from the Green Point pump station and most of the wastewater treatment works have major odour problems.

The fact is that these municipalities and Port Elizabeth are trying to run their treatment plants with obsolete systems and just not spending enough money on technology that would enable them to keep up.

Len Palmer

Letters must be addressed to The Editor and can be faxed to (012) 331-2565 or E-mailed to laniv@wrc.org.za. Letters are published at the editor's discretion, and may be edited for length. Letters are strictly the opinion of the author(s) only and do not necessarily reflect the considered opinions of the members of *the Water Wheel* or the WRC.

Schools' water target being determined

The Department of Water Affairs & Forestry (DWAF) is working with the Department of Education (DoE) to come up with a strategy to address the lack of access of safe water in schools.

In answer to a question raised in Parliament, DWAF Minister Lindiwe Hendricks said that the departments were currently working together to define minimum standards and criteria by which to base a target on, for example, the minimum number of learners per toilet, the type of structures to be constructed, and so forth. "Already the DoE has done a great deal of work to identify which schools are lacking services, and DWAF is currently working with them to finalise the database so that project plans can be developed and budget allocated," she reported.

In addition to the existing capital expenditure budget of the DoE, an additional top-up budget of R950-million over the Medium Term Expenditure Framework period (i.e 2007/08 to 2009/10) has been allocated from the fiscus to address the backlog of water, sanitation and electricity in schools and clinics.

"During the 2007/08 financial year our programme to address water and sanitation in schools and clinics will focus primarily (although not exclusively) on clinics so that this backlog is addressed by the end of this year," Hendricks noted. "From 2008/09 onwards we will then focus on addressing the water and sanitation need in schools."

Wastewater conference on the cards

The Water Institute of Southern Africa, together with the Water Research Commission and Amatola Water are hosting a Wastewater Management Conference with the theme "From Challenge to Opportunity" on 12 & 13 June at the Regent Hotel, in East London.

Wastewater management is becoming increasingly challenging in the South African context due to the promulgation of more stringent legislation and the shrinking resource base coupled with the expectation of a rapid increase in service delivery across all communities in the country.

According to the organisers, this conference provides a broad foundation to change the approach to wastewater management in South Africa. The first half of the conference focuses on the drivers, responsibilities and challenges that face wastewater management and practitioners. The second half of the programme focuses on identifying opportunities through the appropriate use of technology and resources.

For more information, contact Taryn van Rooyen at Tel: (011) 463-5085; Fax: (011) 463-3265; E-mail: conference@soafrica.com

Programme looks beyond toilets and taps

Government's Masibambane programme has entered its third phase.

Since its launch in 2001, the programme has become known for its achievements in institutional support and development, sector collaboration and for seeking to fulfil national strategic objectives in the water sector, the Department of Water Affairs & Forestry said in a statement. "The programme has successfully integrated the three spheres of government around water issues to build the capacity of municipalities to be able to perform their functions of being water services authorities."

In the third phase, the programme will look beyond that provision of basic services to ways in which water can be used to enhance the development of principally rural South Africans. "There are still many opportunities to further improve the integrated management of water at municipal level – water quality monitoring, waste discharge and waste conservation – which in turn offer more potential to put water to more productive use," said DWAF. "In a water-scarce country such as South Africa, which is aiming for 6% annual growth and for the provision of First World services to its people, while at the same time addressing rampant poverty and the HIV/Aids pandemic, Masimbambane III is one of the essential mechanisms through which the sustainable use of water for growth and development will be achieved."

Calling all water women

Nominations are now open for the 2007 Women in Water Sanitation & Forestry Awards.

The awards, developed jointly by the Department of Water Affairs & Forestry, the Water Institute of Southern Africa and the Water Research Commission, recognise the role that women play in water, sanitation and forestry management. It highlights the participation of professional and community-based women as well as the key role that women play in poverty eradication, education and sustainable development.

Nominees are sought for four categories, namely research, community development, education and awareness, and management and policy-making. Successful nominations will be chosen by the adjudication panel for the use of knowledge and skills as well as considerable capacity to ensure that water, sanitation and forestry management in South Africa contribute towards building a country that belongs to all. Entries close 31 May. For more information, contact Liz Maziya at Tel: (011) 466-6336/9; Fax: (011) 466-6337; E-mail: info@zzone.co.za; or visit: www.dwaf.gov.za/events.asp

Regional conference comes to JHB

The Second African regional conference of the International Commission on Irrigation & Drainage will take place at Glenburn Lodge, in Gauteng, from 6 to 9 November.

The theme of this year's conference is 'Contribution of Rainfed and Irrigated Agriculture to Poverty Alleviation through Increased Productivity in Africa'. It is reported that the conference aims to attract a multi-disciplinary group of professionals involved with water management in Africa, including academics, researchers, extensionists, practitioners, consultants and policy advisors. For more information, contact Monica Chipeta, Tel: (011) 884-1502; E-mail: monica@globalconf.co.za; or Visit: www.sancid.org.za

Aussie water centre comes to SA

The Brisbane-based International Water Centre (IWC) is to establish an office in Johannesburg.

Supported by the Queensland government, the centre is a joint venture of the University of Queensland, Griffith University, Monash University, the University of Western Australia, the Moreton Bay Catchment Partnership and the International River Foundation. The IWC's mission is to provide quality skills, services and products for managing the world's water resources, waterways and catchments.

The centre offers a series of water management courses which South African students will now be able to enrol in. In addition, the IWC will allocate significant resources to water research in South Africa, and its office in Johannesburg, situated within the Monash University campus, said Queensland Premier Peter Beattie. "The management of the world's water resources has become one of the most critical issues of the twenty-first Century."

Beattie also announced that the Queensland government would contribute A$10 000 towards funding a post-graduate student scholarship exchange through the IWC which has its headquarters at the University of Queensland. The scholarship will allow a PhD student from the University of KwaZulu-Natal to undertake water-related research for up to a year.

Water on the Web

www.envirolearn.org.za
In support of learning and teaching about water and water-related issues, the Water Research Commission and Share-Net have developed a series of lesson plans on water. The lesson plan packs, from grade R to grade 10, are linked to the national curriculum. All the lesson packs are now available on the Share-Net website.

www.sancold.org.za
SANCOLD (South African National Committee on Large Dams) represents South Africa on the International Commission on Large Dams. The website contains useful information on dam engineering in South Africa and emphasises environmental and social matters pertaining to dams. The site also provides current information on various events related to SANCOLD and its impending reorganisation.

www.unep.org/women_env/
This website includes a database of influential women in the field of environment. Individuals and organisations are invited to add to this list by nominating women who they feel have made a significant and recognised contribution, nationally, regionally and globally, to the field of the environment.

http://www.unesco-ihe.org
UNESCO-IHE Institute for Water Education is instrumental to the strengthening of efforts by other universities and research centres in increasing knowledge and skills of professionals working in the water sector. The mandate given by UNESCO to IHE is to strengthen and mobilise the global educational and knowledge base for integrated water resources management. The website offers information on educational programmes and courses offered by the institute, research and development and publications to name but a few.

Dam construction imminent

The construction of the R5-billion De Hoop Dam on the Steelpoort River, in Limpopo, is due to start in the second quarter of this year.

The dam project, which was officially launched by Minister of Water Affairs & Forestry Lindiwe Hendricks in March, forms part of the Olifants River Water Resource Development Project. The dam is set to supply water to the towns, industries and poorly serviced rural communities in the Sekhukhune district, while also supplying water to developing platinum mines in the region.

According to Hendricks, municipalities in the area, supported by national and provincial government, are preparing to invest an additional R3-billion on infrastructure to treat and distribute potable water to domestic users. More than 800 000 people are set to benefit from improved domestic water supply once the dam has been constructed. The first impoundment of water is planned during the 2009/2010 rainy season.

Environmental groups have expressed concern over the potential downstream consequences of the proposed dam. "Detailed scientific studies have been conducted on the volumes of water required, and at what times, to meet the requirements for the environment in various parts of the Olifants River Catchment – including the Kruger National Park," said Hendricks. "The De Hoop Dam has consequently been planned and designed to fully meet the downstream environmental requirements in the Steelpoort River. The dam will mainly retain flood waters and will, in fact, significantly improve flow conditions downstream during the low flow season as well as during droughts."

Water Diary

PUMPS & VALVES
JUNE 26-28
The Fifth International Pumps, Valves & Pipes Exhibition will take place in Johannesburg. *Enquiries: Exhibitions Africa at Tel: (011) 783-7250; E-mail: marketing@exhibitionsafrica.com; Visit: www.exhibitionsafrica.com*

ENVIRONMENTAL EDUCATION
JULY 2-6
The Fourth World Environmental Education Congress will be held at the Durban International Convention Centre. *Enquiries: Nina Freysen-Pretorius, the Conference Company; Tel: (031) 303-9852; Fax: (031) 303-9529; E-mail: nina@confco.co.za; Visit: www.weec2007.com*

KNOWLEDGE MANAGEMENT
JULY 17
The Second Biennial Knowledge Management Africa Conference will take place in Nairobi, Kenya. *Enquiries: Johanna Chiloane, Tel: (011) 313-3534; E-mail: johannac@dbsa.org*

World News Roundup

- The Stockholm International Water Institute has published a new report on transboundary water management in the Nile River Basin. The report, which can be downloaded from www.siwi.org/downloads/Reports/Nile_Basin_Report_07.pdf, focuses on public goods in the context of the Nile River Basin.
- The first **geological map** of the earth is being assembled in a large international project. Scientists from more than 55 countries are participating in the One-Geology project, which is pooling national geological survey information and presenting it on the Internet for all to see.
- China's Gezhouba Group has been awarded a US$1,46-billion contract to construct what will be Nigeria's largest **hydroelectric plant**, with 2,6 MW installed capacity.
- The Japanese government has signed an agreement with the Maputo Municipal Council, under which the Asian country will finance the construction of 11 **boreholes** in outlying city neighbourhoods. The boreholes, which will be equipped with handpumps, will cost about US$88 500.
- A Europe-wide **weather alarm** system, covering 21 countries, has been launched. Meteoalarm provides information on severe weather in 17 languages from a single website, www.meteoalarm.eu.

Virus removing technology developed

US University of Delaware researchers have reportedly developed an inexpensive, non-chlorine based technology that can remove harmful microorganisms, including viruses, from drinking water.

The patented technology incorporates highly reactive iron in the filtering process to deliver a chemical "knock out punch" to a host of pathogens, from *E. coli* to *rotavirus*. "By using elemental iron in the filtration process, we were able to remove viral agents from drinking water at high efficiencies," noted associated professor Pei Chiu. "Of a quarter of a million particles going in, only a few were going out."

The elemental or 'zero-valent' iron used in the technology is widely available as a byproduct of iron and steel production. Viruses are either chemically inactivated by or irreversibly adsorbed to the iron, according to the scientists.

Waste membrane conserves water

Scientists have developed a sponge-like membrane that enables plant roots to retain more water and regulate soil temperature – which could help agriculture in parched lands.

SciDev.Net reports that the eco-friendly membrane, developed by the Norway-based University of Stavanger, is made from organic waste matter, such as seaweed, fish bones and chicken manure. It helps absorb more of the water around the roots, before it drains away.

The membrane comes in the form of a powder that is dissolved in water and then applied to seedlings. After absorption into the soil, the material forms a membrane around plant roots and helps them retain available water.

Apparently, the extent to which the membrane can help reduce water loss varies between different plants and soil types. However, in a test performed in Nigeria, the technology reportedly cut irrigation needs by 30% to 50%. The technology is already being promoted in Nigeria, with plans to extend trials to Algeria and western Europe.

Male frogs threatened by pollution

In a study undertaken at Uppsala University, in Sweden, frogs that started life as male tadpoles were changed into females by oestrogen-like pollutants similar to those found in water bodies around the world.

It is reported that two species of frogs were exposed to levels of oestrogen similar to those found in water resources in Europe, the US, and Canada. The results showed that the percentage of females in two control groups was under 50% (not unusual among frogs), however, the sex ratio in three pairs of groups maturing in water dosed with different levels of oestrogen were significantly skewed.

Some of the sex-altered males became fully functioning females, while others had ovaries but no oviducts, making them sterile.

Climate change, pollution, threaten world's top rivers

Rivers on every continent are drying out, threatening severe water shortages, according to a new WWF report.

The report, *World's Top Rivers at Risk*, lists the top ten rivers that are fast dying as a result of climate change, pollution and dams. "Poor planning and inadequate protection of natural areas means we can no longer assume that water will flow for ever," reported WWF Global Freshwater Programme director Jamie Pittock. "Like the climate change crisis, which now has the attention of business and government, we want leaders to take notice of the emergency facing freshwater now not later."

Five of the ten rivers listed in the reports are in Asia alone. They are the Yangtze, Mekong, Salween, Ganges and Indus. Europe's Danube, the Americas' La Plata and Rio Grande/Rio Bravo, Africa's Nile-Lake Victoria and Australia's Murray-Darling also make the list.

Endangered rivers threaten the livelihoods of people. River basins are the way nature gathers and delivers water for human use. These ecosystems provide electricity generation, transport, recreation and tourism, and valuable but often unaccounted flood and drought regulation, sediment and nutrient retention, and habitat for diverse fauna and flora.

The Nile River-Lake Victoria basin, which falls within ten countries, is threatened by climate change due to heavy human extraction and high evaporation. Present water withdrawals for irrigation are so high, that despite its size, in dry periods, the river does not reach the sea.

Climate warning models provide diverging pictures of future river flows in the Nile from a 30% increase to a 78% decrease. In addition, saltwater intrusion into coastal freshwater resources is likely to increase as a result of sea-level rise.

The report calls on governments to better protect river flows and water allocations to safeguard habitats and people's livelihoods. "The freshwater crisis is bigger than the ten rivers listed in this report, but it mirrors the extent to which unabated development is jeopardising nature's ability to meet our growing demands," said Pittock.

To download the report, go to http://assets.panda.org/downloads/worldstop10riversatriskfinalmarch13.pdf

FAO warns against irresponsible alien introduction

The United Nations Food and Agriculture Organisation (FAO) has issued an expanded database to warn of the unintended dangers that can arise from introducing non-endemic species, especially alien fish farming.

The Nile Perch, introduced to Lake Victoria in the 1950s, for example, has been blamed for causing the extinction of several hundred native species, although it is a major source of income for lakeshore communities.

The database is available on CD-Rom, and focuses specifically on species used in aquaculture. It includes over 5 000 records of introductions of several hundred species produced via aquaculture.

The CD-Rom also includes a virtual library of reports and studies by FAO. For more information go to http://www.fao.org/fi/default.asp.

Bank prioritises water and sanitation

The African Development Bank, the lead development finance institution on the continent, has placed water and sanitation at the heart of Africa's sustainable development.

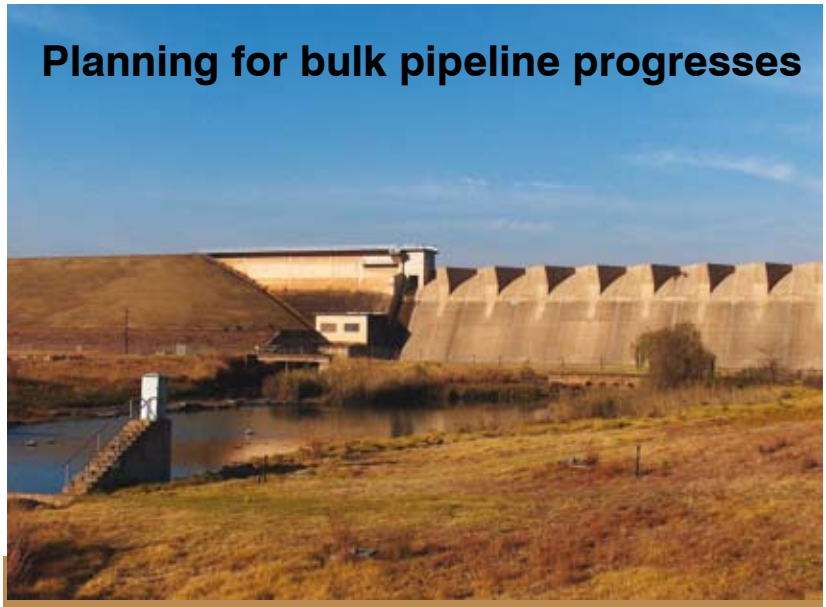
The bank has significantly increased water supply and sanitation financing, reaching over US$330-million a year between 2003 and 2006. The main area of focus has been the poorest 65% of the population living in rural areas. Other areas of interest include sanitation in peri-urban areas and transboundary water resource management.

It is expected that the 2007 financing will be 50% more than 2006, both in terms of the number of countries supported and the volume of financing. A 70% increase in staffing was allocated in the 2007 budget to reinforce the capability of the department.

Water by numbers

- **R1-billion** – The funds needed to upgrade Cape Town's sewage treatment plants. According to Mayoral Committee member Lionel Roelf, most of the city's wastewater treatment plants are already operating near or beyond capacity.
- **2001** – The last time Lake St Lucia had an open passage to the sea. The latest breaching, which occurred in March, was expected to be good for the estuary ecologically as well as for tourism and community livelihoods.
- **R28-billion** – Total municipal debt in South Africa.
- **5** – The number of people killed when an earthen embankment around a sewage reservoir in Om-Al Nasser village in the northern Gaza Strip collapsed, sending a 'sewage tsunami' to surrounding villages.
- **780 Mℓ** – The volume of water Umgeni Water serves daily to its 400 000 customers.
- **5 000 m³** – The volume of water there would be available for each person if all the freshwater on the planet were divided equally among the global population.
- **8,9 billion** – The projected world population by 2050.
- **152** – The number of State dams in South Africa. The total storage capacity in these dams is 28 538 million m³.
- **1,2 billion** – The estimated number of people that live in areas of physical water scarcity, according to the UN. Another 500 million people are approaching this situation.
- **1 200** – The number of households in the Western Cape that have no access to basic sanitation facilities.
- **4%** – The percentage of its renewable freshwater resources that Africa uses.
- **200-million** – The estimated number of people who could become refugees as a result of droughts or floods brought on by climate change, according to the report by former World Bank economist Sir Nicholas Stern.
- **53,2%** – The present average level of Cape Town's dams, prompting the municipality to call on its citizens to use water sparingly.

Planning for bulk pipeline progresses



Construction of Umgeni Water's Richmond Bulk Pipeline is due to start later this year.

The multimillion Rand project, which was waiting for a final Record of Decision at the time of writing, will see the construction of 30 km of 600 mm-diameter steel pipeline from the France township, next to Thornville, along the R56 to Richmond. The pipeline route will follow the R56 Pietermaritzburg to Richmond Road and for the most part will be about 18 m from the centre line of the road. A new pump station will also be built.

The project is necessitated by the increase of population of Richmond and surrounding areas in recent years, which is putting strain on the existing water supply infrastructure. It is believed that the new bulk water pipeline and pump station will enable new allocations and reallocation of water to meet present and future water needs of all sectors in the area.

At present, the Richmond municipality provides potable water to residents sourced from boreholes and dams. The new pipeline will source water from Umgeni Water's Midmar Dam and waterworks.

The pipeline is expected to be completed by 2008.

New water pipes for Alex and Sandton

A R22-million project to install a new water pipeline in Alexandra township and its affluent neighbour Sandton has been completed by Johannesburg Water.

The 6,7 km of 650 mm-diameter pipeline is expected to compliment the existing pipelines and will serve as an alternative water supply feed into these areas. The replacement of water infrastructure forms part of the city's attempt to provide Johannesburg with sufficient water and a proper sanitation system. The pipeline stretches from Randjeslaagte reservoir in Highlands North, east of Dunkeld and Illove reservoir.

Firm expands bottled water foothold

JSE-listed Lonrho Africa has established a new division Lonrho Springs, following its acquisition of the remaining 50% shares in bottled water company Swissta Holdings. Swissta, which has operations in Mozambique and the Democratic Republic of Congo, reportedly provides Lonrho with "invaluable access" to the African bottled water market, the group said in a note to shareholders. "It is also part of Lonrho's broader strategy to become a pan-African company, focused on investing in growth businesses that will make a difference to Africa by enhancing basic infrastructure to facilitate sustainable growth of the continent as a resources and business hub."

Study reports on cities' 'lost' water

Until water wastage in South Africa's cities and towns can be quantified accurately, it is impossible to develop and prioritise the actions that must be taken to ensure that water is used more effectively and efficiently in the country. To this end, the Water Research Commission (WRC) has completed a water loss study of 62 municipalities around the country.

Municipal water in South Africa has been under investigation for many years, with the Department of Water Affairs & Forestry (DWAF) attempting to establish the levels of wastage from all water supply systems countrywide. This has proven a difficult task due to the absence of reliable data in many municipalities as well as confusion regarding how such wastage should be estimated.

Over the last few years WRC has invested heavily in developing advanced and pragmatic tools and methodologies to quantify and assess water losses. In addition to analysing the performance indicators and determining the components of non-revenue water, during this project a methodology was developed to determine realistic water uses for the various areas based on the number of properties being served. Using the realistic uses combined with the actual bulk system input volumes, it was possible to estimate potential savings that each water services authority could expect should they attempt certain water demand management interventions.

Revealing details of the report during the opening of the National Water Conservation and Water Demand Indaba, held in March, DWAF Minister Lindiwe Hendricks said the losses (real and apparent) for the 62 systems analysed was estimated to be 623 million m^3/annum or about 29% of the total water supplied. "This highlights a serious challenge, and I am told that the situation is equally challenging internationally," she said.

The study highlighted the root causes, nature and extent of estimated water losses in the various water use categories. It found that in low-income areas, the greatest challenge to reducing non-revenue water was unbilled authorised consumption. This was generally due to the underestimation of water use in areas where tariffs were based on a 'deemed consumption' or assumed meter readings.

In medium- to high-income areas the greatest contribution to non-revenue water was real losses (i.e physical leakage). The study therefore highlighted the importance of undertaking active leakage control at regular intervals since metering, billing and payment in these areas are generally under control.

The extent of water losses, wastages and inefficient use of water is negatively affecting the ability of municipalities to provide sustainable services; conversely successful receipt of water income by municipalities could dramatically improve their financial position, noted Hendricks. "DWAF is, therefore, looking at how it can support municipalities to implement water conservation measures. To date, R45-million has been allocated to municipalities as part of a flagship project on water conservation and water demand management (WC/WDM) implementation."

It is envisaged that at least eight municipalities selected across various regions will receive this support in the coming year. The success of this pilot project will determine the benefits for DWAF in establishing a WC/WDM fund for municipalities.

Hendricks further noted that her department was in the process of developing a National Water Use Efficiency Information System to assist in monitoring the water use efficiency trends in the country at local, provincial and national scale to be able to identify areas of interventions. "This information system will play a critical role in creating a water saving South Africa, with a dedicated interactive educational tool for water users to learn and share information on efficient water use best practices and initiatives."

To order the WRC report (Report No TT 300/07), contact Publications at tel: 012 330-0340 or e-mail: orders@wrc.org.za