



Letters to the Editor

What is happening at Beervlei?

I refer to the article on Water History in the latest edition (January/February 2011) of *the Water Wheel*, and particularly the description of the Beervlei Dam on pages 22 and 23 of the magazine ('Kouga Dam – serving the fertile Gamtoos valley').

My wife and I travel two or three times a year from KwaZulu-Natal to the Southern Cape, and drive past the Beervlei Dam, situated between Aberdeen and Willowmore. Some years ago, we noticed that the dam was being emptied. It has now been empty for a number of years. What are the reasons for decommissioning this dam?

We have also noticed that the stream that feeds the dam is just a trickle, and sometimes practically dry.

I always have had an interest in dam design, and an explanation on problems encountered would be most welcomed.

CL Marechal (Pr Eng)



Acid mine drainage – Who will carry financial burden?

In the article on acid mine drainage of *the Water Wheel* January/February 2011 ('Red letter year for authorities to prevent mine-water catastrophe'), Prof Terence McCarthy of the School of Geoscience at the University of the Witwatersrand commenting on who should carry the cost, is quoted as arguing that "government is invariably the largest single beneficiary of mining ventures through the State share of profits formulae, taxation of company profits and taxation of salaries paid to workers." Government will probably carry the cost.

What is intriguing is Prof McCarthy's omission of shareholders as beneficiaries of mining activity and therefore potential funders of initiatives to address acid mine drainage. It would be almost impossible to make past shareholders carry some of the cost. It would be just as impossible to seek restitution from past governments that directly levied the taxes Prof McCarthy alludes to. The government that he argues should carry the cost is actually current taxpayers. If current taxpayers must shoulder the cost why can't current shareholders? Is it maybe a case of implicating the latter may be a career, consulting or funding limiting move?

Abel Sithole

Diamonds not the Vaal's best friend

Authorities from the Northern Cape have expressed their concern about the environmental impacts of often illicit alluvial diamond mining along the Lower Vaal River.

Due to the meandering nature of the Vaal River, diamonds are found both in the river channels and on the floodplains where the river once ran. The deposits are actively mined by large-scale miners, informal and small-scale miners. While these precious stones play an important role in the economy of the Northern Cape, removing them is a destructive process, causing many problems for the environment as well as people living downstream.

Large-scale miners rely heavily on hydraulic mining techniques, dredging on the river banks, removing vast areas of floodplain and riparian vegetation using heavy bulldozers and machinery to expose potential diamond-yielding gravel deposits. These operations have resulted in the significant clearing of trees and other vegetation. Clearing of such vegetation directly contributes to rapid loss of soil moisture, bank erosion and topsoil loss. As the trees trap carbon

dioxide, therefore preventing it from being released into the atmosphere, the clearing will in future contribute to the atmospheric carbon dioxide imbalance.

As more vegetation is removed siltation of the river, deterioration of water quality and an overall decrease in biodiversity are noticeable. Increased sediment loads and reduced water flows have seriously affected habitats for indigenous fish populations and aquatic invertebrates in the Lower Vaal River. Many of these alluvial diamond mines operate illegally

and some within less than 5 m from the riparian vegetation or river banks.

Removed sediments, rock dumps, gravel and sand are stockpiled next to the river. When it rains, these sediments are washed into the waterway thereby contributing significantly to water turbidity. The dumps have increased the suspended solids concentrations that may result in hampered oxygenation of the river and the retardation of photosynthesis due to prevention of light and heat penetration. Accordingly,

water temperature drops and threatens the survival of aquatic organisms.

In some stretches of the river, especially in Windsorton, Rooipoort and Schmidts-drift areas, the river has been diverted to allow exploration of diamonds which has a negative impact on river health as a whole. After mining, the areas are most often than not left unrehabilitated and unrestored.

Relevant stakeholders must come together to stamp out illegal activities and rehabilitate and restore the riparian vegetation so that the river can continue providing the service it should. Water is a scarce commodity in South Africa, and communities should take ownership of rivers and contribute to the management of our freshwater ecosystems for the benefit of future generations. There is an urgent appeal to the public to report any illegal activities they come across. Even small contributions, such as removing rubble out of these systems, could greatly contribute towards our future water security. Let's work together to secure our own health.

• Report by Peter Ramollo, Aquatic Scientist with the Department of Environment and Nature Conservation, Northern Cape.



Intensified efforts to improve regional groundwater management

With a view to improving development and management of groundwater in the region, the Southern African Development Community (SADC) is developing several tools to empower persons and organisations involved in the management of groundwater in southern Africa.

Groundwater is likely to play an even greater role for human development under changing climatic conditions hence the need for the resource to be well protected, and properly managed as a measure to mitigate climate change effects. The tools being developed by the SADC Water Division through the Groundwater and Drought Management Project will also assist in raising the profile of groundwater.

The tools include groundwater management plans for communities, maps that will give visual representation of the vulnerability of groundwater and the location of groundwater-dependent ecosystems in the region.

All groundwater resources are vulnerable to various degrees, hence the groundwater vulnerability maps will assist in guiding planners and resource managers in determining which areas are more susceptible to groundwater contamination. Groundwater-dependent ecosystems are vital yet poorly understood components of the natural environment. Typical examples of these systems are springs and wetland ecosystems where groundwater seeps to soil surface occur. In these systems groundwater contributes to water and nutrients which maintain a rich and unique biodiversity adjusted to these special conditions.

Methodologies on how to assist member states to establish the economic value of groundwater are also being developed. All these tools and methodologies will inform decision making and thus assist decision makers in the proper management, policy analysis and development of groundwater resources.

Giving sanitation services franchising a go in the Eastern Cape

An innovative programme whereby emergent micro-entrepreneurs are trained and mentored to provide routine cleaning and maintenance services of sanitation facilities at schools is being tested and evaluated at the Butterworth district schools, in the Eastern Cape.

The programme uses concepts formulated and developed by the CSIR in collaboration with the Water Research Commission, and is based on partnerships. According to CSIR's Dr Kevin Wall, these involve skills development and incentive principles similar to those of franchising.

"We set out to facilitate the creation of emergent micro-businesses to undertake cleaning and maintenance

services of small-scale water and sanitation facilities – such as those owned by schools, clinics and municipalities," he explained. "The franchising concept was not entirely foreign to the people with whom we engaged – they have all patronised franchises such as food outlets and petrol stations."

The franchisor in this instance – Amanz'abantu Services – is an East London-based service provider with many years' experience of working alongside rural and developing communities. "Under the guidance of the franchisor, trainee franchisees were equipped to start cleaning and maintenance of the sanitation facilities at the schools," noted Dr Wall.

Protect wetlands, create jobs



By protecting its wetlands, South Africa will not only be able to conserve its natural resources, but will also create many job opportunities.

This is according to Deputy Minister of Water & Environmental Affairs, Rejoice Mabudafhasi.

Speaking during a visit to Verlorenvlei, a wetland on the West Coast near Elandsbaai, in celebration of World Wetlands Day on 2 February, the minister singled out government's Working for Water and Working for Wetlands programmes, who had provided work to thousands of people while helping to conserve the country's natural resources.

According to Mabudafhasi, involving especially rural communities in wetlands' preservation was very important. "People in rural areas are best placed to understand how wetlands work and how to protect them and take advantage of the economic opportunities that these water bodies provide." South Africa has around 115 000 wetlands, covering over 4 million ha or 4% of the country's total surface area.

The programme establishes and supports local franchisee micro-businesses, thus creating entrepreneur and employment opportunities – mostly for women, as it turns out. The cleaning and maintenance services provided by the franchisees at schools are being paid for by the schools from their budgets

Mabudafhasi said that it was significant that World Wetlands Day was celebrated on the same day as the unbanning of the ANC and other political parties by former President FW de Klerk 21 years ago. However, she questioned whether the world was now freeing the environment as political parties had been freed and pointed out that the country's wetlands faced many challenges, most notably threats from urbanisation and mining.

Verlorenvlei is one of the largest inland bodies of water on the West Coast, and one of 20 wetlands designated as Wetlands of International Importance under the Ramsar Convention on Wetlands. The 1 500 ha vlei hosts at least 75 resident and migratory bird species. In recent years the wetland has come under severe pressure from, among others, agricultural activities and alien vegetation in the upper catchment.

Rehabilitation of the wetland under the Working for Wetlands programme started in 2006 and, to date, R5,2-million has been spent on improving Verlorenvlei, including clearing 140 ha of invasive alien vegetation.

annually allocated for operation and maintenance of infrastructure.

Irish Aid, Ireland's government department that assists developing countries, has committed to providing substantial research and development funding for the pilot for three years.

Source: CSIR

City of Cape Town bags regional water demand management award

The City of Cape Town has become the first winner of the SADC Water Demand Management (WDM) Award.

The award was initiated by the SADC Water Demand Management Programme last year. This programme is being implemented by the Development Bank of Southern Africa (DBSA) with support from the Swedish International Development Cooperation Agency (Sida). In the photograph Thembisile Khosa, DBSA Agencies Unit Coordinator, is handing the prize over to Zolile Basholo and Donnavin Wright of the City of Cape Town.

The regional award is designed to recognise achievements of organisations who have worked towards improving understanding, awareness and implementation of WDM measures. These might include a range of interventions, i.e. changing the behaviour of consumers, disseminating water efficient technologies, introducing efficiency-inducing pricing structures, and reducing leakages in distribution networks, among others.

According to the DBSA, the award acknowledges the high standard, ongoing commitment,

actual implementation and sustainability of WDM initiatives undertaken by institutions and organisations, commercial and public alike. It highlights the measurable improvements in WDM initiatives. Furthermore, the award encourages organisations to strive for excellence in their daily work and continue to enhance their skills and experience in WDM.

“The City of Cape Town’s holistic approach to WDM and water conservation (WC), through the implementation of a number of different WC/WDM projects, each with its own innovative elements, was a testimony to the City’s commitment in addressing some of its water challenges,” said the DBSA in a statement. “The projects implemented fulfil the criteria set out in both the water services development plan and the WC/WDM strategy.”

To date, the City has undertaken numerous projects, including leaks repair, installation of water management devices and debt write-off, use of treated effluent, pressure management, as well as awareness and education for leaks repair projects.

Nominations for the 2010/11 Award are now open. Visit: www.wdm-in-sadc.net or Email: info@wdm-in-sadc.net for more information.



First historic SA engineering landmark awarded

The Van Stadens Weir and Dam outside Port Elizabeth has become the first landmark to be declared a civil engineering works of historic significance by the South African Institution of Civil Engineering (SAICE).

The purpose of the awards is to publicise engineers and their achievements, and to encourage preservation of historic projects. According to SAICE, nominations are judged according to a range of criteria, among others, the works should generally still be in existence, should be over 100 years old, and should have made a notable contribution to the welfare and economy of a community.

Port Elizabeth had struggled with its water supply since its founding in 1820. After various attempts by private suppliers to serve the town from wells

and springs, the Town Council decided to develop a source on the Van Stadens River. A site for a weir was identified in 1877 and the scheme was officially opened in June 1881.

By 1890 it was apparent that a dam would be necessary to store water for those times when the flow of the river would be insufficient to meet the demand. South Africa’s first consulting engineer, Thomas Stewart, was appointed to design the dam, intake and filtration plant, and to arrange to build the works. The complex was completed in 1893.

The entire scheme was one of the first major properly engineered water supply projects in South Africa and the dam is one of the first major such constructions in the country.

Source: SAICE

Organisation calls for protection of ‘no-go’ mining areas

The World Wide Fund for Nature (WWF South Africa), together with numerous South African non-governmental organisations and the Centre for Environmental Rights, has handed over a list of areas to the Minister of Mineral Resources, Susan Shabangu, to be declared ‘no-go mining zones’.

The list is aimed at assisting the minister in exercising her discretion under section 49 of the Minerals and Petroleum Resources Development Act, 2002, which seeks to prohibit or restrict granting reconnaissance, prospecting and mining rights and permits. “This proposal will enable the minister to prevent mining and prospecting in certain areas of critical biodiversity, heritage and hydrological importance,” explained Mark Botha, Head of Biodiversity at WWF.

The proposed areas include, among others, national parks or nature reserves, marine protected areas, mountain catchment areas (such as the Amatholes

in the Eastern Cape), and Ramsar sites, including Barberspan near Delareyville, the Verlorenvlei north of Lamberts Bay, Kosi Bay and the Turtle Beaches of Tongoland in northern KwaZulu-Natal.

“These areas are key for our survival. They nurture one of the most amazing natural heritages in the world and support the bulk of our ecological infrastructure for water provisioning and filtering,” said Botha. “What people tend not to realise is that such areas are the basis for a growing and sustainable economy. They provide agricultural with free basic inputs.”

“We are asking that areas of key water catchments, groundwater recharge and ecosystems recognised as threatened or sensitive should be conserved. Cultural heritage sites identified by national or provincial heritage agencies also need protection,” noted Botha.

Source: WWF

JW expanding Olifantsvlei sewage works

Johannesburg Water (JW) has embarked on a multimillion Rand project to increase the capacity of the Olifantsvlei Wastewater Treatment Works, one of the six treatment works operated and maintained by the utility.

The extension and completion of this project will see an increased capacity from 200 ML/day to 250 ML/day average dry weather flow which will help cope with future growth in the Olifantsvlei catchment in the south of Johannesburg, said the utility in a statement. The construction phase of the project has started and anticipated completion date for the civil, mechanical and electrical contracts is the end of April 2012.

The appointed contractors will be required to make every effort to give first preference to local communities when employing staff to work on the project. Furthermore, accredited training will be provided to technical staff from historically disadvantaged groups in line with JW's empowerment and upliftment initiatives.

Record shattered at De Hoop

Impoundment of De Hoop Dam is set for April 2011.

This is after the Department of Water Affairs construction team shattered the national record for placement of concrete.

A total of 103 600 m³ of concrete was placed in 23 days – more than double the previous record of 40 600 m³ which was placed in one month at Wolwedans Dam in the Southern Cape. The latter dam supplies water to Mossel Bay.

The concrete was placed between November 4 and 27, with a peak hourly production of 329 m³. The African record for concrete placed in one month is 175 000 m³. De Hoop Dam is being constructed using a special roller-compacted concrete mix.

New SAICE president calls for ethical leadership

New President of the South African Institution of Civil Engineering (SAICE) has called for engineers to lead with integrity.

Reading out loud his 'Credo for the African Engineer' Mathetha asserted that "just like doctors have the Hippocratic Oath to guide their actions to provide medicine to the sick, engineers should have a credo which would guide them in providing the fundamentals of human life, such as clean water, access to sanitation, roads and so on, in an ethical and moral manner." He expressed the hope that his credo would be embraced with enthusiasm by South African as well as fellow African engineers to be used as a tool towards achieving moral and ethical behaviour at all times.

"Universities are instrumental in creating the highest knowledge, expertise and innovation. Universities must also ensure that knowledge and expertise promote the welfare, culture and sustainable development of the surrounding society. However, adhering to ethical principles becomes increasingly difficult when faced with the realities of the working environment. It is in this area that learned societies such as SAICE, can make a huge contribution by providing the impetus for morality and sustainability through the introduction of a credo," stated Makhetha.

SAICE has embarked on an anti-corruption campaign to enhance moral and ethical conduct among the profession. "Engineers are faced with finding a fine balance between development and sustainability. It is an ethical choice [for engineers] to provide an enabling solution which would allow people to acquire and maintain a sustainable and balanced lifestyle," noted Makhetha.



Water diary

NANOTECHNOLOGY MAY 15-18

The IWA Applications of Nanotechnology in the Water Sector 2011 will take place in Monte Verita, Switzerland. This conference will bring together leading scientists from different research fields to discuss and push forward the most promising applications of nanotechnology in the water and wastewater industry. *Enquiries: Ralf Kaegi; Tel: +41 (0) 44 823-5273; Email: ralf.kaegi@eawag.ch; www.iwanano2011.org*

POLYMERS MAY 22-25

The 11th International Conference on Frontiers of Polymers and Advanced Materials will take place at the University of Pretoria's Conference Centre. *Email: conference@icfpam.ac.za or Visit: www.icfpam.co.za*

WATER TECHNOLOGY JUNE 6-10

The 8th IWA Leading-Edge Conference on Water and Wastewater Technologies will take place in Amsterdam, the Netherlands. The conference focuses specifically on

advances and development in water and wastewater technologies.

Email: let2011@iwahq.org; Visit: www.let2011.org

TRANSBOUNDARY WATER JUNE 8-9

The 3rd Orange River Basin Symposium is being hosted by the University of the Free State, Bloemfontein. Themes include, among others, environmental water requirements, water harvesting, changing environments, transboundary water issues, state of the Orange River, the role of water in food security and acid mine drainage. *Enquiries: Sanet Neethling; Tel: (051) 401-2863; Email: neethlingis@ufs.ac.za; Visit: www.ufs.ac.za/orangeriver*

HYDROLOGY SEPTEMBER 12-14

The 15th South African National Hydrology Symposia will take place at Rhodes University, Grahamstown. The theme of this year's conference is 'Science and Practice for Sustainable Water Resource Management'. *Visit: www.ru.ac.za/institutes/iwr/sanciahs*