

WATER NEWS

2023/24 1ST EDITION

DAY

REVOLUTIONISING WATER MANAGEMENT

PAGE 15

CLIMATE CHANGE STRATEGY

PAGE 39

BLUE DEAL

PAGE 34-37

WATER SECURITY STRATEGY

PAGE 32-33

FOR THE LOVE OF WATER

SURFACE WATER ASSESSMENT & MONITORING

PAGE 22-23

RESOURCE QUALITY MONITORING PROGRAM

PAGE 12-14

EUTROPHICATION STATUS

PAGE 16-17

CAREER GUIDANCE

PAGE 42-43



VISION

Sufficient, equitable and quality
water resources for all in the Inkomati-Usuthu
Water Management Area

MISSION

To efficiently manage water resources by empowering
our stakeholders in our quest to contribute towards
transformation by promoting equal access to water and
protecting the environment

VALUES

Integrity
Batho Pele (Stakeholders Orientation)
Accountability
Diversity
Transparency

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IUCMA



Inkomati-Usuthu CMA

CONTENTS

WATER NEWS 2DAY

- 04 Inkomati-Usuthu Water Management Area
- 05 Lucma gets clean Audit For 2022/23

- 06 - 07 Some Dams in the Inkomati-Usuthu Water Management Area

- 08 - 09 Foreword by the CEO
- 10 - 11 Editor's Note
- 12 - 14 Resource Quality Monitoring Program

- 15 Water User Associations

- 16 - 17 Eutrophication Status
- 18 - 21 Surface Water Status
- 22 - 23 Surface Water Assessment and Monitoring
- 24 - 25 Groundwater

- 26 Breaking News: Mamokebe Mine Fined
- 27 Report Water Pollution Incident

- 28 - 29 Water Use and Wastewater

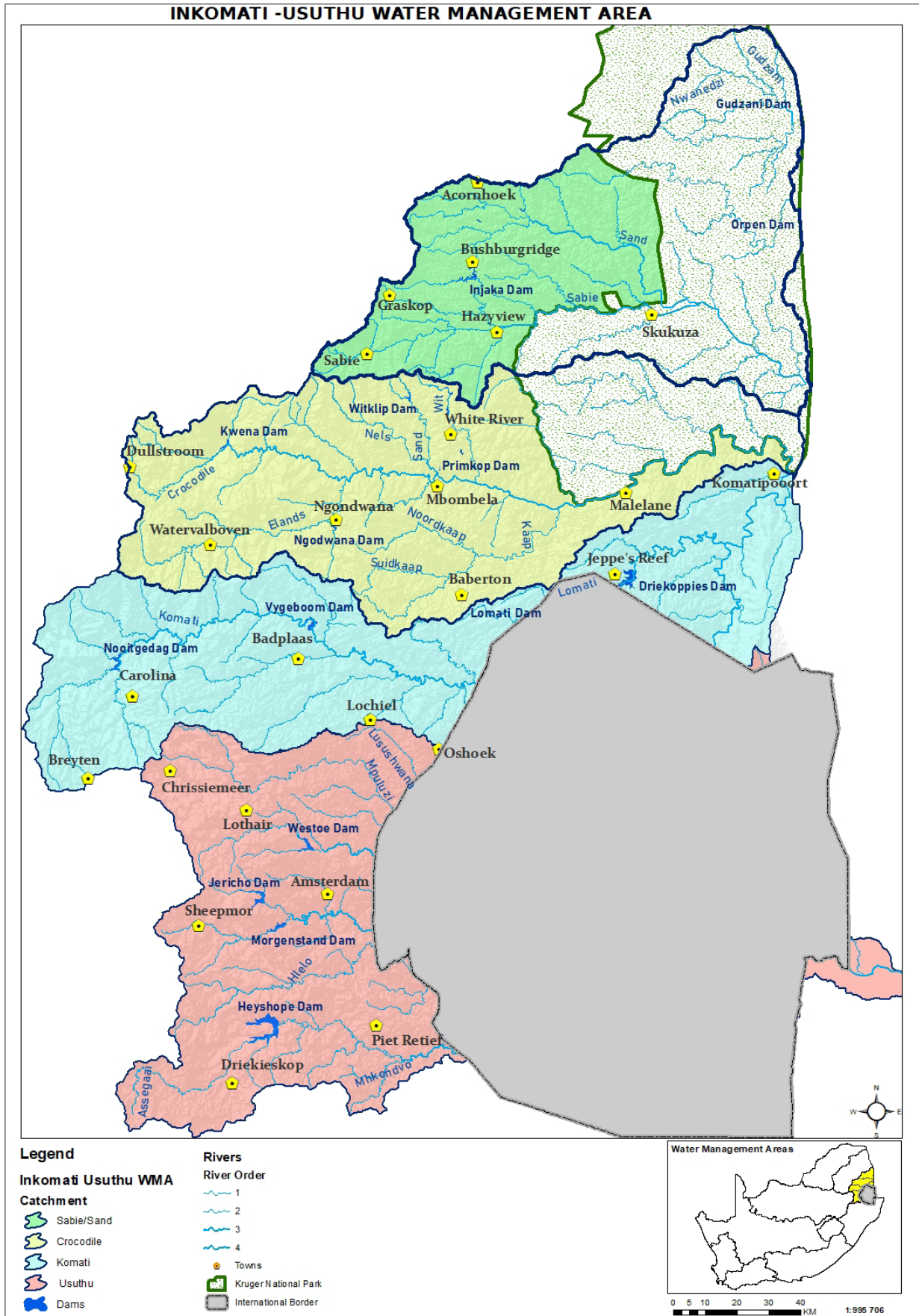
- 30 - 31 National Science Week 2023
- 32 - 33 Water Security Strategy
- 34 - 37 Blue Deal

- 38 River Operations Web Portal
- 39 Climate Change Strategy

- 40 Water Saving Tips

- 42 - 45 Career Guidance
- 46 - 47 Disaster Management

INKOMATI-USUTHU WATER MANAGEMENT AREA





IUCMA GETS CLEAN AUDIT FOR 2022/23

*“Unqualified audit opinions
since inception
2006-2023 and still going strong”*

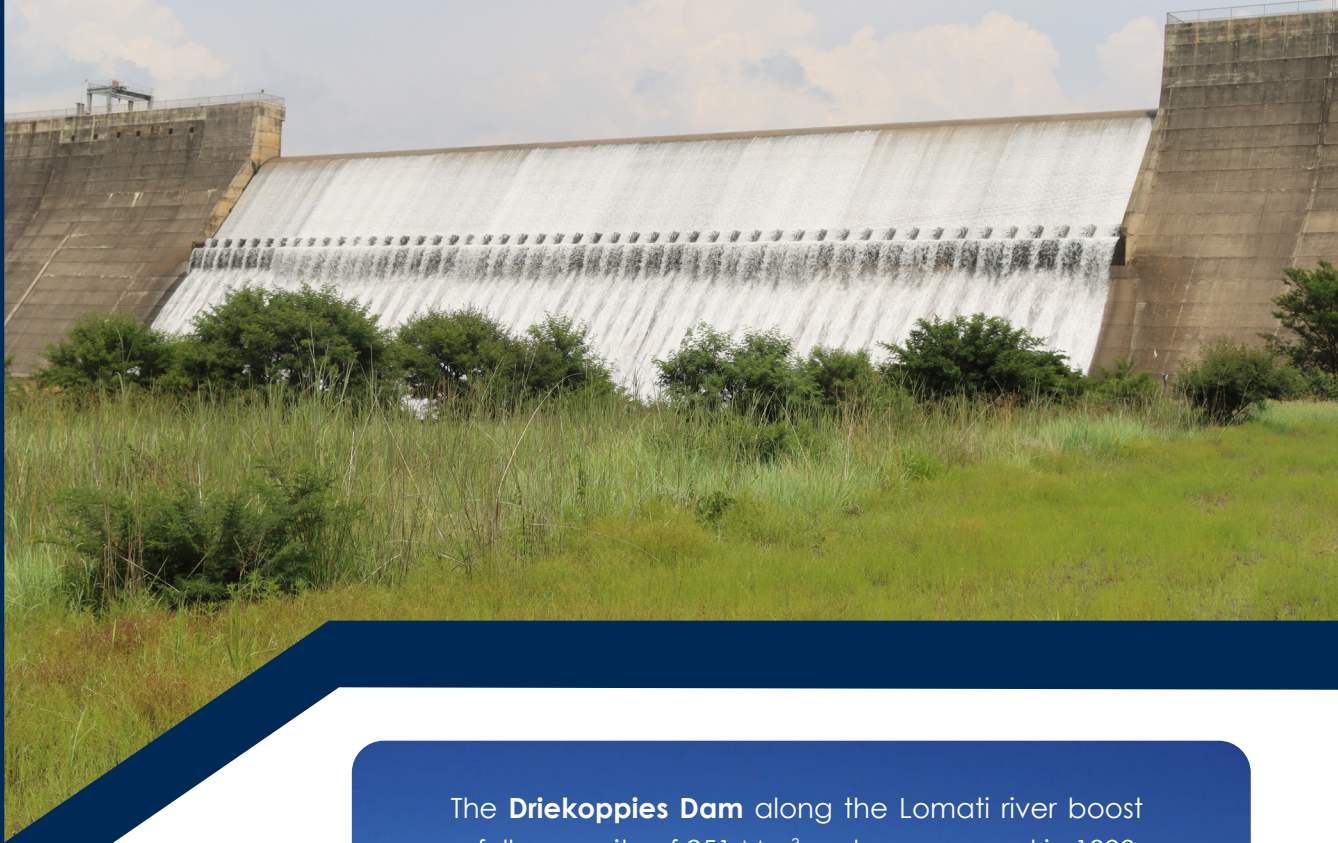
SOME DAMS IN THE INKOMATI-USUTHU

WATER MANAGEMENT AREA

The **Jericho Dam** in Mpama river was built in 1966/68 with a full capacity of 59.5 mil.cub.m.

Injaka Dam along the Marite river boost a full capacity of 124 mil. cub.m.

Located along Crocodile river, the **Kwena Dam** is a combined gravity and arch type boosting a total catchment area of 954 sq.km.



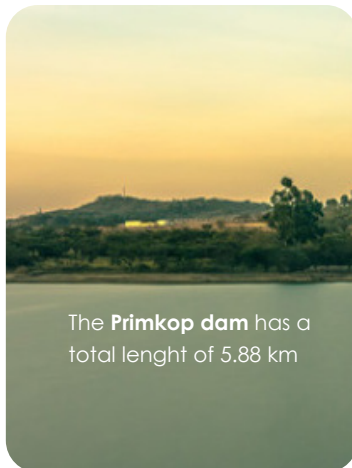
The **Driekoppies Dam** along the Lomati river boost a full capacity of 251 Mm³ and was opened in 1998.



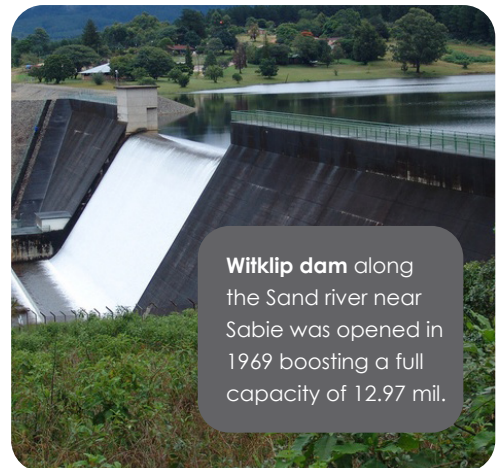
Da Gama Dam was established in 1977 along the Witwaters river and boost a full capacity of 13.58 mil.cub.m.

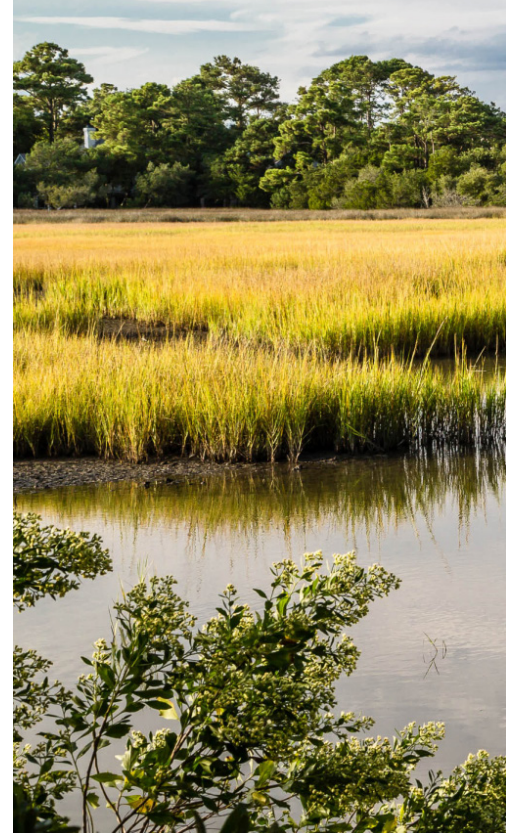


The **Primkop dam** has a total lenght of 5.88 km



Witklip dam along the Sand river near Sabie was opened in 1969 boosting a full capacity of 12.97 mil.





FOREWORD BY THE CEO:

Mr Lucky Charles Mohalaba

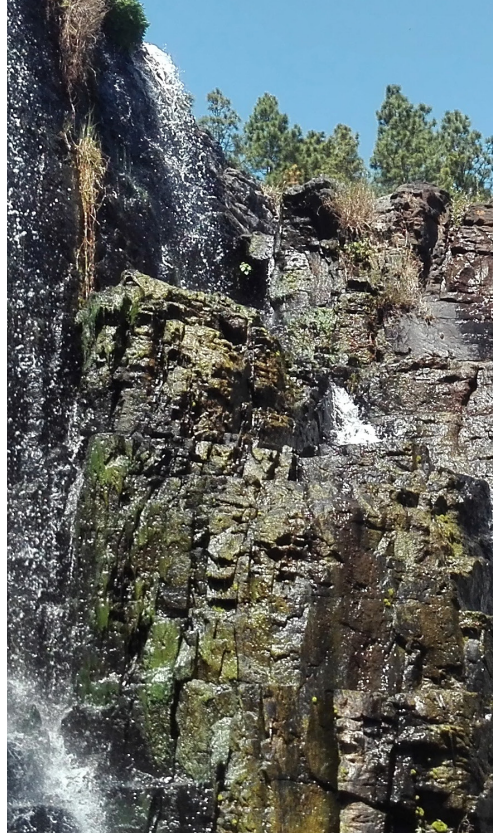
Dear Valued Stakeholders,

I am delighted to share with you the remarkable achievements of the Inkomati-Usuthu Catchment Management Agency (IUCMA) in our latest newsletter. As we reflect on the past year, it fills me with immense gratitude to announce that we have achieved a clean audit for the 2022/23 financial year. This accomplishment underscores our unwavering commitment to responsible financial management and transparency.

In these challenging times, when accountability and stewardship of public funds are of utmost importance, the clean audit signifies that every cent entrusted to us has been meticulously accounted for and put to the best possible use. It reflects the dedication and diligence of our team as we strive to safeguard the precious water resources within our area of operation.

Furthermore, our commitment to enforcing water legislation remains resolute. The Compliance Monitoring and Enforcement (CME) article sheds light on a significant legal action, where the Piet Retief Regional Court imposed a hefty fine of R300,000 on Mamokebe (Pty Ltd) Mining Company for contravening National Water Act legislation. This sends a clear message that we will not tolerate infringements that jeopardise our water resources.

I am particularly excited to share our Disaster Management approach, where we seamlessly integrate technology and data analysis as a decision-making tool to protect both water resources and the communities that depend on them. This article reveals the complex nature of real-time data transmission, advanced data management systems, and collaborative advisory services that underpin our success.



Amid the intensifying climate crisis, IUCMA continues to be a trailblazer in water management, skillfully navigating the complexities of climate change impacts within our water Management Area (WMA). Our strategies stand out as examples of resilience, adaptability, and cooperation during these challenging times.

Our journey toward water security within the region is another significant milestone covered in this newsletter. We have taken significant strides in water resource planning and operations, paving the way for a more secure water future.

Last but not least, we have some exciting news to share about the transformation of water management governance through the establishment of Water User Associations (WUAs). This forward-thinking initiative, led

by the Minister of Water and Sanitation, is poised to have a positive impact on our communities and environment by promoting inclusivity and collaboration. I, therefore, invite you to explore this newsletter, which highlights our team's dedication and passion for managing and safeguarding our precious water resources.

Your support and engagement are greatly appreciated as we collaboratively strive for a sustainable water future.

Warm regards,

LC Mohalaba, CEO



Editor's *Note*

BY MS SYLVIA MACHIMANA



Dear Reader,

In this edition of our newsletter, we are proud to present an overview of the IUCMA's recent undertakings and achievements. Our dedicated team has been hard at work, striving to ensure the responsible management and preservation of our precious water resources. As you read through the following articles, you will gain a deeper understanding of the remarkable progress made by IUCMA in various aspects of water resources management.

- **Blue Beal Project:** Discover what the South African Blue Beal project is all about, and our dedicated efforts in the Crocodile Blue Deal chapter. This initiative showcases our dedication to conserving crucial water ecosystems by focusing on the operations of Wastewater Treatment Works (WWTW) of municipalities along the Crocodile River catchment. Our goal is to enhance their Green Drop status, marking a meaningful stride towards securing these vital resources for future generations.

- **Compliance Monitoring and Enforcement (CME):** In this article, we highlight our relentless commitment to enforcing water legislation. The hefty fine imposed on Mamokebe (Pty Ltd) Mining Company by the Piet Retief Regional Court serves as a firm reminder that we take violations of water laws seriously. We are committed to our mission to protect water resources from unlawful exploitation.
- **Disaster Management:** Our approach to Disaster Management is a highlight of this edition. We demonstrate how advanced technology, real-time data, and collaborative advisory services are seamlessly integrated to protect both water resources and the communities that depend on them. The intricacies of our Disaster Management efforts are shown in this article, highlighting our dedication and swift effective action when required.
- **Eutrophication Status in the Water Management Area:** Our real-time data indicates that recreational activities in most areas within our Water Management Area (WMA) are generally safe. However, we draw your attention to the caution required at Corumana Dam in Mozambique due to detected high-risk level cyanobacteria. Safety remains a top priority for us, and we encourage caution when engaging in water-related activities.
- **Water Security Strategy:** IUCMA's strides in water resource planning and operations are showcased in our Water Security Strategy article. The Agency is committed to forging a path toward water security within our WMA, ensuring that water resources are available when and where they are needed most.

- **Surface Water Assessment:** This edition also spotlights the 2022-23 hydrological year, which witnessed above-normal rainfall levels. The data provided illustrates the stark contrast to the hydrological trends of the past decade, underlining the importance of our ongoing efforts in water resource management.
- **Water User Associations (WUA):** We are pleased to announce a shift from single-sector Irrigation Boards to multi-sector Water User Associations (WUAs). This transition aims to create a more inclusive and collaborative approach to Integrated Water Resources Management (IWRM), benefiting all water users within the catchment. This project is ongoing, and we will keep all stakeholders informed about its progress.

We invite you to explore these articles and gain insights into IUCMA's commitment to ensuring sound water resources management.

Warm regards,

S Machimana, Editor



**QR CODE FOR THE
IUCMA WEBSITE**

IUCMA's Resource Quality Monitoring Program



*Mr Marcus Selepe (left) and
Ms Caroline Tlowana (right) from
Resource Quality Monitoring*

In South Africa, efficient management of water resources is a matter of paramount importance, as outlined in the National Water Act of 1998 (Act 36 of 1998). Chapter 14 of this act mandates the Minister to establish national monitoring systems to collect relevant data and information. This information must be comprehensive as well as responsive to both current and future challenges in managing the country's water resources. Within this framework, the Inkomati-Usuthu Catchment Management Agency (IUCMA) plays a pivotal role by conducting surface water quality and quantity monitoring programs within its water management area (WMA). These programs contribute to the broader national monitoring system.

Understanding Resource Quality

The National Water Act indicates that "resource quality" encompasses a number of aspects related to water resources, including:

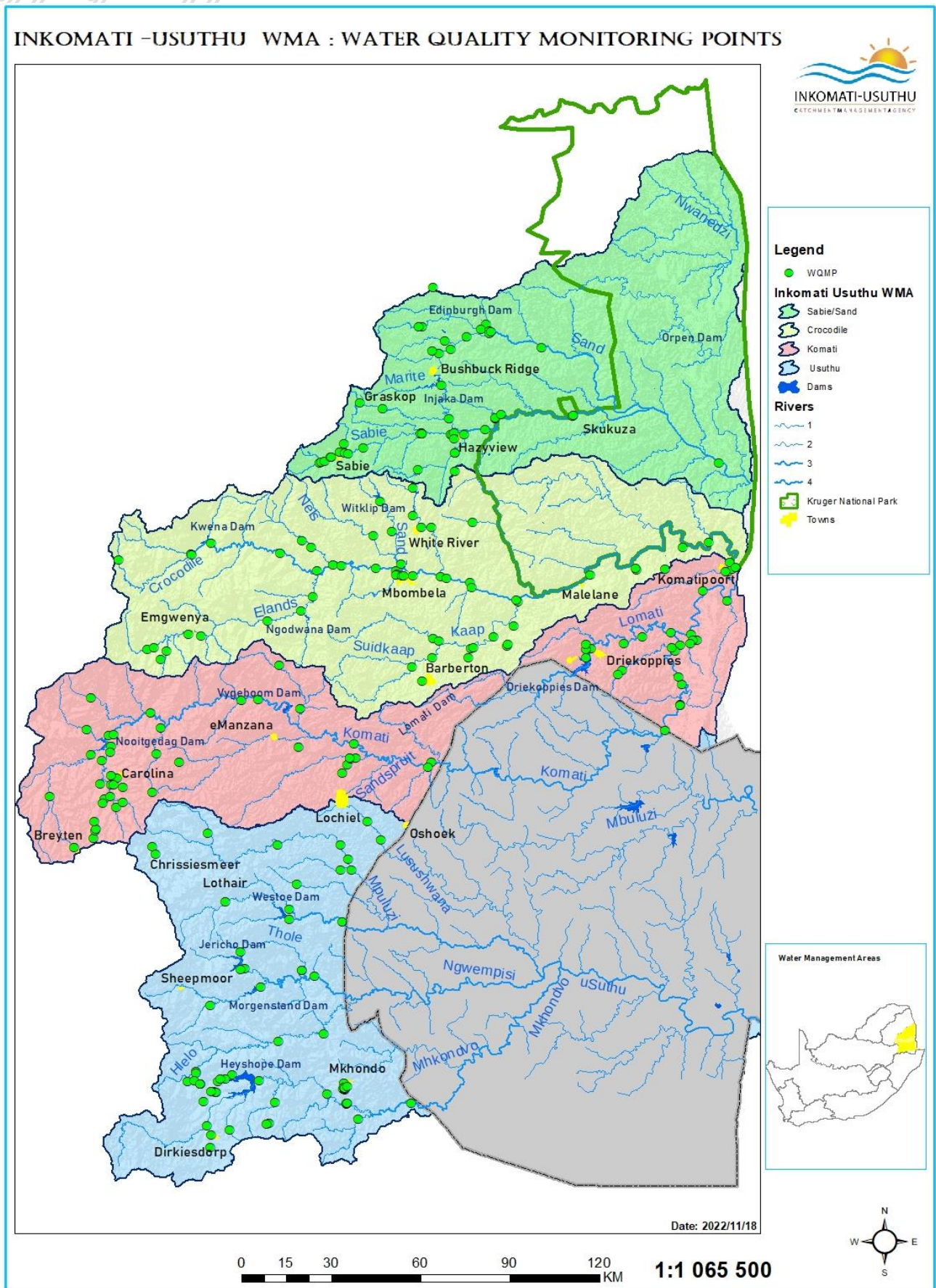
- (a) The quantity, pattern, timing, water level and assurance of instream flow.
- (b) Water quality, which refers to the physical, chemical and biological characteristics of water.
- (c) The characteristics and condition of instream and riparian habitats.
- (d) The characteristics, conditions and distribution of aquatic biota.

Surface Water Monitoring Program

The primary objective of IUCMA's Surface Water Monitoring Program is to measure, assess and report on the compliance status and trends of its water resources. This includes both quantity and quality aspects. The aim is to generate data that supports balanced decision-making, strategic planning, and sustainable management, protection and utilization of water resources.

Between April and June 2023, IUCMA conducted an extensive water quality monitoring program at 270 sites. The distribution of the monitoring sites across the WMA is shown in Figure 1. The program encompasses physical, chemical and microbiological monitoring, with data being captured using the Water Management System (WMS) spreadsheets, which are subsequently submitted to the Department of Water and Sanitation's Resource Quality Information System (RQIS) directorate.

Figure 1: Water quality monitoring sites in the Inkomati-Usuthu WMA.



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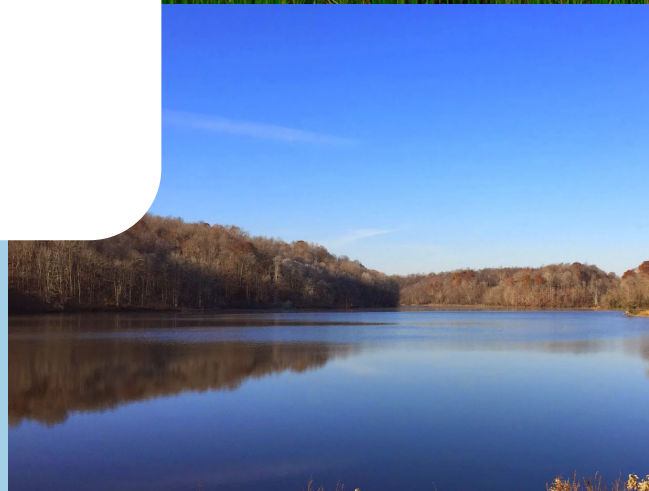
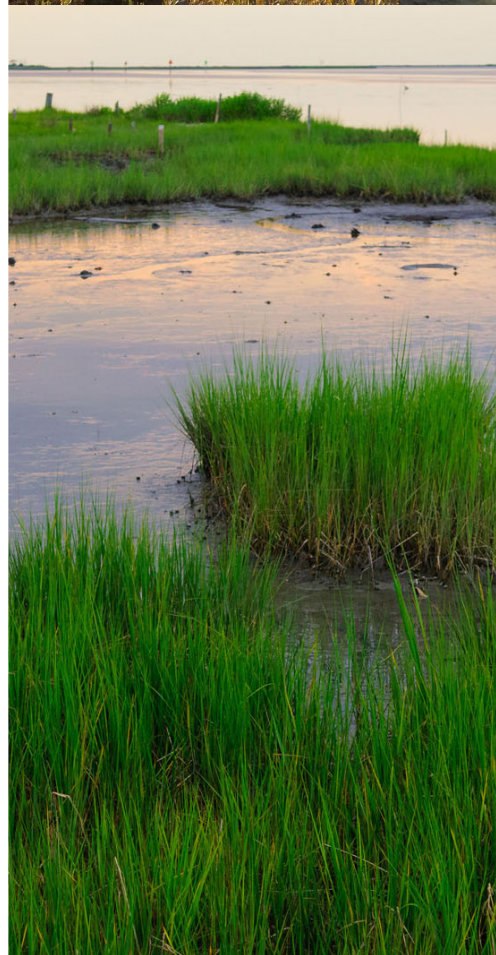
Monitoring Methods

The Surface Water Quality Monitoring Program employs multiple methodologies, including:

- **Grab sampling monitoring sites):** Monthly water samples are collected and analyzed by a South African National Accreditation System (SANAS) accredited laboratory.
- **Digital eutrophication monitoring (11 dams):** The Cyanolakes application is used to monitor the eutrophication level in 11 dams.
- **Continuous monitoring (5 monitoring sites):** Telemetric water quality probes record measurements every three hours in the Inkomati-Usuthu WMA. Data is transmitted to ZedNet via a network, and other data is downloaded using Win-Situ software.

Specific variables of concern vary from one monitoring point to another within the respective catchment areas. These variations are based on the type of land use activities in the area, the nature of authorized water use, and the Resource Quality Objectives (RQOs) in a specific catchment area.

In conclusion, IUCMA's commitment to thorough monitoring of surface water quality and quantity is integral to safeguarding South Africa's precious water resources. By adhering to the requirements set forth in the National Water Act, IUCMA ensures that it has the necessary data and information to make informed decisions to ensure sustainable water resource management and protection.



REVOLUTIONISING WATER MANAGEMENT: FROM IRRIGATION BOARDS TO WATER USER ASSOCIATIONS



*Mr Hasani Makhubele
from Institutions and Participation*

We are excited to bring you some important news on the water management front that is set to impact our communities and environment positively. In a visionary stride of the Minister of Water and Sanitation, a project is underway to reshape the way we manage irrigation water: the current single-sector irrigation boards are transitioning into a more inclusive and collaborative type of organisation, known as Water User Associations (WUA)

Understanding the Project

The aim of this initiative is to create a unified approach to managing irrigation water and fostering cooperation among all water users in a defined Water Management Area. This collective effort will be organized under newly established Water User Associations to ensure a more equitable and sustainable distribution of this precious resource.

Why Water User Associations Matter

The advent of WUAs holds immense promise. By bringing together all authorized water users, be it for agricultural, industrial or domestic purposes, this approach seeks to streamline and optimize water usage. The transition has been made possible by the National Water Act (Act 36 of 1998), with the legislation providing the framework for these associations to take shape and to function effectively.

Simplified Process

Authorized water users will be required to become members of these newly established water user associations. This step is vital in ensuring a well-coordinated and cooperative system of water management. The transformation will occur once the proposed water user associations are officially recognized under the National Water Act, which will signify a momentous shift towards more efficient water governance.

Central Role of Inkomati-Usuthu Catchment Management Agency

The Inkomati-Usuthu Catchment Management Agency will play a crucial role in this transformative journey. This agency will oversee the amalgamation of the 23 existing irrigation boards into a few streamlined water user associations. This management approach aligns with the provisions outlined in Schedule 4 of the National Water Act.

Get Involved

For those eager to learn more about this transformative process or require clarification, we encourage you to contact Mr Hasani Makhubele at hasanim@iucma.co.za or by calling 062 156 5050. Mr Makhubele will be delighted to provide you with insight, updates and answers to any questions you may have.

In conclusion, the journey from irrigation boards to water user associations is a leap forward in effective water management. This change promises to enhance collaboration among water users and also pave the way for more sustainable and responsible water usage. Let's look ahead to a future where we manage our vital water resources collectively and wisely.

Stay tuned for more updates as this project unfolds and delivers on its transformative potential.

EUTROPHICATION STATUS

IN THE INKOMATI USUTHU WATER MANAGEMENT AREA



*Mr Marcus Selepe (left) and
Ms Caroline Tlowana (right) from
Resource Quality Monitoring*

Understanding Eutrophication

Eutrophication is a natural process that is characterized by nutrient enrichment in bodies of water, particularly nitrogen and phosphorus compounds. This enrichment can stimulate the growth of algae and aquatic plants, which leads to various undesirable consequences, including deteriorating water quality. However, human activities (such as agricultural runoff, erosion, pollution, and industrial waste, can exacerbate eutrophication) accelerate its effects. This includes the development of harmful algal blooms, like blue-green algae, which can have a detrimental impact on both water quality and ecosystems.

Monitoring Eutrophication

IUCMA is committed to monitoring and managing eutrophication in the Inkomati Usuthu WMA, to safeguard our water resources. The Agency utilizes digital eutrophication monitoring tools, such as

the Cyanolakes web application, to track the development of algal blooms in real-time. This technology complements the existing National Eutrophication Monitoring Programme (NEMP).

Trophic Status and Criteria

To assess the eutrophication status of our dams, we employ trophic status classifications and criteria. The following classifications help us understand the nutrient levels and productivity of aquatic ecosystems:

- **Oligotrophic:** Low nutrient levels, not highly productive in terms of aquatic life.
- **Mesotrophic:** Intermediate nutrient levels, moderately productive, but showing early signs of water quality problems.
- **Eutrophic:** Rich in nutrients, very productive and exhibiting increasing signs of water quality problems.
- **Hypertrophic:** Extremely high nutrient concentrations, where physical factors govern plant growth and result in severe and continuous water quality problems.

We also consider criteria such as chlorophyll-a concentrations and cyanobacteria levels to determine the trophic status of our water bodies.

Cyanobacteria Risk Levels

Cyanobacteria - commonly known as blue-green algae - can pose health risks to humans and animals. Cyanobacteria risk levels are categorized based on chlorophyll-a concentrations, i.e.:

- Low: 0 - 10 µg/L chlorophyll-a from cyanobacteria.
- Medium: 10 - 50 µg/L chlorophyll-a from cyanobacteria.
- High: 50 - 100 µg/L chlorophyll-a from cyanobacteria.
- Very High: > 100 µg/L chlorophyll-a from cyanobacteria.

These levels help us assess the potential health risks associated with the presence of cyanobacteria.

Recent Findings

Our monitoring efforts during the period 1 April 2023 to 30 June 2023 revealed promising results. All eleven major dams within the WMA maintained an oligotrophic status, which indicates low nutrient levels with an average chlorophyll-a concentration of less than 7 µg/L. Importantly, no cyanobacteria (which pose an immediate danger to human health) were detected during this period.

Recreational Activities

Based on these findings, it was deemed safe to engage in recreational activities that require either full or partial contact with the water, except for Heyshope Dam, where a high health risk from cyanobacteria was detected. Full-contact use was not recommended in dams with medium levels of cyanobacteria during this period, but partial-contact use was considered safe.

Cyanolakes Real-Time Results

The real-time data as of 30 June 2023 indicates that recreational activities that require either full or partial contact with the water are generally safe across our WMA, except Corumana Dam in Mozambique. Corumana Dam exhibited a mesotrophic status with a very high-risk level of cyanobacteria detected, which necessitated caution in engaging in water-related activities at this location.

Please stay informed about eutrophication status and cyanobacteria risks in our region, and always prioritize safety when engaging in water-based activities. Let's work together to protect and preserve our valuable water resources.

SURFACE WATER

AVAILABILITY STATUS



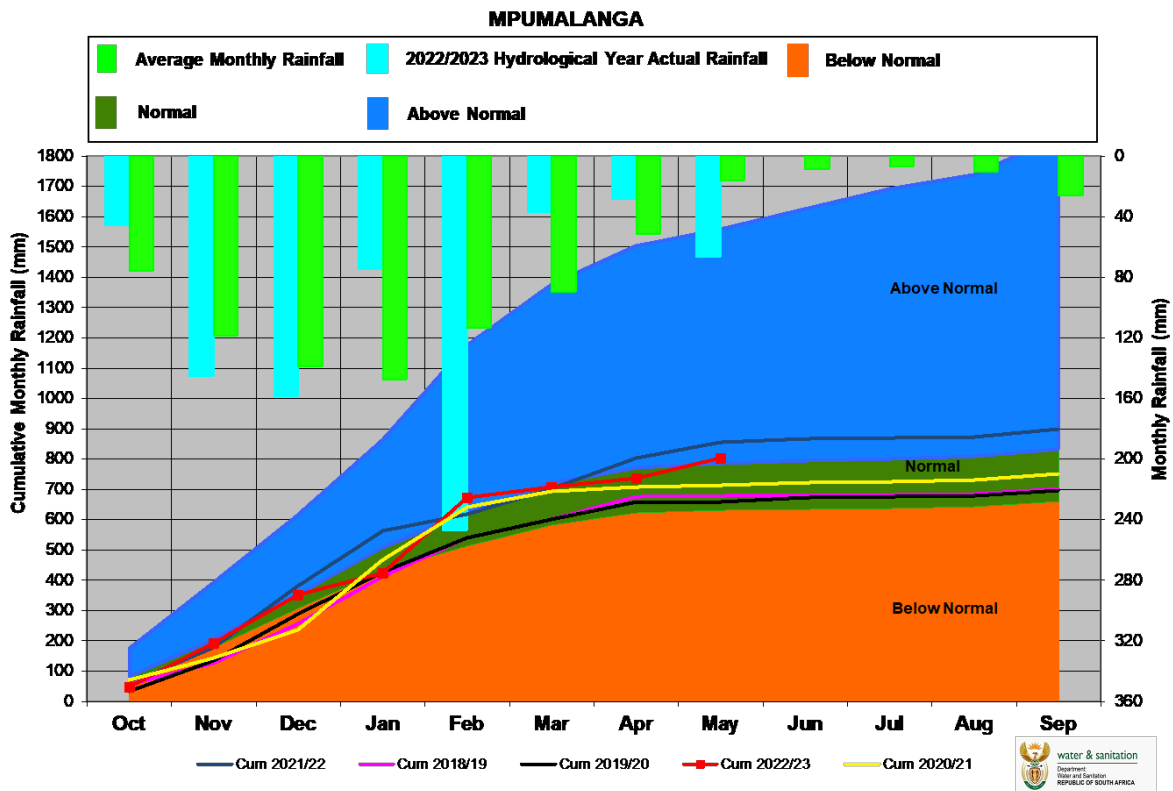
*Dr Tendai Sawunyama (left) and
Mr Siphon Magagula (right) from Resource
Planning and Operation*

A GLIMPSE INTO THE SURFACE WATER RESOURCES OF THE WATER MANAGEMENT AREA: UNVEILING THE 2022-23 HYDROLOGICAL YEAR: A REMARKABLE SHIFT IN WATER DYNAMICS

In a groundbreaking revelation, the Inkomati-Usuthu Catchment Management Agency (IUCMA) divulged the intriguing findings of its comprehensive analysis of surface water resources. The spotlight rests on the 2022-23 hydrological year, which has proven itself as one of the most water-rich periods in recent history. The deluge of above-normal rainfall throughout this period is indicated in Figure 1 and stands in stark contrast to the hydrological trends of the past decade. This meteorological boon played a pivotal role in rejuvenating both the Water Management Area (WMA) and the province at large, helping them recover from the long-standing grip of the severe drought of 2015-2016.



Figure 1: Mpumalanga rainfall analysis



Continues on page 20 and 21



Fluctuations in River Flow and Aquatic Abundance

In a significant shift, the flow level of the major rivers – the Crocodile, Sabie, Komati and Usuthu Rivers – have shown a steady rise since January 2023, but gradually receded by March 2023, which signified the end of the rainy season. Impressively, both the Sabie and Crocodile systems were spilling, requiring releases. Moreover, given the anticipated annual water allocation for the year starting 1 May 2023, the WMA's systems appear to be safe from water usage restrictions until the upcoming rainy season.

Resilient Reservoirs and Envisioning the Seasons Ahead

Going into the winter season of the 2022-2023 hydrological year, the key dams in the Inkomati-Usuthu WMA reflect a very positive scenario: nearly all of them are above the 80% storage capacity level. This astonishing performance is shown in Table 1 below and underlines the positive results of the extensive rainfall during winter months.

Table: The current water storage status of the major dams in the Inkomati-Usuthu WMA, as of 7 August 2023

Dam	7 August 2023 - % FSC	Purpose/Towns
Da Gama Dam	99.8	Irrigation
Inyaka Dam	100.3	Irrigation, domestic use (Bushbuckridge)
Klipkopjes Dam	99.6	Irrigation, domestic use (White River)
Kwena Dam	100.2	Irrigation, domestic use (Mbombela, Nkomazi)
Longmere Dam	100.4	Irrigation, domestic use (White River)
Nooitgedacht Dam	94.5	ESKOM
Primkop Dam	101.1	Irrigation, domestic use (White River)
Heyshope Dam	99.5	ESKOM
Jericho Dam	84.3	ESKOM
Morgenstond Dam	99.1	ESKOM
Westoe Dam	66.3	ESKOM
Vygeboom Dam	100.3	ESKOM
Witklip Dam	100.2	Irrigation, domestic use (White River)
Lomati Dam	96.0	Domestic (Barberton)
Driekoppies Dam	100.8	Irrigation, domestic use (Nkomazi LM)



Reading the Skies: Weather Insight and Implications

A noteworthy phenomenon emerges from the latest South African Weather Service (SAWS) seasonal climate watch for August 2023 to December 2023: the El Niño-Southern Oscillation (ENSO) currently languishes in an El Niño state. It is predicted that this state will endure through most of the upcoming summer months. While ENSO's initial impact seems to be limited, it is predicted that its influence might intensify as summer progresses. Early spring forecasts predict above-normal rainfall for most regions, but western parts might receive below-normal rainfall during mid-spring and late spring.

Water Conservation: A Continual Priority

Despite the abundant water reserves in the region's primary river systems and the anticipation of above-normal

rainfall in the upcoming season, the IUCMA is unwavering in its commitment to promoting prudent water usage. The agency is poised to uphold compliance and enforcement measures while encouraging the community to embrace water conservation and demand management strategies.

As we reflect upon this remarkable shift in the hydrological landscape, let's remember that even in times of plenty, responsible stewardship of our water resources remains paramount. Stay informed, stay vigilant, and let's all ensure a sustainable and thriving water future for all.

Surface Water Assessment & Monitoring



*Dr Tendai Sawunyama (left) and
Mr Siphon Magagula (right) from Resource
Planning and Operation*

HARNESSING PRECIOUS RESOURCES FOR A SUSTAINABLE FUTURE: SURFACE WATER ASSESSMENT AND MONITORING

As the world grapples with the challenges of climate change and increasing water demands, effective water resource planning and management have become essential to ensuring the sustainable allocation of this invaluable resource. In the enchanting landscape of the Inkomati-Usuthu Catchment Management Agency (IUCMA), a pivotal role is being played to ensure that water resources are harnessed, monitored and managed with precision. In this article, we delve into the intricate tapestry of surface water assessment, river level monitoring and dam level status, and unveil the agency's efforts to secure water availability for both present and future generations.

1. Seasonal Climate Forecast

As we peer into the climate crystal ball issued by the South African Weather Service (SAWS) on 30 June 2023, a fascinating picture emerges. The El Niño-Southern Oscillation (ENSO) - a climatic phenomenon that has far-reaching implications - is transitioning into a warm El Niño-like phase. Early predictions suggest that this El Niño event might linger through the upcoming summer months and possibly exert a moderate to strong influence on weather patterns. The multi-model rainfall forecast suggests above-normal precipitation across much of the country during winter and early spring but with specific regions bucking this trend. Temperatures are also projected to maintain above-normal levels nationwide. These insights underscore the importance of implementing adaptive water management strategies that are capable of navigating the uncertainties woven into our climate fabric.

2. Catchment Rainfall Status

The rhythm of the water's dance is closely observed through the lens of rainfall stations peppered across the water management area (WMA). In the Sabie-Sand catchment area, the Exeter Rainfall Station whispers its tale of variance - lower rainfall than historical averages in April and June, but a triumphant surge in May. Meanwhile, the Sudwala Rainfall Station in the Crocodile catchment area showed abundant rainfall in May, but below-average figures in April and June. The same pattern was observed at the Nelshoogte Rainfall Station (also in the Crocodile catchment) and the Hartbeeskop Rainfall Station in Usuthu catchment.

3. River Level Status

The river's heartbeat is being monitored carefully, which provides insight into its vigour and vitality. In June 2023, a meticulous survey of 25 river flow gauging sites took place, to determine the operational health of these monitoring sentinels. The symphony of flowing waters reflects a decrease from April to June, which echoes the natural cadence of the seasons. Notably, the Usuthu River's flow at the Assegai River takes centre stage, as it shows a decline that demands prudent management. As our rivers thrive, it's crucial to remember our international obligations. This highlights the importance of keeping a careful balance between our well-being and our obligations.

4. Dam Level Status

Dams are the key reservoirs of water security. In the Inkomati-Usuthu WMA, most dams are above 90% capacity, although the Westoe and Jericho Dams wear more modest attire. However, together they mirror a state of relative plenty, which are testament to the stewardship exercised by IUCMA.

In managing water resources, IUCMA plays a crucial role in maintaining the balance. They oversee the rainfall, river levels, and dam statuses, making sure everything works together smoothly. Dealing with climate challenges and people's needs, the agency acts as both protector and provider, ensuring a steady water supply. When looking at the data from rainfall stations, measuring sites, and dam levels, it is evident that water resource planning relies on information, planning, and dedication.

THE HIDDEN RESERVES:

GROUNDWATER ASSESSMENT AND MONITORING



Dr Tendai Sawunyama (left) and Dr Teboho Shakahane (right) from Resource Planning and Operation

NURTURING THE SUBTERRANEAN LIFELINES TO ENSURE SUSTAINABLE WATER MANAGEMENT

As the world navigates a time characterized by unpredictable climate patterns and growing water demands, wise management of our underground water resources has never been more critical. In the heart of the enchanting landscape of the Inkomati-Usuthu Catchment Management Agency (IUCMA), an intricate network of groundwater assessment and monitoring is springing up. In this article, we delve into the meticulous work done to track groundwater dynamics and its vital contribution to streamflow. We reveal how these efforts ensure a steady flow of life-giving waters in the Usuthu, Komati, Crocodile, and Sabie-Sand catchment areas.

1. Groundwater Assessment and Monitoring: Unveiling the Hidden Veins

The IUCMA orchestrates a remarkable symphony of groundwater monitoring, employing a network of 57 geo-sites, including boreholes owned by both the Agency and Department of Water and Sanitation (DWS) that are spread across the Inkomati-Usuthu Water Management Area (WMA). These silent sentinels provide insight into the ebb and flow of the subterranean world that significantly influences surface water resources and streamflow.

In this symphony, the Usuthu catchment area takes centre stage. Careful regular observation of 12 boreholes within the WMA, coupled with DWS's monthly monitoring of 52 boreholes shared across the Komati, Crocodile and Sabie-Sand catchments, paints a vivid picture of the intricate role of groundwater in shaping water availability. Notably, the IUCMA oversees monthly monitoring of seven boreholes shared with DWS, which showcases a harmonious partnership in safeguarding water resources.

2. **Usuthu Catchment: Balancing the Subterranean Pulse**

Water management revolves around the ever-changing relationship between groundwater levels and the flow of rivers. Take the Ngwempisi River in Merriekloof, for example – here, we can see how groundwater behaves. When groundwater levels drop, it signals the dry season approaching. But it also means there's less water flowing in the river, showing how closely these two phenomena are connected.

The situation in Zandbank (Assegai River) is quite interesting. Groundwater levels are now higher than they were last year, showing how the region is recovering from the El Niño-induced drought of 2015/2016. This increase in groundwater is also contributing more to the river's flow, indicating a positive renewal. This interaction emphasizes the important role of groundwater in meeting our international obligations.

3. **Komati Catchment: Rediscovering Resilience**

The Komati catchment area tells a story of restoration. Groundwater levels have traced a path of recovery from the 2015/2016 drought and now stand higher than in the previous year (2022). However, the melody shifts during the dry season, as decreasing groundwater levels reflect the seasonal ebb. Strikingly, while groundwater levels decline, the groundwater contribution to streamflow takes a different trajectory, as it declines according to historical patterns. This divergence signals the complexity of factors that shape streamflow, including intricate transmission losses.

4. **Crocodile Catchment: The Resonance of Recovery**

The story of the Crocodile catchment area is a story of renewal. Groundwater levels are starting to look normal again, unlike the previous year. This means we're slowly recovering from the drought in 2015/2016. As the groundwater levels go down, it's because it's getting dry, just like the season. But, interestingly, the amount of groundwater flowing into the river is higher than it was in 2022. This shows how these hidden reserves are strong and help us meet our international obligations.

5. **Sabie-Sand Catchment: Depths of Dependability**

In the Sabie-Sand catchment area, Lower Sabie demonstrates its reliability. Groundwater levels have steadied, showing signs of recovery from a previous drought. This is evident in how much groundwater is contributing to streamflow, which is stronger compared to the previous year. These hidden resources provide hope, as they consistently help the IUCMA meet its international obligations.

Conclusion

Illuminating the Depths: A Unified Message

The stage is set, and the message is clear. Across the catchment area, groundwater levels tell a story of recovery, resilience and reliability. This symphony is captured in data and analysis and shapes the delicate balance between international water obligations, ecosystem needs, and water resource utilization.

As we explore groundwater assessment and monitoring, we see how IUCMA takes care of our water. Every drop, every shift in groundwater, and every change in river flow tells a story of sustainability. The ups and downs of these hidden reserves shape our water world and give us a peek into how nature keeps water flowing for generations to come

Breaking News:

Mamokebe (Pty) Ltd Mine Faces Hefty **Fine** for Water Act Violations



Mr Andrew Mbhalati (left) from Compliance Monitoring and Enforcement and Mr Siphamandla Mchunu (right) from Legal Services

In a significant development, the Piet Retief Regional Court has slapped a hefty fine of R300,000 on Mamokebe (Pty) Ltd mining company for contravening the National Water Act. The verdict came after the mine failed to adhere to water regulations, engaged in unlawful water usage and polluted water resources. The infractions occurred between July 2019 and 2020, when the mine intentionally used water without the required Water Use License, near the Ngema Trust Property in the Driefontein district.

The mine started operations without complying with a Water Use directive issued by the IUCMA, as stipulated in Section 19 and Section 53 of the National Water Act 36 of 1998. Another grave concern was the mine negligently polluting water, by allowing wastewater and contaminated water to overflow from the facility into the Heyshope Dam, which caused water pollution. This led to complaints from concerned community members, which prompted a thorough investigation by the IUCMA.

The mining director faced court proceedings and subsequently reached a plea agreement with the state during the legal process. State Advocate Tshepo Mahasha stressed the gravity of the offences, emphasizing their negative effect on the

environment and the local community. As part of the mitigation order, the mine has to provide a quarterly rehabilitation progress report to the IUCMA.

The court imposed a fine of R300,000 with a three-year suspension condition, provided that the mine does not commit another offence in contravention of the National Water Use Act No. 36 of 1996. Additionally, the court directed the mine to pay R120,000 to the IUCMA. This fine is intended to serve as a remedial measure to support the agency in executing its enforcement duties effectively and to fund environmental rehabilitation training for the benefit of the water management area.

This verdict sends a strong message regarding the importance of adhering to environmental regulations and the consequences for those who fail to do so. It also highlights the critical role that vigilant community members play in ensuring companies are held accountable for their action that impact the environment and public health.



**Illegal Damming
in a watercourse is an
offense and is prohibited**



INKOMATI-USUTHU
CATCHMENT MANAGEMENT AGENCY

IMPORTANT UPDATES ON WATER USE AND WASTEWATER INFORMATION



*Mr Sampie Shabangu
from Data Information Management*

Greetings to all our valued readers. We're here to keep you informed about the latest developments from the Inkomati-Usuthu Catchment Management Agency (IUCMA). If you're wondering what all the new complex-sounding terms mean and how they affect you, don't worry, we've got you covered in terms of simple, everyday language.

Why it Matters: Managing our Water Resources

The IUCMA is like the guardian of the water in the Inkomati and Usuthu catchment areas. It makes sure water is shared fairly and used wisely. To do this, it needs to keep track of who is using water and for what purpose. This helps with charging a fair amount and makes sure everyone follows the rules.

Introducing WARMS: The Water Tracker

Imagine you have a notebook where you write down everything you spend money on. WARMS is like that but for water. It's a special system that the organization use to record water users like farmers and industries. It records how much water each one is authorised to use.

Update Alert: What's Been Happening

The Department of Water and Sanitation (DWS) recently put out a notice (Government Notice 3130) asking everyone who uses water to share their information. If you use water for anything like farming or running a factory, you need to let the IUCMA know. Also, if you put any waste into the resource – like waste from factories – you need to tell them that too.

What the Rules Say: Who Needs to Do What

According to the rules, if you're using water from rivers, lakes, or underground sources, you have to register with the IUCMA. It is also important for us to know if you're putting waste into the resource. Additionally, if you make any changes to how you use water, you need to tell IUCMA within a month.

Projects in Progress: What's Happening Next?

The IUCMA is working on some cool to help you keep up to date with the water Legislation:

- **Existing Lawful Use Verification:** Verifying old records to see if people were using water legally even before the current legislation was passed. This affects users who were using water between October 1996 and September 1998.

- **Transformation of Irrigation Boards:** The way water is managed by these boards is changing and will be managed by new groups called water user associations. This is to share water more fairly among different users.
- **Water use Licenses and More:** If your water license has expired, you need to renew it. Using water without a valid license is a big no-no.
- **Paying for Water Use and Waste discharge:** this is called the Waste Discharge Charge System (WDCS). All water users are to register all water uses, this includes the abstraction of water from the resource and discharging of wastewater back into the resource.

Important Reminders for Water Users

- You can't use water in ways not allowed by the law.
- You must share correct information when asked.

- If you are already using water legally and have shared your information, you're good to go.

How to Get in Touch

If you need help with any of this, you can contact the IUCMA Project Management Team:

1. Mr Sampie Shabangu for Registration: shabangus@iucma.co.za or 062 907 9061
2. Mr Hasani Makhubele for Transformation: hasanim@iucma.co.za or 062 156 5050
3. Ms Lufuno Nemathaga for Licenses: nemathaga@iucma.co.za or 082 766 0035

Final Thoughts: Working Together for Water

We all need water to live, so we must use it wisely and share it fairly. The IUCMA is here to make sure of that. By cooperating and keeping IUCMA updated, we can all play a part in managing our precious water resources.

Remember, water is life – let's take care of it together!

Mondi Science and **Career** Exhibitions Week 2023



*Mr Siboniso Mahlalela
from Communications and
Intergovernmental Relations*



INTERACTION: Learners actively interact with presenters in a question and answer session.

The Inkomati-Usuthu CMA and Other Stakeholders Join Forces with Mondi Science for a Transformative Science and Career Exhibitions Week.

Inkomati-Usuthu CMA joined forces with the Mondi Science Centre and over 200 institutions from the public sector to illuminate science and careers at the Mondi Science, Career Guidance & FET Skills Centre in Piet Retief. This week-long event served as a powerful platform for both students and educators to explore the fields of science, technology, engineering and mathematics (STEM) in today's education landscape. The exhibition was graced by the Deputy Director General (DDG) for Curriculum in the Mpumalanga Department of Education, who gave a welcoming address. In his speech, he emphasised the importance of STEM in the education system and urged educators to enforce it in the syllabus.

Career guidance is vital, especially for pupils from rural areas with inadequate resources. The exhibition functioned as a mine of information, giving learners insight into a multitude of career prospects, diverse career possibilities, employment market trends

and higher education requirements. Furthermore, it facilitated direct interaction between students and professionals from a variety of sectors, which enabled students to gather valuable insight firsthand. Attendees can use this information to make well-informed choices regarding a profession in line with their current high school subjects and abilities.

Institutions took centre stage and delivered presentations to various schools in scheduled time slots. Notably, the IUCMA played a pivotal role, with Mr. Sibonangaye Mkhathshwa and Mr Thabiso Nkosi leading informative sessions on the various career pathways in the water sector. The duo also shed light on the bursary opportunities generously provided by IUCMA, with a focus on water-related courses. They advocated passionately for responsible water resource management and underscored its integral role in the nation's food and economic sectors.



FOCUS : Learners focus while grasping information from the IUCMA presenters

The exhibition proved transformative for many students from Pongola. It dismantled preconceived notions about career options and expanded their horizons beyond traditional paths like law, teaching, accounting and medicine. The event served as an enlightening experience, as it empowered them with newfound knowledge and broader perspectives.

The Mondi Science and Career Exhibitions Week 2023 ignited the student's passion for learning, discovery and career exploration. By fostering dialogue between academia, industry professionals and eager students, the event helped to carve a path toward a brighter and more informed future for the students.



GRATITUDE: Learner expressing gratitude to IUCMA for empowering them with neoteric knowledge.

WATER **SECURITY** *STRATEGY*

ENSURING WATER SECURITY THROUGH STRATEGIC PLANNING AND OPERATIONS: A GLIMPSE INTO THE IUCMA'S EFFORTS

The Inkomati-Usuthu Catchment Management Agency (IUCMA or the Agency) has taken significant strides in the field of water resource planning and operations, as it forges a path toward water security in the region. Against a background of increasing demand for water, which surpasses available resources, the IUCMA's endeavours are central to the effort to attain a sustainable balance between supply and demand. As water scarcity grows as a global concern, the IUCMA's action shows how water-related challenges can be tackled head-on.

- **Crafting a Water-Secure Future: A Holistic Strategy**

The cornerstone of the IUCMA's approach is its comprehensive water security strategy: it is not just about quenching immediate thirst, but ensuring a sustainable, secure and efficient water supply for the generations to come. In the context of South Africa, water security transcends mere water availability: it encompasses managing and mitigating water-related risks to achieve lasting benefits. The IUCMA has adopted this strategy as its guiding principle.

- **Allocating Water for Sustainability**

The IUCMA's proactive approach includes a water allocation plan that was prepared with meticulous care and is an invaluable instrument in managing water distribution. In collaboration with the Water Research Commission, the Agency is designing standardized methods to assess the socio-economic repercussions of the water reallocation process. This step is crucial in ensuring an informed, balanced allocation strategy that fosters sustainable growth without compromising the aquatic ecosystem.

- **Delving into Groundwater: Strategies and Tools**

In recognition of the significance of groundwater, the IUCMA has embarked on an ambitious groundwater strategy. This comprises several projects that are aimed at quantifying groundwater resources and regulating their usage. The development of a decision support system for the main catchment areas is a significant feat that enables effective management of groundwater. The interactive dashboard allows for transparent communication that ensures stakeholders are well-informed participants in the journey toward water security.

- **Dams for Development: Balancing Ecological Impact**

Dams can enhance water resources significantly, but not without careful consideration of the ecological impact. The IUCMA's involvement in the Crocodile East Water Resource Development Project exemplifies the effort to maintain this delicate balance. Through its technical advisory role, the Agency assesses the ecological consequences of building a dam. Prioritizing the use of options that have a lower impact underscores the commitment to preserving delicate ecosystems.

- **Natural Harmony: Alien Vegetation Management**

The IUCMA is tackling the problem of invasive alien plants in river systems to address hydrological concerns. By removing these plants, the agency enhances hydrological dynamics and ensures runoff for river users. This intervention aligns with the broader perspective of holistic water resource management.

- **Harvesting the Skies: Rainwater Harvesting**

Rainwater harvesting has emerged as a promising solution for access to water, with potentially far-reaching benefits. The IUCMA is at the forefront of this rainwater harvesting initiative and is collaborating with district municipalities in this regard. This initiative not only augments rural water supply but also bolsters food security through an increase in the amount of water available for agricultural practices.

- **Efficiency Redefined: Water Use Efficiency**

Efficient water use is the crux of sustainable water management. IUCMA actively engages in monitoring water used for crops and ensures scientific precision in its allocation decisions. By employing cutting-edge tools to estimate water use efficiency, the agency achieves a dual objective: optimizing water allocation, while creating opportunities for reallocation to address pressing water demands.

In conclusion, the IUCMA's endeavours are a shining example of strategic water resource planning and operations. As water security becomes an increasingly important global issue, the agency's multi-faceted approach, which encompasses allocation, ecological preservation, innovation and community engagement, paints a promising picture for sustainable water management. By ensuring that our water resources are nurtured with care and foresight, the IUCMA is laying the foundation for a water-secure future in the region.



WHAT IS BLUE DEAL SOUTH AFRICA?

PROVIDING CLEAN WATER TO SOUTH AFRICA WITH THE DUTCH BLUE DEAL PROGRAMME

We are excited to bring you the latest update on the Dutch Blue Deal Programme and its significant impact here in South Africa. This international initiative runs from 2018 to 2030 and aims to support governments at both national and regional levels worldwide while strengthening integrated water resources management (IWRM) efforts. The Dutch Blue Deal Programme achieves these goals by enhancing knowledge and expertise, improving organizational functionality, and fostering cooperation with key national and regional stakeholders.

The Global Objective

Internationally, the Blue Deal's primary objective is to provide clean, sufficient and safe water access to 20 million people across 40 catchment areas around the world. It's a commendable goal that underscores the importance of equitable water distribution and management on a global scale.

The Birth of the South African Blue Deal Partnership

Within the framework of the Dutch Blue Deal Programme, a significant milestone was achieved right here in South Africa with the establishment of the National Blue Deal South African Partnership. This partnership was solidified through a national Memorandum of Understanding (MoU), signed by prominent entities, including the Dutch Water Authorities, the Department of Water and Sanitation (DWS), the South African Local Government Association (SALGA), the Municipal Infrastructure Support Agency (MISA), the Ministry of Cooperative Governance and Traditional Affairs (COGTA), and the Water Research Commission (WRC). The official launch of this partnership took place at the MinMEC conference on 5 March 2020.

Regional Projects for Sustainable Water Management

Specific regional projects included in the South African Blue Deal Partnership were carefully selected for implementation in three catchment management areas (CMAs): the Upper Vaal, Pongola-Umzimkulu, and Inkomati-Usuthu CMAs.

One such regional project is the Inkomati-Usuthu Blue Deal project, which focuses on combatting pollution in the Crocodile River. This initiative will initially focus on mitigating sanitation impacts in Mbombela Local Municipality, Nkomazi Local Municipality and Emakhazeni Local Municipality. The project's primary objectives include rehabilitation and performance optimization of two wastewater treatment works (WWTWs) in each of these municipalities.

Key Partnerships for Success

The active participation and support of several key partners and stakeholders are essential to ensuring effective implementation of the Crocodile River pollution mitigation project. These include:

- Provincial Department of Cooperative Governance and Traditional Affairs
- Provincial Treasury
- Provincial Municipal Infrastructure Support Agency
- Provincial South African Local Government Association
- Provincial Department of Water and Sanitation
- Nkangala District Municipality
- Ehlanzeni District Municipality

These collaborative efforts highlight the importance of a unified approach to address the pressing issue of water pollution in our region.

Join Us in the Journey for Cleaner Water

The South African Blue Deal Partnership is on a mission to improve water quality and accessibility for all. As we move forward, we invite you to join us in this crucial endeavour to make clean, sufficient and safe water a reality for our communities.



CROCODILE RIVER BLUE DEAL PARTNERSHIP

Exploring Wastewater and the Importance of Water Quality Management

Background on Wastewater

Wastewater is often overlooked but is a critical topic that requires our attention. It is not just a by-product of our daily lives, it is a potentially hazardous substance that, if not managed properly, can have severe consequences for our water resources and public health and safety. Treatment of wastewater is a crucial step in safeguarding these aspects.

Wastewater treatment serves multiple purposes. Its primary goal is to enhance the physical, chemical, and microbiological quality of water to ensure it meets acceptable standards of safety before being returned to the environment. Managing wastewater treatment is pivotal to maintaining water quality and overall environmental health. But, as the saying goes, “You can’t manage what you can’t measure”, which means that measurement and monitoring are vital in this area.

Introducing the Water Quality and Data Management Task Team

The Water Quality and Data Management Task Team was established on 29 November 2022 to address these concerns. This task team is a collaborative effort that involves several organizations that play a significant role in the treatment of wastewater within the Crocodile River System. These organizations include:

- Department of Water and Sanitation (DWS)
- Inkomati Usuthu Catchment Management Agency (IUCMA)
- Department of Cooperative Governance and Traditional Affairs (COGTA)
- Ehlanzeni District Municipality
- Local municipalities (City of Mbombela, Nkomazi, and Emakhazeni)
- Young expert professionals (YEPs)

Continues on page 36

Objectives of the Task Team

The Water Quality and Data Management Task Team has set clear objectives to guide its actions, i.e.:

- a) Measure, assess and report: Regularly measure, assess, and report on water quality in the operation of wastewater treatment works (WWTWs) and the management of water resources that are impacted. These reports will aid decision-making at various levels, from strategic to operational.
- b) Promote data sharing: Foster data and information sharing among organizations involved in wastewater treatment, as collaborative data sharing is crucial for effective management.

Monitoring Water Quality

The task team's focus is on comprehensive water quality monitoring, which encompasses the following key areas:

- a) Operational monitoring: This involves proactive monitoring to identify and rectify issues as they arise during wastewater treatment processes.
- b) Compliance monitoring: Ensuring that effluent and sludge quality adheres to the conditions of authorization, maintaining regulatory compliance.
- c) Impact monitoring: Assessing the impact of wastewater on various water resources, including groundwater and effluent discharge points upstream and downstream.

Monitoring Approach

The task team has adopted a pragmatic approach to water quality monitoring. It emphasizes the importance of starting small and ensuring that all activities yield tangible results as they progress toward more significant goals. The process begins with a thorough assessment of the current status of water quality and data management. The next step is identifying gaps and deficiencies in the Water Quality Monitoring Programme.

Monitoring Programme Framework

A comprehensive monitoring programme framework is being developed to guide the task team's efforts. This framework will provide a structured and systematic approach to addressing water quality concerns and managing wastewater effectively.

In conclusion, the Water Quality and Data Management Task Team is committed to enhancing wastewater treatment and water quality management within the Crocodile River System. By working together, and emphasizing measurement and monitoring, we aim to make a meaningful contribution to improving water quality to the benefit of our community and the environment alike. Stay tuned for more updates as we embark on this essential journey.

Blue Deal Milestone Achieved: Green Drop Plans

Milestone Achieved: Green Drop Improvement Plans for Better Water Quality in the Blue Deal Crocodile River Partnership

The Blue Deal Crocodile River partnership in Mpumalanga has achieved a significant milestone in its efforts to improve water quality and sustainability. Through joint efforts, participating municipalities have successfully developed and finalized their Green Drop improvement plans. This accomplishment is the result of successful collaboration between South Africans and the Dutch, a key aspect of which was the implementation of the Green Drop methodology. This aims to assess and improve the performance of wastewater management systems.

The Green Drop improvement plans focus on crucial aspects of management of Wastewater Treatment Works (WWRW), such as the development of an asset register and a strategy to improve a municipality's Green Drop score. By implementing the plan, a municipality aims to secure the prestigious Green Drop certification,

which is a mark of excellence in wastewater management. The certification is awarded to wastewater systems that achieve a score equal to or exceeding 90%, with different performance areas carrying a unique weighting, based on regulatory priorities. The certification has great significance as it recognizes a municipality's dedication to optimizing the operation of wastewater treatment plants (WWTWs) and ensuring the highest standards of water discharge.

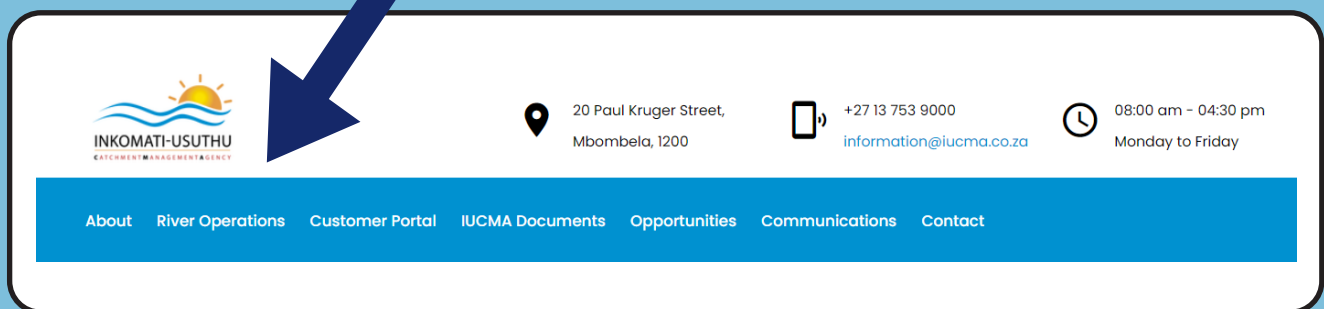
A key beneficiary of improved water quality is the majestic Crocodile River. The river's health is essential to sustaining the abundant wildlife that depends on it, as well as meeting the needs of local communities for safe drinking water and water for irrigation and religious ceremonies. By striving to enhance the quality of the Crocodile River, the participating organizations are actively working towards creating a more sustainable and harmonious environment for all.

River Operations Web Portal

River 
Operations
Web Portal

The Inkomati-Usuthu Catchment Management Agency is committed to bring you all the information you need to enable you to use water wisely and considerably. The IUCMA has established a web portal for River Operations that brings you the daily flows of the water in the Catchment. To gain access to this information, please log on to

<http://riverops.inkomaticma.co.za/>



The screenshot shows the top navigation bar of the IUCMA website. On the left is the logo for INKOMATI-USUTHU CATCHMENT MANAGEMENT AGENCY, featuring a sun and waves. A large blue arrow points to this logo. To the right of the logo are three contact details: a location pin icon for '20 Paul Kruger Street, Mbombela, 1200', a mobile phone icon for '+27 13 753 9000' and 'information@iucma.co.za', and a clock icon for '08:00 am - 04:30 pm Monday to Friday'. Below these details is a blue horizontal bar containing a navigation menu with the following items: 'About', 'River Operations', 'Customer Portal', 'IUCMA Documents', 'Opportunities', 'Communications', and 'Contact'.

River 
Operations
Web Portal

NAVIGATING THE IMPACT OF CLIMATE CHANGE

Within the complex world of water resource planning and operations, a significant challenge emerges, the looming threat of climate change. The Inkomati-Usuthu Catchment Management Agency (IUCMA) is responsible for water management and is deftly navigating the complexities of the impact of climate change in the region. As the climate crisis intensifies, the agency's strategies are a beacon of resilience, adaptation, and cooperation.

Forecasting the Impact of Climate Change

Projections on climate change in the region cast a stark picture: more frequent floods and droughts. The repercussions of these extreme weather events reverberate through various sectors and demand attention. As temperatures climb, a subtle yet profound shift will also occur – an increase in evapotranspiration rates. This seemingly innocuous change carries weighty implications, particularly for agriculture, where higher irrigation demands threaten to disrupt established practices and strain available resources.

Adaptation: A Call for Urgent Drought Management

In the agricultural sector, the urgency of drought management is evident along the Crocodile River. With every summer bringing heightened temperatures, the imperative to adapt grows more pressing. The Agency's determination to promote adaptive strategies has a significant impact on the community and provides hope for protecting livelihoods as temperatures continue to rise.

Water Quality Under Siege: Battling Algal Blooms

Rising temperatures beget another challenge – the proliferation of harmful algal blooms in reservoirs. A crucial facet of water resource management takes centre stage: quality. Chemical reactions fueled by higher temperatures can spawn elevated concentrations of pollutants and minerals. The agency's initiatives to safeguard water quality are a critical line of defense against encroaching pollution.

Unequal Burden: Vulnerable Communities and Climate Impacts

Climate change is not a level playing field: its impact is often borne disproportionately by marginalized communities. In the Inkomati-Usuthu water management area (WMA), this inequity is in the form of supplying water of sub-par quality to rural areas. The fallout from extreme weather events, such as flooding, further amplifies the health and water quality risks in these communities, which underscores the urgency of implementing responsive strategies.

Beyond Borders: Transboundary Consequences

The way water systems are all connected shows us something important: climate change affects everyone. Since the Inkomati-Usuthu Waters cross our borders, what the IUCMA does also affects other countries. That is why making fair deals with our neighbours about water is incredibly important. We have to make sure there's enough water, share it fairly, and decide where it goes.

Unity in Strategy: Collaborative Roadmap Ahead

Addressing the formidable challenge of climate change requires a unified effort. The recent stakeholder workshop convened by the Department of Agriculture in Mpumalanga Province, in which the IUCMA played a pivotal role, charting a way forward. This engagement will culminate in an aligned strategy that will bolster the province's resilience against climate-induced uncertainties.

Conclusion: Navigating Uncertainty with Resolve

In the broader context of addressing climate change, managing water is an exceptionally intricate and complex aspect. Through its visionary strategies, the IUCMA exemplifies the spirit of resilience required to confront this challenge head-on. By recognizing the extensive effects of climate change, enhancing adaptation strategies, and working together, the agency is steering us toward a sustainable water future. The agency stands firm in its commitment to safeguarding water resources, which casts a ripple of inspiration that invites all stakeholders to unite in safeguarding the lifeblood of our ecosystem and society.

Water

saving tips



Kettles should
not be filled

to the brim but with just enough water for your needs. This will reduce your electricity bill too.



Taking a bath can use between

80 and 150

litres of water per bath.



Do not overflow

containers like pots, as this may result in using more energy to heat the water.



Fix a **leaking toilet** otherwise it can waste up to

100 000 litres

of water in one year.



WETLANDS

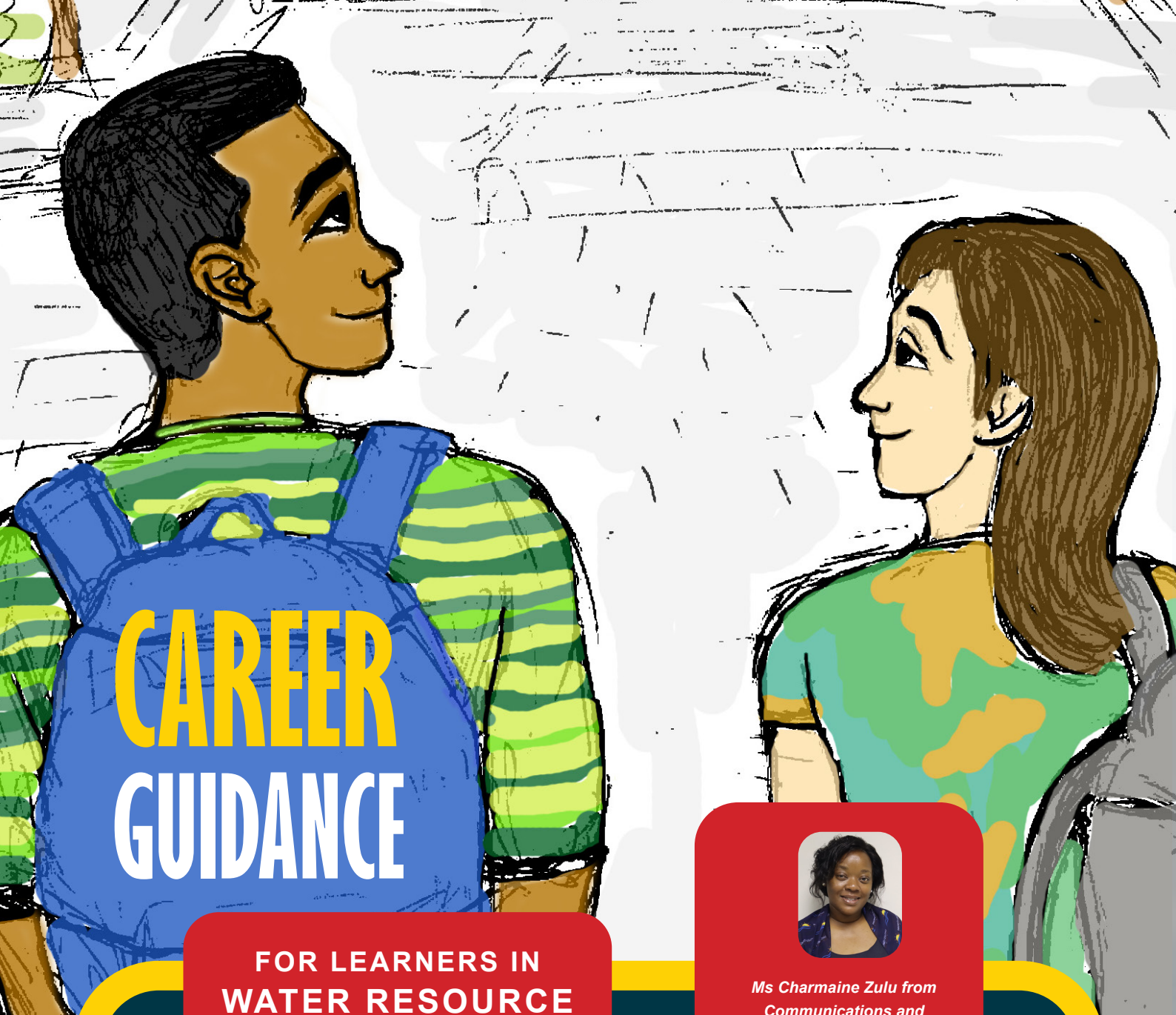
ARE HABITATS OF ANIMALS,
AND A NATURAL STORAGE
FOR WATER RESOURCES.
CONSERVE THEM

Be responsible and take care of the Environment

Tel: 013 753 9000 | Website: www.iucma.co.za

*Inkomati-Usuthu CMA, your
partner in water management*





CAREER GUIDANCE

FOR LEARNERS IN WATER RESOURCE MANAGEMENT



*Ms Charmaine Zulu from
Communications and
Intergovernmental Relations*

The Inkomati-Usuthu Catchment Management Agency (IUCMA) is an agency that has been established in terms of the relevant section of the National Water Act, Act 36 of 1998. The IUCMA has been established by the National Department of Water Affairs (DWA) in terms of the Act, to specifically implement certain sections of the Act. The mentioned sections of the Act address the management, protection, development and prevention of pollution of the national water resources.

Career options and study opportunities in the form of financial assistance are offered by IUCMA. Since the IUCMA is a science focused institution, subject choices during high school should include science, geographical sciences, biological sciences and mathematics.

The breakdown of career choices offered by the IUCMA is indicated below:

1. Water Resource Specialist/Manager

Academic qualifications:

- 1.1. Bachelor of Science degree in (Aquaculture; Biology; Chemistry; Chemical Engineering; Biochemistry; Microbiology, Limnology; Zoology; Botany; Civil Engineering)
- 1.2. Bachelor of Science in Environmental Sciences (Geography; Geographical Information System; Geology)
- 1.3. Bachelor of Technology Water Care
- 1.4. Bachelor of Technology Analytical Chemistry

2. Hydrologist

Academic qualification:

- 2.1. Bachelor of Science (Hydrology; Hydrological Modelling; Water Quality Modelling)

3. Aquatic scientist

Academic qualification:

- 3.1. Bachelor of Science (River Health; Aquaculture; Bio-monitoring; Water and Waste Water; Water Quality Management; Zoology; botany; Limnology)

4. Water Resources Planners

Academic qualification:

- 4.1. Bachelor of Science/Engineering (Water Engineering; Chemical; Waste Water Treatment; Water Resources Modelling)

5. Water Resources Compliance Monitoring and Enforcement

Academic qualifications:

- 5.1. Bachelor of Science degree in (Biology; Chemistry; Chemical Engineering; Biochemistry; Microbiology, Environmental Law; Hydrology; Geohydrology; Civil Engineering)
- 5.2. Bachelor of Science in Environmental Sciences in (Geography; Environmental Law, Geographical Information System)
- 5.3. Law degree (Environmental Law)

6. Geohydrologist

Academic qualifications:

- 6.1. Bachelor of Science (Hydro-geology; Hydrology)
- 6.2. Bachelor of Technology (Geo-hydrology; Hydrology; Water Resources Modelling; Water Quality Management)

7. Stakeholder Management

Academic Qualifications:

- 7.1. Bachelor of Arts (Developmental Studies; Public Administration; Public Management; Social Studies)
- 7.2. Bachelor of Technology (Developmental Studies; Public Administration; Public Management)

LIST OF SOUTH AFRICAN UNIVERSITIES

EASTERN CAPE



Tel: 047 502 2200
Website: www.wsu.ac.za
Email: postmaster@wsu.ac.za



RHODES UNIVERSITY
Where leaders learn

Tel: 046 603 8148
Website: www.ru.ac.za
Email: registration@ru.ac.za

NELSON MANDELA
UNIVERSITY

Tel: 041 504 1111
Website: www.mandela.ac.za
Email: info@mandela.ac.za



University of Fort Hare
Together in Excellence

Tel: 040 653 2312
Website: www.ufh.ac.za
Email: admissions@ufh.ac.za

“For more Universities view page 44 and 45”

LIMPOPO



University of Venda
Creating Future Leaders

Tel: 015 962 8000
Website: www.univen.ac.za
Email: info@univen.ac.za



Tel: 015 268 9111
Website: www.ul.ac.za
Email: enrolment@ul.ac.za

FREE STATE



**Central University of
Technology, Free State**

Tel: 051 507 3911
Website: www.cut.ac.za
Email: tomtomple@cut.ac.za



UFS·UV
UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA

Tel: 051 401 2114
Website: www.ufs.ac.za
Email: Studentadmin@ufs.ac.za

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Tel: 018 299 1111/2222
Website: www.nwu.ac.za
Email: applicationsug@nwu.ac.za

MPUMALANGA



**UNIVERSITY OF
MPUMALANGA**

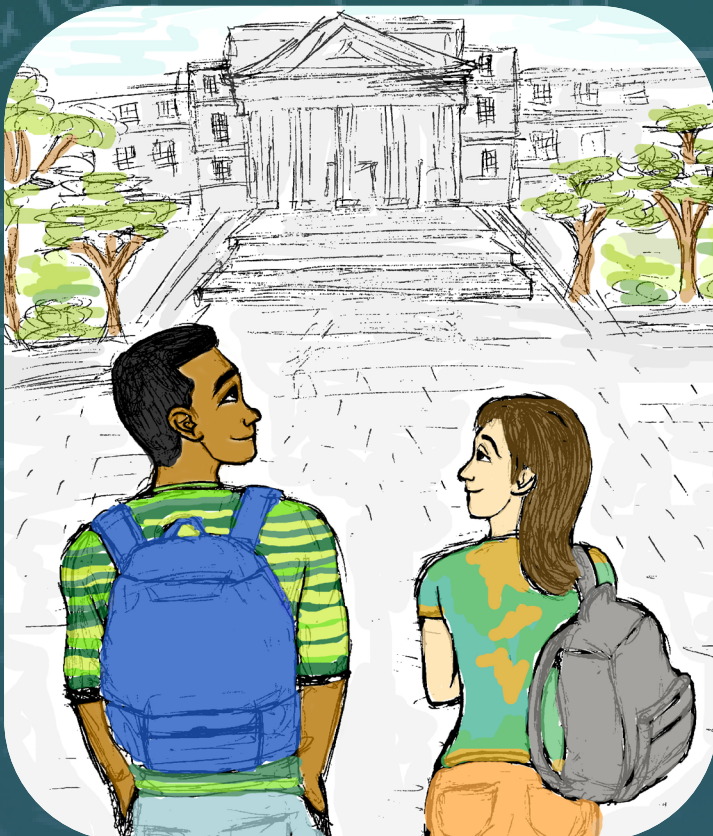
Tel: 013 002 0001
Website: www.ump.ac.za
Email: info@ump.ac.za

NORTHERN CAPE



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UNIVERSITY**

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Email: information@spu.ac.za



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 Website: www.wits.ac.za
 Email: studentaffairs@wits.ac.za



Tel: 012 429 3111
 Website: www.unisa.ac.za
 Email: study-info@unisa.ac.za



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 Email: info@ump.ac.za



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 UNIVERSITY OF PRETORIA
 YUNIBESITHI YA PRETORIA**

Tel: 012 420 4111
 Website: www.up.ac.za
 Email: ssc@up.ac.za



Your world to a better future

Tel: 016 950 9214/5
 Website: www.vut.ac.za
 Email: reception@vut.ac.za



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SAFEGUARDING WATER AND LIVES: DISASTER MANAGEMENT AT IUCMA

Harnessing Technology for Early Detection and Swift Action

In the heart of the Inkomati-Usuthu Catchment Management Agency (IUCMA), an unsung hero stands vigilant, ready to combat the unseen threats that nature can unleash upon us. Disaster management is an integral facet of IUCMA's multi-faceted approach, which seamlessly blends technology, data analysis and swift action to protect both the water resources and the communities that depend on them. In this article, we delve into IUCMA's disaster management efforts to unveil the intricate web of real-time data transmission, advanced data management systems and collaborative advisory services that underpin its success.

a) Disaster Management: Preparedness and Vigilance

Preparedness is key to effective disaster management. IUCMA stands as a beacon of readiness that is always alert to any potential incidents that could disrupt the delicate balance of healthy water resources. No disaster-related incidents occurred during the first quarter (April to June 2023). This allowed IUCMA to focus on honing its tools that ensure a seamless operation of its web-based real-time data transmission system.

This web-based system is a technological tool that serves as the central nervous system of IUCMA's disaster management efforts. It is the conduit through which critical hydrological, meteorological and water quality data flow, therefore ensuring that the agency remains informed and ready to respond to any disaster.

b) A Symphony of Data Management

The strength of IUCMA's disaster management system lies in both its vigilance, as well as its robust data management systems. Five interwoven systems form the backbone of this effort to harmonize data for more effective action, i.e.:

- i. HydroNet: A gateway to a wealth of external hydrological, meteorological and water quality data. This easily accessible repository empowers IUCMA's functions and operations with real-time insight.
- ii. Hydstra/ZedNet: A treasure trove of data storage that houses real-time and historical data on surface water quantity, groundwater quantity, and water quality. Rainfall and river flow data are received in real-time, while groundwater data is collected quarterly.
- iii. DHI Postgres (RiverOps): A dynamic system that handles real-time operations, manages short-term releases, powers the RiverOps website, sends daily stakeholder emails and downloads data from external contributors.
- iv. InWaRDS: An integrated platform that supports various facets of water resource management, from resource directive measures (RDM) and water use licensing (WUL) to compliance and enforcement (CME), and long-term decision-making.
- v. Disaster Early Warning System (DARE): A sentinel against nature's wrath, it provides early warning of droughts, floods and pollution. DARE is fully operational and offers crucial alerts that enable timely interventions.

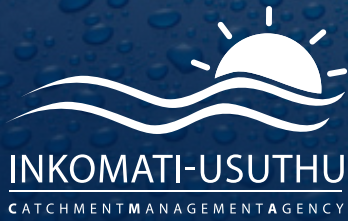
c) From Data to Action: Collaborative Advisory Services

The beauty of IUCMA's approach lies in its collaborative spirit. The data and insight generated by its information management systems don't remain locked away – they're shared with stakeholders, advisory forums and departments at all levels. This orchestrated exchange of knowledge happens through IUCMA catchment forums, district and provincial disaster advisory forums, provincial climate change forums and national advisory forums.

The IUCMA Information Management Systems empower the agency to provide advisory services to these stakeholders, offering timely insight that guides informed decisions. Whether it's managing disaster risks, offering recommendations for water use, or strategizing for long-term sustainability, IUCMA's role reverberates through the corridors of informed action.

In a world where the unpredictable is the norm, IUCMA's disaster management efforts stand as a testament to human innovation and collaboration. By weaving together cutting-edge technology, data-driven insight, and a commitment to community well-being, IUCMA paints a portrait of preparedness and resilience. As we navigate the ever-changing landscape of water resources, IUCMA's vigilant watch reminds us that with careful planning and cooperative effort, we can stand strong against the surging tides of uncertainty.





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