2ND EDITION
2012

INKOMATI
CATCHMENT MANAGEMENT AGENCY

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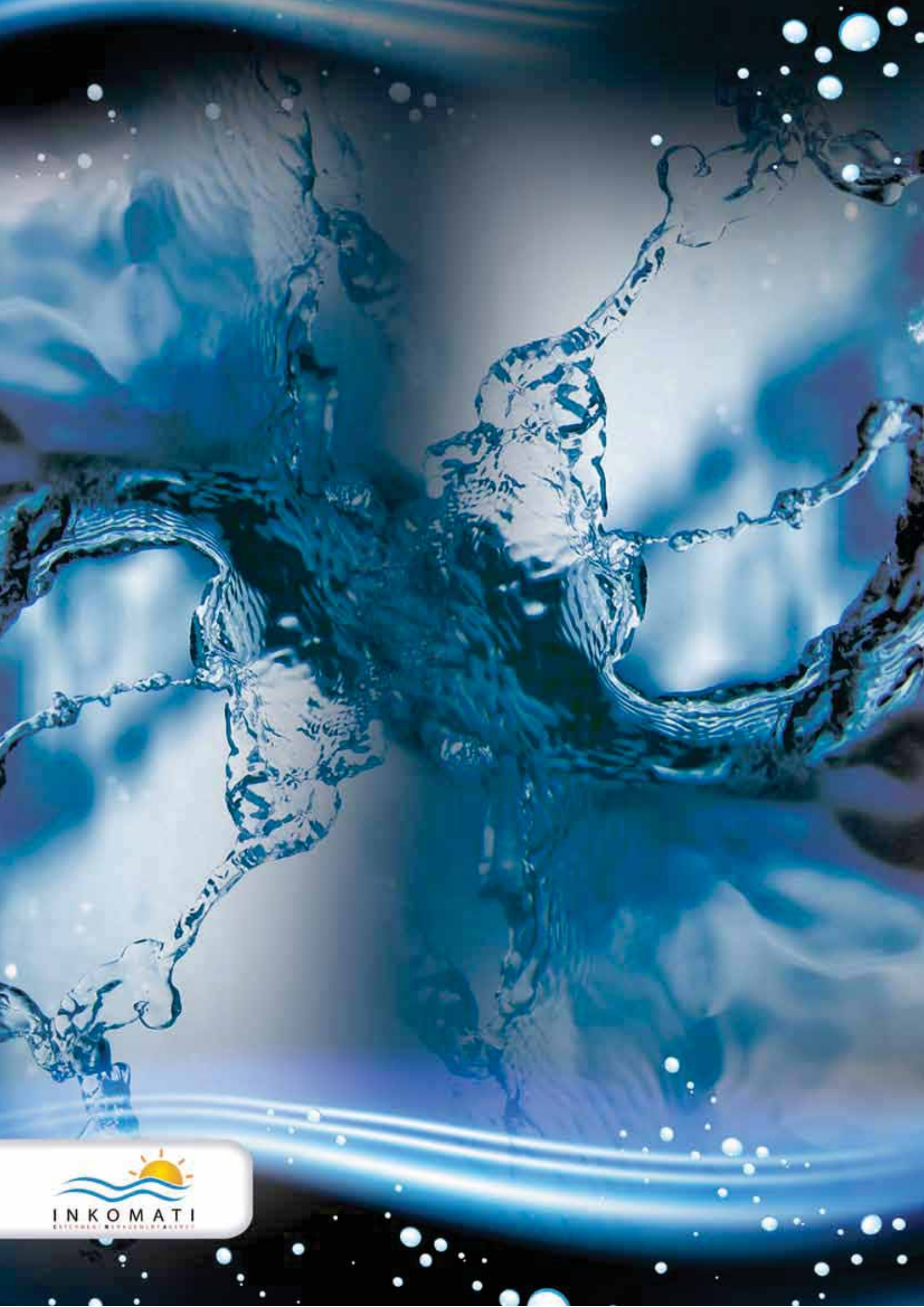
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Our Vision

Water for all in Inkomati

Our Mission

Our mission is of a pioneering catchment management system that empowers stakeholders to engage in consensual and adaptive decision making, to achieve reform, and to promote persistent social, economic and environmental justice across the Inkomati catchment.

- The Inkomati CMA supports the co-operative management of the Inkomati basin as an internationally shared water course
- The decision-making environment of the Inkomati CMA, including delegated functions, enables collaborative action towards equity, sustainability and efficiency in a continually evolving socio-economic system
- The Inkomati CMA manages the resources adaptively, co-operatively and progressively to achieve social, economic and environmental justice, and promote healthy living

Our Values

- The Inkomati CMA acknowledges the interdependence of our responsibilities for caring for the resource and there is explicit recognition of the diversity achieved by what individual/ group contributes to promoting equity, efficiency, and sustainability as defined in the National Water Act
- Decisions, actions and outcomes are subject to performance evaluation against measurable goals, indicators and timeframes
- The Inkomati CMA strives for a trusting, transparent and corrupt-free system of catchment management that is cognisant of existing agreements and promotes fairness before the law, environment and economic development
- Management is adaptive, open to critique and outcomes driven, with solutions being practical, achievable and implement able
- The Inkomati CMA practices problem solving that embraces:
- Ethics of Ubuntu (out humanity is defined by how others experience our behaviour), Simunye (we are one) and Batho-pele (people first)
- Consensus driven stakeholder participation
- Decision within our mandate are made and are justified on the basis of the best available social, technical, economic, environmental and governance knowledge

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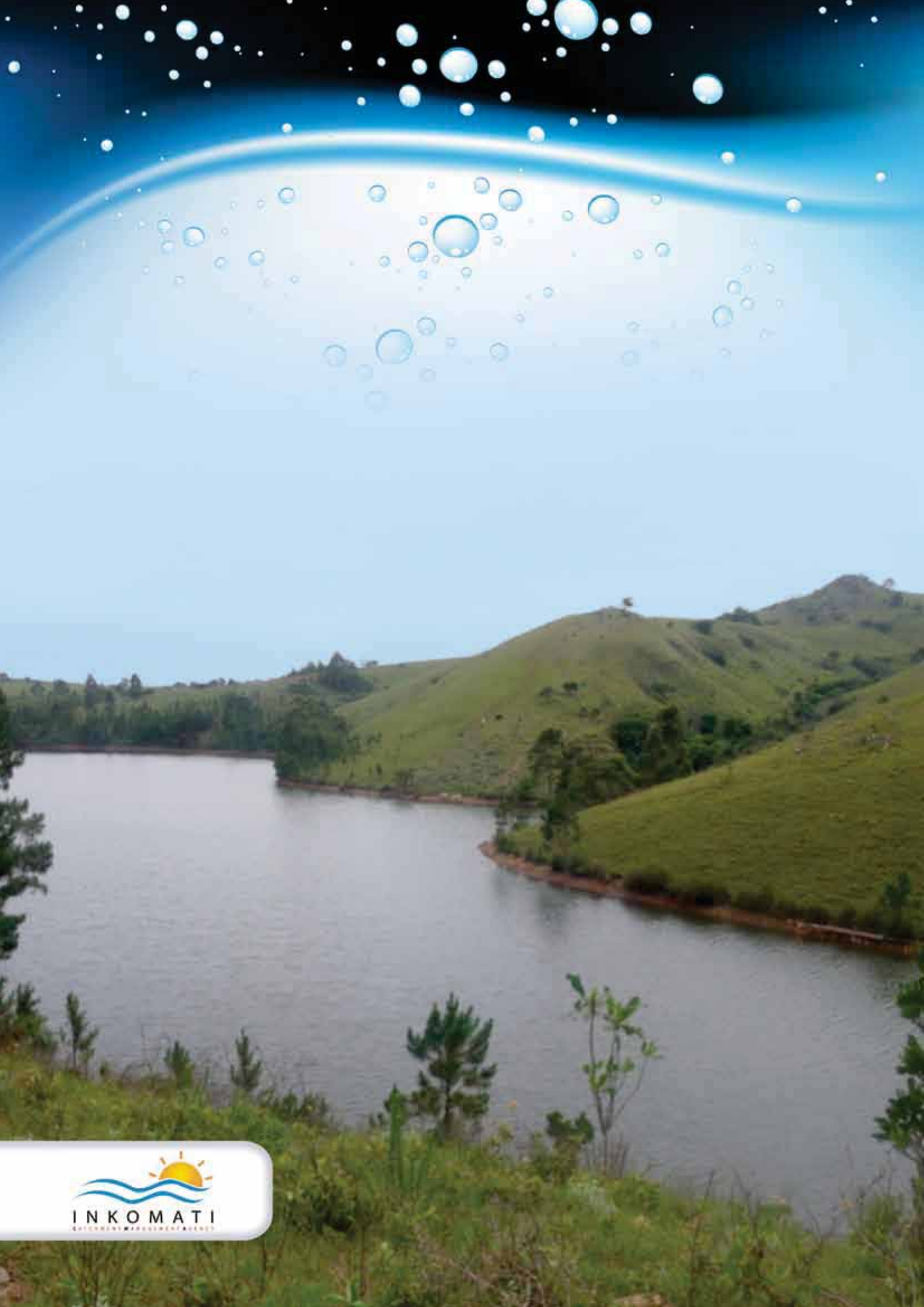
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Wonderful WETLANDS

"There is clear water up to your ankles and a dragonfly zips past your head as you watch some ducks fly off the water - welcome to the soggy world of the wetland"

What are wetlands?

Wetlands are difficult to define because of their great variation in size and location. The most important features of wetlands are: Waterlogged soils or soils covered with a shallow layer of water (permanently or seasonally), unique types of soil, and distinctive plants adapted to water-saturated soils. Marshes, bogs, swamps, vleis and sponges are examples of wetlands.

WHY ARE WETLANDS IMPORTANT?

- Flood busters:
  Wetlands associated with streams and rivers slow floodwaters by acting as giant, shallow bowls. Water flowing into these bowls loses speed and spreads out. Plants in the wetland play an important role in holding back the water. The wetland acts as a sponge as much of the flood water is then stored in the wetland and is slowly released to downstream areas, instead of it all rushing to the sea within a few days. This greatly reduces flood damage, particularly erosion, and ensures a more steady supply of water throughout the year.

- Filters:
  Wetlands improve water quality as they are very good natural filters, trapping sediments, nutrients (e.g. nitrogen and phosphorus), and even pathogenic (disease-causing) bacteria. In addition, pollutants such as heavy metals (e.g. mercury, lead) and pesticides, may be trapped by chemical and biological processes. In other words, the water leaving the wetland is cleaner than the water entering it.

- Wetlands and wildlife:
  Wetlands are filters where sediments and nutrients accumulate, so many plants grow there, e.g. bulrushes, grasses, reeds, waterlilies, sedges and trees. The plants, in turn, provide food and a place for attachment and shelter for many creatures. There is more life, hectare for hectare, in a healthy wetland than in almost any other habitat. These productive places support huge numbers of insects, fish, birds and other animals. Some animals are completely dependant on wetlands, whilst others use wetlands for only part of their lives. The wattled crane, for example, is dependant on wetlands for breeding. The rich diversity of waterbirds in southern Africa (totalling 130 species) is possible because of the many wetlands spread across the sub-continent. The wetlands of southern Africa are of international importance as they are the southern destination for many migratory wading birds.

- People and wetlands:
  Wetlands have been used for centuries as grazing for domestic stock, and as a source of reeds used for thatching, hut construction and basket weaving. They provide for fishing, hunting and the opportunity to observe wildlife, especially birds. Wetlands are appreciated for their beauty as open spaces and also for their educational value.

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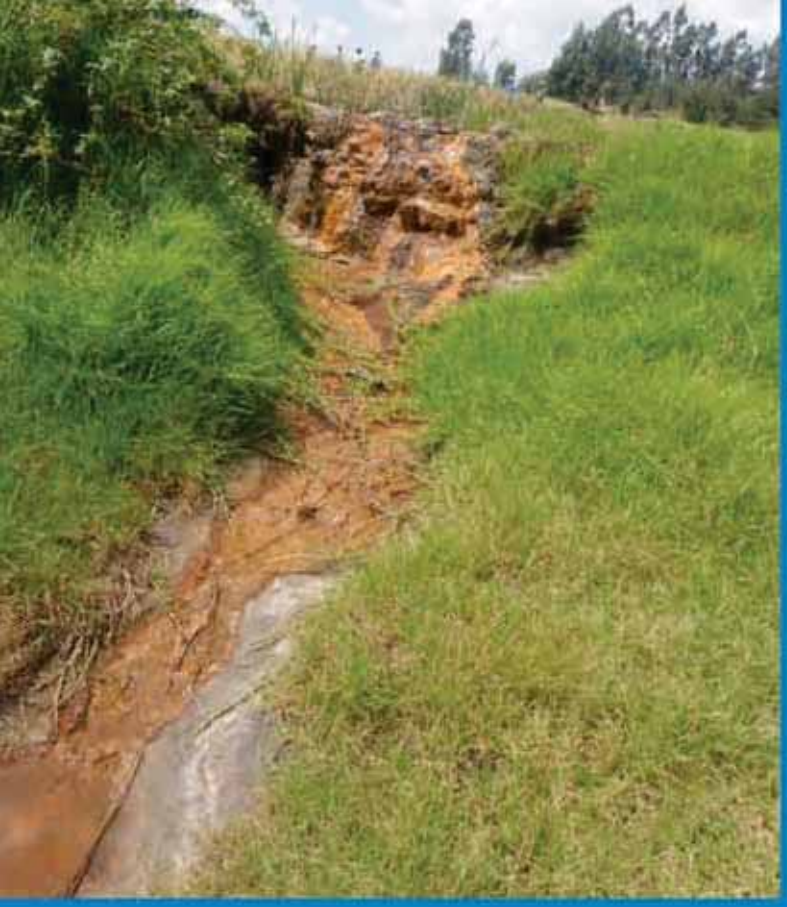
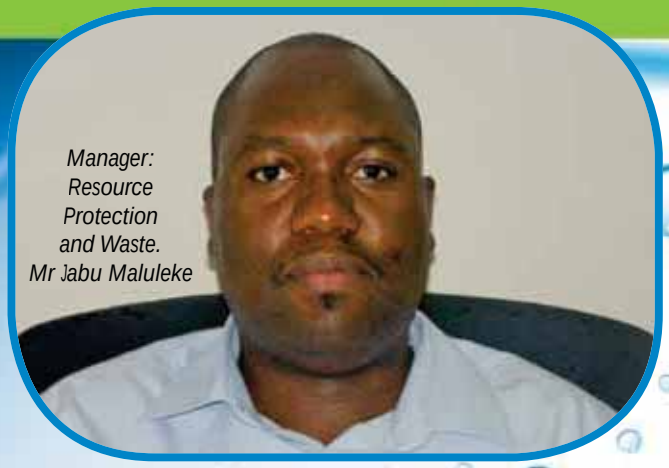


ACID MINE DRAINAGE *Outcry*



Manager: Resource Protection and Waste. Mr Jabu Maluleke

The road to economic prosperity comes with a price. The situation in a small town of Carolina is a case at point. Carolina is a small town dominated by small scale coal mining and agriculture in South Eastern part of Mpumalanga, within the Jurisdiction area of Chief Albert Luthuli Local Municipality (CALM) and Gert Sibande District Municipality (GSDM). Coal mining is a well-known activity in Mpumalanga and today the effects of these mining activities is making headlines in the South African media. Carolina drinking water resources (the Boesmanspruit dam) is compromised due to contamination from the coal mines. The effects of contamination has to date finds its way into the household potable water taps.

The Inkomati Catchment Management Agency (ICMA) is an agency of the National Department of Water Affairs, (Mpumalanga Region) that is delegated to render Catchment Management within the Inkomati Water Management Area.

The Carolina Water Quality problem was reported to the ICMA, and actions were immediately taken to intensify monitoring of surface water resources (three tributaries) within the Boesmanspruit catchment, which drains into the Boesmanspruit dam. After intensive investigations, which are still continuing, a number of point sources which discharges into the Boesmanspruit were identified and this includes: two old mine shafts that are actively decanting and four mining houses which are having operations within the main tributary (the western tributary) of the Boesmanspruit catchment.

Boesmanspruit is a perennial stream that originates in the small town of Brighton, Mpumalanga and runs North Westerly towards Hendrina, where it joins Waterval River and then drains into the Nooigedacht Dam in the Western side of Carolina. The Boesmanspruit forms the upper reaches of Komati River, which is one of the four rivers within the Inkomati Water Management Area (IWMA).

The Boesmanspruit sub-catchment is relatively small in extent (1600km2) and the main activities are coal mining, crop farming and stock farming. Coal mining in the sub-catchment

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mostly takes a form of open cast, although there had been extensive underground mining in the past. Coal mining occurred mostly in the Boesmanspruit catchment area, a catchment area for the Boesmanspruit dam.

All over the world, coal mining has been associated with Acid Mine Drainage (AMD) due to mined out material that is exposed. Due to this exposure and subsequent reactions, mine drainage which is metal rich is formed from chemical reaction between water and rocks containing sulphur bearing minerals. This result in a runoff that is highly acidic and contains high concentration of heavy metals such Sulphur, Iron, manganese and low pH and therefore further dissolves heavy metals such as copper, lead and mercury into the ground or surface water. The process leading to formation of acid mine drainage is depicted through in a chemical formula below:

1) $2FeS2 + 7o2 + 2H20 \Rightarrow 2FeS04 + 2H2S04$

And further oxidation of ferrous to ferric sulphate is shown in the following formulas:

2) $4FeS04 + 2H2S04 + 02 \Rightarrow 2Fe2(SO)43 + 2H20$

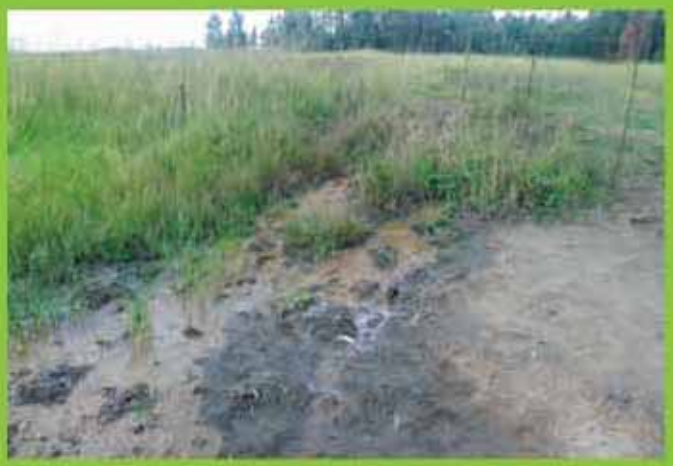
3) $Fe2(S04)3 + 6H20 \rightarrow 2Fe(OH)3 + 3H2SO4$

The subsequent hydrolysis of the ferric oxide compound yields ferric hydroxide. This compound and hydrated iron oxides cause the marked rusty-colour water and precipitates in surface water recourses (evident in the pictures).

they did not and are not contributing to the pollution of the Boesmanspruit dam. The 14 days period lapsed on 28 March 2012. After the lapsing of the 14 days, all four mining houses have submitted information for consideration in view of the conditions of the pre-Directives. Review of this information has started and it will be concluded by Friday 13 April 2012. In addition to the 14 days information requirement, the mining houses are required to submit water quality monitoring data for Boesmanspruit within 30 days of the issuing of Pre-Directive as well as proof that the footprint of their operations are contained within their premises. The 30 days period will lapse on 20 April 2012. Upon receipt of the information, a review will start and will be concluded 04 May 2012.

The National Department of Mineral Resources is being engaged to assist with identification and possible rehabilitation of one of the two actively decanting mines in order that this source is contained and treated accordingly. One of the coal mines has already started groundwork at the second actively decanting mine shaft. This work will include containing and onsite treatment of the decanting water.

The ICMA continues to collect water samples at Boesmanspruit sub-catchment. Eight monitoring points have been identified and water samples are collected bi-weekly. Additionally, catchment investigations to assess the possibility of existence of other point sources of pollution that are contributing to the pollution load into the Boesmanspruit are continuing. If



Due to extensive and uncontrolled coal mining within the Boesmanspruit, the situation described above has established itself and the Boesmanspruit system including the Boesmanspruitdam has received extremely high loading of AMD.

In response to the situation and as it one of the core functions, the ICMA conducted catchment investigations and subsequently issued four pre-Directives in terms of section 19 of the National Water Act, 36 of 198 to the mines that are operating within the catchment of the Boesmanspruit. These pre-Directives were issued on 09 March 2012. The Pre-Directives requires the four mining houses to indicate within a period of 14 days whether they have any proof to justify that this additional sources are identified more pre-Directives and Directives in terms of the National Water Act will be issued.

To ensure continued supply of potable water, the DWA assisted the Municipality with four water tankers. In addition, other stakeholders such as Gert Sibande District Municipality; Rand Water; the mining houses continue to provide support to the Municipality. The Water Services Regulations of the DWA Head Office are also providing support at the treatment plant in addition to assisting with the plant optimisation.

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Opinion and Analysis of the COP17 Durban Conference

by Dr Tendai Sawunyama, IWR Water Resources (Pty) Ltd

FOOD FOR THOUGHT: COULD THIS BE AS RESULT OF CLIMATE CHANGE?

The above picture is a small bridge en route Coopersdal in the Nkomazi area under water during the Jan/Feb floods

Introduction

The last round of climate change talks in Durban has since been concluded. Weary delegates are back in their respective countries. Some are probably reflecting on the discussions, others may be trying their best to forget them. It is worth summarising the outcome of the convention. To start with I will give you an oversight of the history of climate change-where we are now; how we get here and where are we going?

Where are we now?

In 2007, the world learnt that climate change was human-made, definitely happening, and that the collective global effort so far to keep greenhouse gases to a "safe" level was grossly insufficient. The Intergovernmental Panel on Climate Change (IPCC) released its Fourth Assessment Report (AR4), in the wake of an unusual number of severe weather-related disasters, and at the head of an almost unbroken series of the hottest years on record. These are some basic well-established links:

- the concentration of greenhouse gases in the earth's atmosphere is directly linked to the average global temperature on Earth;
- the concentration has been rising steadily, and mean global temperatures along with it, since the time of the Industrial Revolution; and
- the most abundant greenhouse gas, carbon dioxide, is the product of burning fossil fuels.

How did we get here?

Climatologists were the first to sound the alarm in the 1960s and 1970s. These scientists noticed that concentrations of CO_2 in the atmosphere were increasing, and that it was correlated to a steady increase in global temperatures. More than two decades

after these first urgent calls, governments created the United Nations Framework Convention on Climate Change (UNFCCC). What led to the creation of the UNFCCC was the first assessment report of the Intergovernmental Panel on Climate Change, released in 1990. The Panel was created by the World Meteorological Organization and the United Nations Environment Programme in 1988, and this first report reflected the views of approximately 400 scientists. Its primary message was global warming was happening and something had to be done about it. The IPCC now has a well-established role. It reviews worldwide research, issues regular assessment reports, and compiles special reports and technical papers. Its findings reflect global scientific consensus and are political in character, providing a crucial counterbalance to the often highly charged political debate over how to respond to climate change. Its assessment reports now reflect the work and observations of thousands of scientists. IPCC reports are frequently used as the basis for decisions made under the Convention. They played a major role in negotiations leading to the Kyoto Protocol details which can be easily obtained online.

Where are we going?

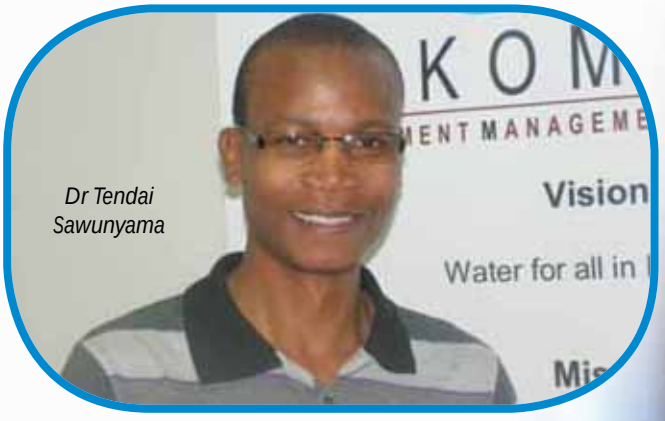
Scientists, economists, political scientists, financial experts and all manner of other researchers use historical observations and known links to create models and project outcomes. The IPCC collates published and reviewed science, including projections of what is to come based on a scale of warming scenarios. These collective projections paint quite a clear picture that things are gradually getting worse than anticipated if no actions are taken.

Outcomes of the Durban conference

The Durban Convention was geared to allow countries to reach a consensus on how to deal with climate change but alas, reaching the outcomes of the conference took hours and hours beyond those scheduled. In the end of the conference, 194 countries were able to agree of a number of decisions that provide meaningful progress to multilateral climate policy process. These include:

i. A 2nd commitment period under the Kyoto Protocol, avoiding a gap in binding commitments to reduce emissions by 2012. It was agreed that European Union will place its current emission-cutting pledges inside the legally-binding Kyoto Protocol, a key demand of developing countries;

ii. Durban Platform for Enhanced Action, establishing a process to form legal instrument for all nations to commit to climate change by 2015, with implementation by 2020;



Dr Tendai Sawunyama

iii. Launch of Green Climate Fund, which could provide unprecedented levels of climate finance to developing countries, however how to raise the money has not been agreed.

iv. Operationalization of the Adaptation Committee and progress in all of the major elements related to adaptation.

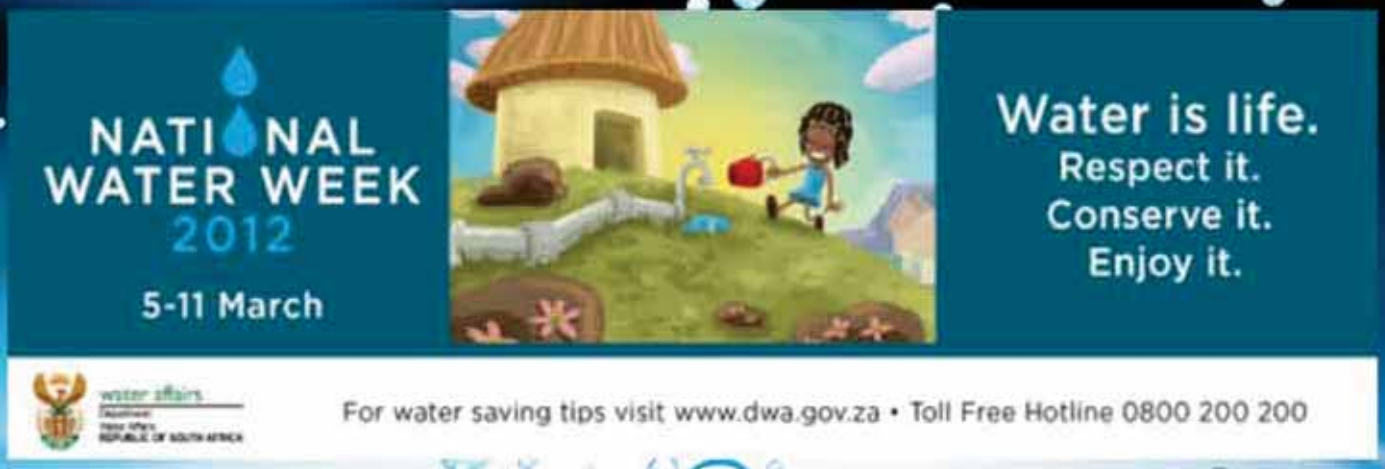
The Durban decisions are available online and include:

- Establishment of an Ad Hoc Working Group on the Durban Platform for Enhanced Action;
- Report of the Ad Hoc working group on Long Term Cooperative Action under the Convention;
- Launching of Green Climate Fund.

It is important to note that the conclusion was delayed by a dispute between the EU and India over the precise wording of the "roadmap" for a new global deal. India did not want a specification that it must be legally binding. Eventually, a Brazilian diplomat came up with the formulation that the deal must have "legal force", which proved acceptable. The roadmap proposal originated with the EU, the Alliance of Small Island States (Aosis) and the Least Developed Countries bloc (LDCs). They argued that only a new legal agreement eventually covering emissions from all countries - particularly fast-growing major emitters such as China - could keep the rise in global average temperatures since pre-industrial times below 20C, the internationally-agreed threshold. "If there is no legal instrument by which we can make countries responsible for their actions, then we are relegating countries to the fancies of beautiful words," said Karl Hood, Grenada's Foreign Minister, speaking for Aosis. "While they develop, we die; and why should we accept this?"

2012 CROCODILE FORUM MEETING DATES

10 February Silulumanzi | 13 April SAN Parks | 8 June MMC
10 August ICMA | 9 October DWA
9 November Irrigation Boards



2012 NATIONAL WATER WEEK celebration

Right:
By Ms. Leketso Khaile, community officer for Crocodile sub-catchment

The national water week celebration was held on the 8th of March 2012 at Kanyamazane Stadium under the theme "Water is life, respect It, conserve it, enjoy it". The national water week was celebrated in a form of a Fun Run and a 3km fun walk. The categories were a 10km and 4km Marathon then the fun walk was a 3km. The event was championed by the Department of Water Affairs (DWA) in partnership with the Inkomati Catchment Management Agency (ICMA), the Department of Culture, Sports and Recreation (DCSR), SembCorp Silulumanzi, Department of Education, and LoveLife, South African Police Services (SAPS), Transvaal Suger Board (TSB) and Mbombela Local Municipality.

The event was a huge success. People came in numbers, with a total of 1196 participants. Most participants were primary school Learners from around Kanyamazane, Old Age Centers, government employees and some community members. A total of 80 volunteers assisted with marshaling and support at the water point.

It needs to be acknowledged that Ms. Lillian Masilela and Mr. BK Mokoena, ICMA governing board members, also participated. They made us proud and posed a challenge to us to consider doing some fitness exercises. This event was the first of its kind and it was evidence to all who participated that our people understand that we need to preserve water as our precious natural resource.

Trophies, medals, and certificates were given to participants as a token of appreciation for thier participation.

"Bravo to all participats, you made the event possible"

Above:
The team during the endless preparatory meetings that led to the success of this event.

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"Indeed water is life lets respect it, love it and preserve it."

The event was officially opened by the National Anthem. This leaner led the crowd with her mesmerizing voice. What a talent!

Ms. Lillian Masilela and Mr. BK Mokoena, both in Yellow at the ICMA water point.

Sported here are some of the young participants in the fun run.

Above: Some of the prizes for the participants

A play performance by the second prize winners of "Baswa le metsi" national Schools competitions. The tent in the background is housing the senior citizens who participated in the fun walk.

Left: A councilor from Mbombela Local Municipality gave a speech on behalf of the Executive Mayor.

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