

EXECUTIVE SUMMARY

PART A: FOUNDATION INFORMATION

CHAPTER 1: INTRODUCTION

CMS DEVELOPMENT AS A STAKEHOLDER-CENTRED PROCESS

A very concerted effort was made to ensure that CMS development was a strongly stakeholder centred process. The stakeholder engagement process followed the Adaptive Planning procedure of Strategic Adaptive Management which in turn is the central planning and decision making system adopted by the ICMA. Adaptive planning with the stakeholders provided thorough exploration of their perceptions of the state of water resources management in the catchment and their desires for a future well managed catchment. A technical team used the outcome of 5 stakeholder workshops as guidance when drafting the CMS that would form the basis of a shared future for water management in the Inkomati Catchment. These workshops were:

1. **Orientation Meeting (February 15th 2010)**

A general purpose meeting to inform stakeholders of the need, purpose and process of this CMS and to gain their acceptance.

This was followed by 3 “visioning workshops”, one per sub-catchment, in which stakeholders mapped out their future water use strategy to ensure equity, efficiency and sustainability. All identified resource poor, emerging and historically disadvantaged stakeholders were invited to pre-workshop capacity building sessions to ensure they could participate effectively in the open meetings

2. **Crocodile sub-catchment visioning workshop (March 9th 2010)**

3. **Sabie-Sand sub-catchment visioning workshop (March 11th 2010)**

4. **Komati sub-catchment visioning workshop (March 12th 2010).**

5. **Final Strategy Meeting (March 24th 2010)**

An overall approach to IWRM in the Inkomati WMA was framed by stakeholders at this meeting and was described in a final visioning document entitled “Desired future of the Inkomati WMA”.

STRUCTURED OBJECTIVES AND STRATEGIC ACTIONS FROM THE VISIONING SHOWING THE LINKS TO THE SUB STRATEGIES OF THE CMS

The CMS Drafting team then used this “Desired future” document to develop a matrix of stakeholder-derived objectives vs IWRM strategic action programmes. The objectives and action programmes in turn formed the basis of the 6 IWRM sub-strategies of the CMS. Please refer over the page for the table. Please note that the strategic Actions highlighted in red are deemed to be a priority.

This was undoubtedly the most exhaustive public participation exercise ever conducted in the name of water management in this country and it has led to a CMS that is highly stakeholder centered. In the final stakeholder meeting stakeholders expressed their general satisfaction with the process (there were no objections) and accepted the draft material presented to that point as reflecting their issues and desires for a shared future

Table 5-1: STRUCTURED OBJECTIVES AND STRATEGIC ACTIONS FROM THE VISIONING SHOWING THE LINKS TO THE SUB STRATEGIES OF THE CMS

Red Text: Highest ICMA Priorities	OBJECTIVES					
	Practical IWRM to achieve equitable, sustainable, and efficient uses of Inkomati water resources which meet evolving stakeholder needs and legal obligations					
	A sustainable water resource		Collaborative and coordinated IWRM for wise socio-economic development		Secure financial arrangements for IWRM	
Sub Strategies Strategic Action Programmes	WRM Sub Strategies		Integration Sub Strategies	Facilitation Sub Strategies		
	Resource Protection (RDM)	Regulating Water Use (SDC)	Cooperative Governance & Institutions	Stakeholder Engagement	Information & Monitoring	Finance
Achieving equity		<ul style="list-style-type: none"> - Establish a viable, up to date and transparent system for water authorisation. - Develop a first Generation Water allocation plan - Implement Water Allocation Reform 	<ul style="list-style-type: none"> - Coordinate activities to increase access to water for resource poor farmers - Facilitate innovative solutions to the water services backlog. 	<ul style="list-style-type: none"> - Establish participatory IWRM decision-making process. - Facilitate empowerment programmes. - Establish Water User Associations. 		<ul style="list-style-type: none"> - Develop and implement a realistic and cost effective process for processing water use licence applications.
Water Availability and Flow Management	<ul style="list-style-type: none"> - Facilitate the progressive, and stakeholder centred implementation of the Reserve. 	<ul style="list-style-type: none"> - Consolidate systems for integrated planning and operations of river systems 	<ul style="list-style-type: none"> - Promote coordinated river operations. - Decrease water losses and increase water use efficiency 	<ul style="list-style-type: none"> - Establish and maintain appropriate River Operations Committees. - Ensure Reserve processes are transparent and inclusive. 	<ul style="list-style-type: none"> - Research systems, for integrated river operations. - Monitor progressive realisation of the Reserve and international obligations. 	
Managing water quality	<ul style="list-style-type: none"> - Support DWA to classify the resource 	<ul style="list-style-type: none"> - Consolidate and implement workable 	<ul style="list-style-type: none"> - Institute a cooperative spatial/ 	<ul style="list-style-type: none"> - Ensure implementation of 	<ul style="list-style-type: none"> - Implement accessible and 	<ul style="list-style-type: none"> - Implement Waste Discharge system to

	and setting Resource Quality Objectives - Implement the above	procedures to determine license conditions for wastewater disposal.	develop. planning for water sustainability - Manage pollution incidents. - Prevent further water quality degradation.	Resource Quality Objectives and Reserve are transparent and inclusive.	transparent water quality and ecosystem monitoring systems.	cover costs of managing quality of the water resource
Generating and managing knowledge			- Build knowledge sharing networks nationally and internationally.	- Embed systems of social co-learning / co-generation of knowledge into IWRM decision-making processes.	- Identify monitoring & information Institutions - operationalise learning reflection and review system - Participate in IWRM networks etc. - Learning Strategy	
Achieving compliance and enforcement	- Ensure the necessary monitoring requirements for compliance are implemented	- Consolidate clear and realistic standards which different types of water use must be compliant - Ensure appropriate Enforcement of the different water uses	- Investigate enforcement needs and methods - Develop transparent system for dealing with transgressors.	- Awareness and education to help with mindset changes.	- Operationalise transparent and accessible systems for monitoring compliance, and actions against transgressors	- Ensure cost recovery from transgressors in terms of Sections 19 and 20 of National Water Act
Generating revenue					- Audit for transparent and directed use of IWRM funding. - Operationalise payment monitoring	- Investigate and develop realistic mechanisms through which water use charges can be implemented.

CHAPTER 2: CATCHMENT DESCRIPTION

The Inkomati Water Management Area is one of nineteen Water Management Areas in South Africa defined in the NWRS and is wholly within the Mpumalanga Province, South Africa. However, it forms a part of the **Incomati International River Basin** which is shared between the Republic of Mozambique, the Kingdom of Swaziland and the Republic of South Africa

The IWMA has been divided into three Sub-catchments:

- the Komati River, which rises in South Africa, flows through Swaziland and then re-enters South Africa before flowing on into Mozambique;
- the Crocodile River which joins the Komati just before the border with Mozambique;
- the Sabie and Sand River catchment. The undeveloped Nwanedzi and Nwaswitsontso Rivers are wholly within the Kruger National Park and are included with the Sabie-Sand Catchment for the purposes of the CMS.

PHYSICAL CHARACTERISTICS

MAIN PHYSICAL ATTRIBUTES

- **Rainfall is Influenced by the Topography**

The topography directly influences the rainfall distribution in the WMA with the Majority of the Rainfall occurring in the Mountainous Regions of the IWMA. Climate Change is expected to bring hotter, wetter summers and longer, drier winters.

- **Ecologically Important**

Approximately 37 % of the land area of the Inkomati WMA is covered by Nature Reserves, including the Kruger National Park (KNP), Sabie Sand Game Reserve Complex and numerous important Reserves under the management of the Mpumalanga Tourism and Parks Agency (MTPA). Implementing the Ecological Reserve is an important requirement of this sector.

LANDUSE

The Inkomati WMA has many commercial farmers as well as the largest number of previously disadvantaged and emerging farmers in the country. Agriculture is the most significant land use in terms of water use accounting for 57% of the average water requirements

Forestry in the Inkomati Water Management Area covers approximately 14 % of the total area and is a significant user of water.

There are also significant urban, rural and industrial users in the catchment. Mining is also significant and has the potential to threaten water quality in the upper Komati. Refer to figure 2-10.

SOCIO ECONOMIC AND POLITICAL ASPECTS

DEMOGRAPHY

Refer to table 2-2 for population figures.

The Sabie Sand has the highest population amongst the 3 sub-catchments and the Komati has the minimum. 67% of the population are living in the rural areas.

67% of the population live in very large high density “rural” and semi urban communities. Future growth in population is expected to be moderate, and concentrated in the urbanised areas, with a decline in some rural areas. Approximately 9% of the IWMA is within tribal area boundaries.

LAND TRANSFORMATIONS

The Inkomati WMA has among the most numerous and largest Land Claims in the Country. Land reform, under the control of the Department of Land Affairs, will significantly impact the transformation of water users and the ability to empower black farmers is at risk because the catchment is considered to be “stressed”.

INSTITUTIONS

There are 26 Irrigation Boards operating under the 1956 Water Act and 2 Water User Associations have been established under the current Act.

Water Services Providers include Bushbuckridge Water Board and Silulumanzi . The other Local Municipalities provide their own water services.

ECONOMY

MAIN ECONOMIC ATTRIBUTES

- **The Economy of the Inkomati WMA is highly dependant on the availability of water**

The position of Mpumalanga, Nelspruit and the so-called Maputo Development Corridor linking Gauteng to Maputo, is a very important growth factor with the provincial economy.

Mining is the dominant contributor to the (water based) GDP of the basin, followed by industry, irrigation and forestry. The industries analyzed are irrigation and forestry based, with the result that the two sectors contribute more than 50% to the total GDP of the basin. Irrigation is the dominant contribute to the water generated employment of the basin, followed by industry, mining and forestry.

Since Nelspruit is the capital city of Mpumalanga, a large number of government institutions are located there. This, together with the local government bodies in the other areas, contributes to the significance of the government sector in the Inkomati WMA.

INTERNATIONAL ASPECTS

The Incomati is an international river basin shared between the Republic of Mozambique, the Kingdom of Swaziland and the Republic of South Africa. The most recent agreement on water sharing is the Interim IncoMaputo Agreement for Co-operation on the Protection and Sustainable Utilisation of the Incomati and Maputo Watercourses.

Article 4 of the IIMA sets out the utilization of the Incomati watercourse between the parties based on the estimates of the present availability of water in the Incomati. It must be noted however that no assurance or risk level is stated and the PRIMA project information will probably amend these allocations for the final comprehensive agreement.

The Progressive Realization of the Incomaputo Agreement (PRIMA) programme has been set up to enable a more comprehensive agreement to be developed.

CHAPTER 3: WATER RESOURCES AND USE

WATER RESOURCES IN THE INKOMATI WMA

WATER AVAILABILITY

Please refer to the main document for explanations of water availability, yield and assurance of supply

In arid countries such as South Africa, it is not economical to always plan on yield which is available 100% of the time, and in most systems restrictions are introduced to limit supply during drought in order to achieve a greater supply when dams are full or rivers are flowing strongly. This is certainly the case in most of the Inkomati WMA. The magnitude of the water resource is therefore clearly dependant on the level of assurance that users in the systems are prepared to accept.

OPERATING RULES

Operating rules are designed to improve the assurance of supply to water users in a river system and to ensure that the river system does not fail and thus impact on the water availability. Considering the nature of the River Systems in the Inkomati, the implementation of operating rules is vital to ensure sustainability and equity.

SURFACE WATER

Surface water provides for 92% of the available water in the Inkomati WMA which is ranked 5th in terms of Mean Annual Runoff (MAR) out of 19 WMA's. Despite this Water Resource Management remains inequitable, inefficient and unsustainable.

The total available water, as a function of the Mean Annual Runoff, is estimated to be 3,207 million m³/a.

Please refer to table 3-1 for information on the surface runoff

GROUNDWATER

The groundwater surface water interaction is very important and dependant on whether the rivers are perennial or non perennial with groundwater having a greater impact on perennial rivers. However, this interaction is not sufficiently understood in the Inkomati WMA and more information or research is required.

Areas of Dolomite and Limestone exist in the WMA. The impacts of groundwater in these regions are very different to the remainder of the catchment

WATER QUALITY

Water Quality in the Inkomati Water Management Area as a whole can be said to be generally good. However, there have been trends identified that are worrisome. Specific areas in the Elands, Kaap and the Crocodile (downstream) are highlighted as worrying spots. Electrical Conductivity (EC) is rising steadily in all the catchments, which is due to the increasing concentration of various dissolved substances. Faecal coliform pollution in the IWMA is a common feature and it is affecting the use of the water resource. Pollution of the rivers by untreated or semi-treated sewage has raised alarm in the IWMA.

Please refer to the main text for the water quality variables of concern.

WATER USE

Actual water use is difficult to quantify due to the general lack of monitoring. Furthermore, there is almost always a difference between the amount of water that is required, the amount that is used, and the amount that is allocated. Please refer to the main text for the concepts of Requirement, Use, Demand and Allocation.

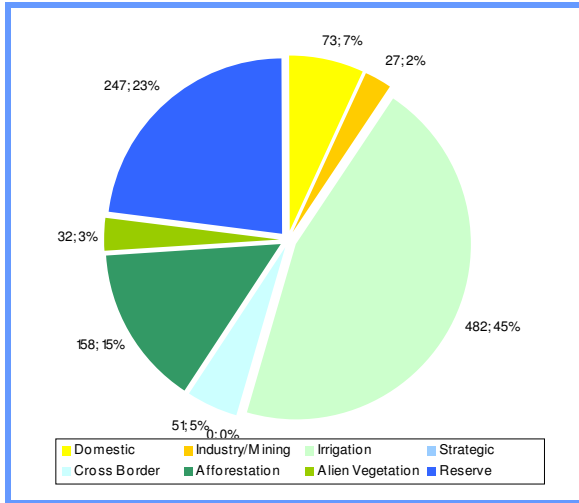
The demands have been split into two scenarios. These are a best estimate of current day water use and allocations. Only the allocations are shown here.

ALLOCATED WATER USE

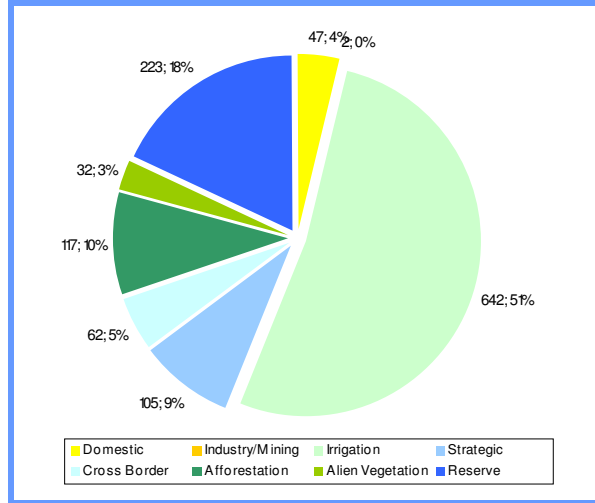
The irrigation water allocations are determined for all three catchments as the greater of the IIMA, the Komati Basin Treaty and the scheduled water use of irrigators by the Irrigation Boards. For irrigators outside irrigation boards or controlled areas, the uncontrolled water 'allocations' are determined using the irrigation model and are thus equal to the water Requirement. Please refer to tables 3-10 and 3-11.

Figure 3-9: Water Demands

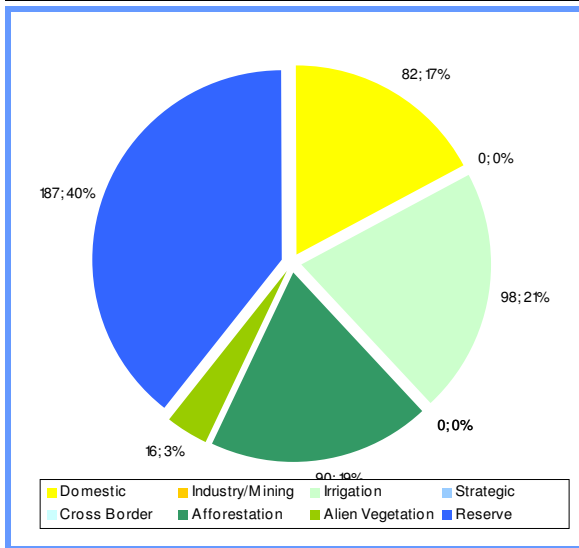
Crocodile Water Demands.



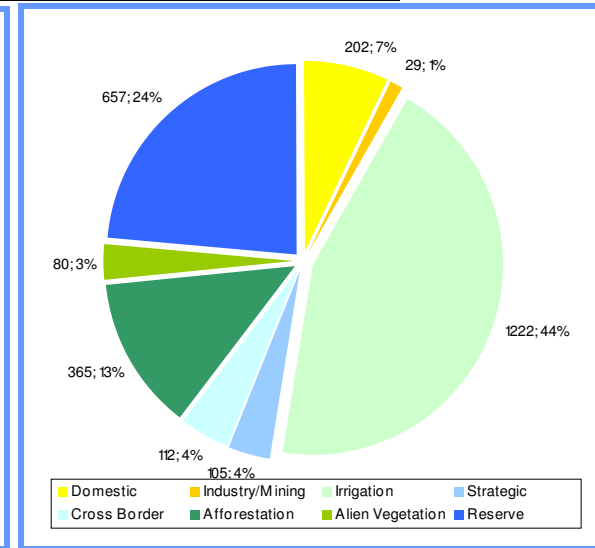
Komati Water Demands



Sabie Water Demands.



Inkomati WMA Water Demands



The current estimated annual volumetric requirements for the ecological reserve have been included as a demand to illustrate the order of magnitude of the ecological reserve requirements.

CHAPTER 4: CATCHMENT ASSESMENT

WATER BALANCE ASSESMENT

This section outlines the current balance between water demand and supply. Please refer to tables 4-1,4-2 and 4-3 for information on the water balance

Catchment is Stressed

Previous studies have all indicated a severe state of stress in the Inkomati. The latest Inkomati Water Availability Assessment Study confirms a state of stress (allocation is higher than availability), but it is not as severe as previously thought. The current level of water use within the Komati and Sabie catchments appears to be sustainable with users receiving water at acceptable levels of assurance. The Crocodile system is more stressed than the remainder of the Water Management Area, as illustrated in Figure 4-4 on Availability vs Demand further on in this Chapter.

Generally, no new water is available for allocation.

Implementation of Reserve and International Obligations

The cross border flows specified in the Interim Inco-Maputo Agreement - which is the most recent legally-binding agreement entered into by South Africa, Swaziland and Mozambique - have not yet been implemented. This situation needs to be rectified, but will increase the level of stress. The outcomes of the Progressive Realisation of the Inco-Maputo Agreement (PRIMA) programme will determine how these cross border flows will be implemented.

Scenario modeling has indicated that the implementation of the Reserve will result in decreased water availability (Refer to the figure 4-4 on Availability vs Demand) as well as decreased assurances of supply in all three sub-catchments. In the Crocodile, the decrease in assurance is of a magnitude that is unacceptable to users, especially for the irrigation sector. These issues require careful consideration and serve to emphasise that the process of implementing the Reserve must be stakeholder centred.

STEEP ASSESMENT

SUMMARY OF KEY ISSUES RELATED TO CURRENT SITUATION, IMPLICATIONS OF “BUSINESS AS USUAL” AND DRAFT STRATEGIC ACTION

Please refer to tables 4-4 to 4-10 for the Social, Technical, Ecological, Economic and Political (STEEP) issues in the Inkomati WMA. The tables lay out a description of key issues, a projected future, the acceptability of that future and hence the strategic actions required to retain the status quo or to bring about change. Note that you may not see all the issues here. This is because the key issues that have arisen from the visioning process are presented.

These tables do not indicate any Prioritisation among the issues.

CHAPTER 5: DESIRED FUTURE FOR THE INKOMATI WATER MANAGEMENT AREA

A very concerted effort was made to ensure that the development of the CMS was a strongly stakeholder centered process. The overall purpose of the stakeholder engagement process was that it should bring to light the stakeholders' perceptions of the state of water resources management in the catchment and also their desires for a future well management catchment. This visioning process resulted in the following vision, values, attributes, threats and objectives.

The visioning also resulted in Strategic Actions that were then linked to the sub strategies of the CMS as shown in figure 5-1.

VISION

We share the Inkomati water resources, and responsibility for their management, amongst ourselves and with our neighbours.

Our decision making environment, including delegated functions, enables collaborative action towards equity, sustainability and efficiency in a continually evolving socio-economic system.

We manage the resource adaptively, co-operatively and progressively to achieve social, economic and environmental justice, and promote healthy living

VALUES

We acknowledge the interdependence of our responsibilities for caring for the resource and there is explicit recognition of the diversity achieved by what each individual/group contributes to promoting equity, efficiency and sustainability

Decisions, actions and outcomes are subject to performance evaluation against measurable goals, indicators and timeframes.

We strive for a trusting, transparent and corruption-free system of catchment management that cognizant of existing agreements and promotes fairness before the law and economic development.

Management is adaptive, open to critique and outcomes driven, with solutions being practical, achievable and implemented

VITAL ATTRIBUTES

Livelihoods in the catchment are inextricably tied to the health of the rivers and their tributaries through an economy based largely on tourism, irrigation agriculture, forestry, mining and government

The very variable, in both space and time, rainfall is largely generated in a small area of the upper catchment but demand is highest in the lower reaches where the soils are better and poverty levels are high.

The catchment is a critical element of an internationally renowned conservation area and international tourist hot-spot both of which are dependent on healthy aquatic systems and good water supply.

The rivers are an important source of water for both Mozambique and Swaziland

Knowledge of, and expertise in, Water Resource Management is high but the human skills base is low.

There are still large disparities in access to water and current water allocations are not meeting the domestic and economic needs of many stakeholders

Although generally not good there are examples of well organised water resource management institutions and agricultural water allocation systems which can act as good examples.

Water use infrastructure is generally limited and water management is largely “run-of-river”. There is potential for improving water yield (e.g. more water storage facilities)

The wide altitudinal range from west to east is accompanied by high biodiversity and a diverse and scenic landscape mosaic in which rivers and wetlands play a very important role

THREATS

THE BIG 7

- Despite the willingness and commitment of some, there is a high degree of public discontent, scepticism and resultant apathy towards water resource issues. This is clearly related to both the perceived and actual poor progress in implementing the requirements of the National Water Act and Integrated Water Resources Management. There is a serious threat of these water issues leading directly to civil protest and unrest.
- Very poor land- and water-use planning is threatening our ability to address fundamental issues of equity and sustainability of the water resource. This is because poor planning leads to uncontrolled urban and rural development, mining and forestry expansion, degradation of the scenic mosaic and pollution from poorly maintained infrastructure.
- A continued lack of infrastructure (small dams, canals, off-stream storage, etc.) and extension support in the lower reaches of the catchment entrenches and exacerbates the imbalances of the past and the plight of the historically disadvantaged.

- Corruption, continued circumvention of regulations by developers and mining, and continued lack of law enforcement are negatively impacting on socio-economic development and rapidly reducing the sustainability of water resources. (*Issues in need of law enforcement include illegal water abstraction and waste dumping; illegal land use within wetlands and riparian zones; illegal river regulation of rivers and drainage of wetlands; illegal fishing, hunting, harvesting of medicinal plants; etc.*)
- Non-implementation of the Reserve and agriculturally biased flow regimes are undermining the sustainability of the resource and thus its delivery of the ecosystem services upon which the poor subsist, biodiversity conservation depends and tourism and irrigation rely for profitability.
- Lack of cooperative governance at national, (Depts. Water Affairs, Agriculture, Minerals and Energy, and Environment), provincial (e.g. land use planning) and local (service delivery) levels is undermining the management of water resources for improve equity, efficiency and sustainability.
- A CMA that is not fully operational in terms of the assignment and delegation of functions, staff and finances poses a threat to the Integrated Water Resources Management of the Inkomati Water Management Area.

OBJECTIVES

The primary objective must be to achieve full delegation of authority to the ICMA so that they can practice effective IWRM to achieve equity, efficiency and sustainability of water use including:

- develop pragmatic, workable decision-making structures and processes,
- develop a solid financial strategy,
- establish Water User Associations,
- actively participate in co-operative governance, planning, enforcement/policing, and training, and
- Careful quantification of goals for progressive realisation of objectives

CO-OPERATIVE GOVERNANCE

Urgently develop a system of co-operative governance and stakeholder engagement that gives water a high profile across local and regional government structures.

The system must:

- Mobilise sufficient political will and support to hear the voice of the crying masses for water,
- minimize the circumvention of water policy in the name of development.
- Contain a clear plan to engage service providers about infrastructure development, maintenance and the polluter pays principle

- Ensure broad follow through with the strategy
- Incorporate the National Freshwater Priority Conservation Areas framework
- Get mining and tourism on board
- Participate in international programmes
- Strengthen stakeholder participation and engagement in decision making

SUSTAINABILITY

- Increase the water yield, especially for resource poor farmers, by developing new infrastructure and eradicating alien vegetation.
- Water use is fully metered/measured, monitored and compliant across the Inkomati Catchment
- A process for implementing the Reserve must be put in place and must include full integration of the National Freshwater Ecosystem Priorities.
- Water quality monitoring, auditing and making the data public
- Promote conjunctive uses of water, water conservation and water demand management.

FUNDING

Develop a transparent and attainable plan for funding that identifies the sources of funds, mechanisms for gathering those funds and for allocating them to priority projects. The plan must include:

- Ensuring of performance auditing.
- Development of a billing system that includes waste discharge charges.
- Implementation of a system of incentives , disincentives (e.g. the waste discharge charge system); and benchmarks to ensure more equitable and efficient water use

INFORMATION NEEDS

- Good and implementable strategy for information collection, and use, in Integrated Water Resources Management, evaluation and monitoring. We need a better quantified water balance
- Quantify climate change effects on water availability
- Develop an effective communication strategy

STRUCTURED OBJECTIVES AND STRATEGIC ACTIONS FROM THE VISIONING SHOWING THE LINKS TO THE SUB STRATEGIES OF THE CMS

The CMS Drafting team then used this “Desired future” document to develop a matrix of stakeholder-derived objectives vs IWRM strategic action programmes The objectives and action programmes in turn formed the basis of the 6 IWRM sub-strategies of the CMS. Please refer to Pages 5 and 6 of this executive Summary for the table.

Please note that the strategic Actions highlighted in red are deemed to be a priority.

PART B: WRM SUB STRATEGIES

The sub strategies of the CMS, Chapters 6 to 11, all relate to the table 5-1: “structured objectives and strategic actions from the visioning showing the links to the sub strategies of the cms” and set out the actions to achieve these Strategic Action Programmes and objectives.

The two complementary sub-strategies: **Resource Protection or Resource Directed Measures (RDM)**, and **Regulating Water Use or Source Directed Controls (SDC)** both contain measures to ensure the protection of water resources by setting objectives for the desired condition of resources, as well as measures in place to control water use to limit impacts to acceptable levels.

The Stakeholders have clearly and strongly stated their wish for all relevant WRM functions to be transferred to the ICMA during the visioning process. The ICMA is in the process of revising a Memorandum of Agreement (MOA) with DWA, which will outline the process of transferring the assignment and delegation of functions from DWA to the ICMA. This is a key Strategic Action

CHAPTER 6: RESOURCE PROTECTION (RESOURCE DIRECTED MEASURES)

The purpose of this sub-strategy is to ensure water resource sustainability in the Water Management Area through protection of water resources using a suite of statutory and non-statutory tools. Based on the principles of sustainability, equity and efficiency, the sub-strategy must give effect to the Class, Reserve and Resource Quality Objectives (RQOs) of the water resources and associated protection measures.

The focus of this sub-strategy is to ensure the achievement of the following through action programmes of co-operative governance with the DWA and other stakeholders:

- **Stakeholder centred finalisation and implementation of the Reserve in all sub-catchments, and tributaries.** Stakeholders have raised serious concerns over their lack of involvement in the Reserve determination process that DWA has been running to date. It is vital that this determination process continues in a more transparent and inclusive manner, and that implementation, monitoring, and enforcement to achieve the Reserve are fundamentally participatory and inclusive
- **Participatory classification of the water resources in the whole Inkomati Water Management Area.** It is assumed that the responsibility to determine the class and the reserve will remain the competency of DWA. This means that the timeframes for the finalisation of the classification of the resource is dependent on the pace at which DWA deals with these gaps, including setting of RQOs. Interim RQO's and classification systems will be used while this is still in progress
- **Setting of Resource Quality Objectives.** Similarly it is assumed that the setting of RQOs will remain the competency of DWA. The ICMA will be responsible for consolidating standards for resource protection and implementing the RQOs in a phased manner to achieve objectives over an agreed period of time.

- **The protection of water resources** (vulnerable aquifers and wetlands) from water quality impacts through recognition and establishment of the National Freshwater Ecosystem Priority Areas (NFEPA)
- **Achieving monitoring, compliance and enforcement. The ICMA must ensure** that all in-stream measuring equipment is properly maintained, and bio-monitoring for the River Health Programme is Implemented. Investigate cooperative agreements with the Kruger National Park and Mpumalanga Tourism and Parks Agency for compliance monitoring.

CHAPTER 7: REGULATING WATER USE (SOURCE DIRECTED CONTROLS)

The **objective** of the sub-strategy for water-use regulation is to define the limits and constraints, incentives and disincentives that must be imposed on the use of water resources in order to achieve the desired vision and water resources protection for the WMA. Based on the principles of equity, sustainability and efficiency, the strategy must address allocation, re-allocation, authorisation and licensing, water management and pollution control, augmentation measures, and compliance and enforcement.

ACHIEVING EQUITY

Establish a Viable, up to date and transparent System for Water Use Authorisation

Collaborate with DWA and with stakeholders to ensure that the authorisation system develops in a way that is pragmatic, and that explicitly takes into account:

- Existing water use activities still need to be validated, and this is proposed to be within three years from the time the ICMS is gazetted.
- Future authorisation of water use must be included in the Water Allocation Plan, and this must determinedly address the issues of access to water for resource poor farmers.
- The Water Use Authorisation Committee is an existing and functional structure that should be capitalised on, maintained and strengthened.
- The progressive assignment and/or delegation of water use authorisation functions to the ICMA,
- The DWA-ICMA Memorandum of Agreement must address the issue of the split responsibility that comes from the ICMA being assigned the functions of pollution control, and control of emergency pollution incidents (NWA, Sections 19 and 20), while DWA is still responsible for authorising water use.

Develop a First Generation Water Allocation Plan

An important component for the first CMS will be to plan for the reallocation of existing entitlements to address issues of **inequitable access to water**, particularly for resource poor farmers, and issues of **water stress and unsustainability**.

The ICMA must collaborate with stakeholders and with DWA to finalise the first generation Water Allocation Plan for the Inkomati catchment **within the next ICMA Strategic Business Plan cycle**.

MANAGING FLOW

Consolidate Systems For Integrated Planning And Operations Of River Systems

River operations are the primary tools by which flow is managed and, consequently, are central for the implementation of many plans, and progressive achievement of many IWRM objectives. As such, it is a **priority Strategic Action Programme for the Inkomati Water Management Area.**

Managing flow requires interlinks to numerous other sub strategies in the CMS for implementation. This is primarily because the managing of flows implies the managing of water users and their related water uses. The Operations of River systems can be split into two strategic actions:

- **Assist DWA with the development of operating rules**
- **Facilitate integrated planning and operations of river systems at appropriate levels of detail.** The real time Decision Support System for the operations of the Crocodile River, and the decision-making system that the ICMA has begun to build around it, are examples of the approach that the ICMA is developing for integrated planning and operations of river systems.

The ICMA will continue to participate in the Komati Joint Operations Forum (KJOF) and in the Progressive Realisation of the Inco-Maputo Agreement (PRIMA) project to revise the international operating rules.

MANAGING WATER QUALITY

The focus of this strategic action programme is to stop the deteriorating quality of the resource through the implementation of strategic action programmes aimed at specific problem areas

Consolidate and Implement Workable Procedures to Determine License Conditions for Waste Discharge and Disposal.

In-stream water quality will be measured through monitoring and data assessed over short, medium and long term to establish trends. Investigations will then be conducted and corrective measures implemented where deteriorating trends are identified.

ACHIEVING COMPLIANCE AND ENFORCEMENT

Compliance and enforcement will only be achieved through engagement with stakeholders, cooperation with other institutions, effective monitoring and information systems, and systems to deal with transgressors. It thus forms an important action programme under the co-operative governance sub-strategy. This section deals with the monitoring of authorisations and compliance in terms of conditions for use in the Water Management Area.

Consolidate Clear and Realistic Standards with which Different Types of Water Use must be Compliant

The different water uses defined in the NWA (s21) require different monitoring, compliance and enforcement policies and procedures. DWA has gone some way in developing these policies and procedures and has established links with institutions such as the South African Police, Department of Environmental Affairs. The ICMA needs better understand these processes and links in order to complete an action strategy.

Ensure Appropriate Enforcement of the Different Water Uses

A great deal of information is available on enforcement and compliance. However, the actual implementation of enforcement is generally lacking. Stakeholders expressed frustration with this situation, and were eager to help the ICMA to develop innovative systems for enforcement, that do not rely solely on legal mechanisms. The ICMA will facilitate this collaborative development.

PART C: FACILITATING SUB STRATEGIES

CHAPTER 8: STAKEHOLDER ENGAGEMENT

Integrated Water Resource Management (IWRM) cannot be achieved by any single organisation or structure. It needs a system of organisations and individuals working towards a common set of objectives. Stakeholders expressed the desire to share the responsibility of managing a healthy water resource but warn that the current situation is unacceptable. There is a shortage of appropriate water management structures and where they do exist, responsibilities for decision-making are unclear or unsuitable. Furthermore processes of communication and lines of accountability are not adequately clarified.

This sub-strategy must establish and maintain pragmatic structures and processes for IWRM that are inclusive, transparent, and consensus-based. *The ICMA will operationalise the strategic actions proposed here via the implementation of its Business and Operational Plans*

ACHIEVING EQUITY

Establish and maintain pragmatic and workable structures and processes for participatory IWRM decision-making.

The establishment and maintenance of appropriate decision-making structures and processes is critical for successful IWRM, specifically when making decisions about how the inequities of the present will be addressed.

A number of stakeholder engagement processes will be employed within the broader process of participatory IWRM to ensure that the right tools are used for the right activities at the right times.

Facilitate appropriate capacity building and empowerment programmes.

Capacity building must address assumptions about equity in the participation process especially in respect of historically disadvantaged groups and individuals who have particular needs that must be directly targeted.

Capacity building involves a range of activities for improving the stakeholders' ability to achieve sustainable natural resource management. These include increased awareness, skills, knowledge, motivation, commitment and confidence. Capacity building should value and build on existing local expertise and knowledge and be based on principles of trust, mutual reciprocity and norms of action.

Revise and implement an inclusive process for establishment of Water User Associations.

The process of establishing Water User Associations, or of transforming Irrigation Boards into Water User Associations is designed to address issues of equity of access to water but has been slow to progress. It urgently needs to be practically and efficiently resolved. Transformation must proceed based on the values for IWRM decision-making that were agreed on by all stakeholders in the CMS process if it is to ensure broad based IWRM decision-making and implementation

MANAGING FLOW

Establish and maintain appropriate River Operations Committees.

The operation of river systems requires that technical decisions are taken over appropriate time scales. Operations Committees for each sub-catchment can serve as appropriate decision making entities. Monitoring the consequences of these operations and evaluating them against stakeholders' value will be clearly defined.

Ensure Reserve determination and implementation processes are transparent and inclusive.

Stakeholders explained that they felt intentionally excluded from Reserve determination processes and this presents a serious threat to co-operation and therefore sustainability. The economic, social, and environmental implications of various Reserve scenarios must be openly negotiated with all stakeholders.

MANAGING WATER QUALITY

Ensure that processes to determine and implement Resource Quality Objectives (RQOs) and the Reserve are transparent and inclusive.

GENERATING AND MANAGING KNOWLEDGE

Embed systems of social co-learning and co-generation of knowledge into IWRM decision-making processes.

ACHIEVING COMPLIANCE AND ENFORCEMENT

Facilitate awareness and education campaigns to help with mindset changes.

Many transgressions may be the result of individuals or groups being unaware of their responsibilities or, of course, simply not caring about their responsibilities. Specific education and awareness campaigns will be developed to target particular stakeholder groups that are not compliant.

GENERATING REVENUE

Ensure that decisions taken about how IWRM revenue will be generated are inclusive and transparent.

CHAPTER 9: MONITORING AND INFORMATION

The Visioning process clearly identified the need for knowledge based and knowledge led decision making.

The **objective** of the information management and monitoring sub strategy is to provide a strategic plan that:

- a) will provide the ICMA with the water resources and related information required to meet the responsibility towards effective water resources management as well as the reporting requirements regarding the health of water resources in their care to the Minister of DWAF;
- b) is consistent with the national standards and requirements as per the NWA
- c) guides collecting, accessing, analysing and sharing a wide range of information for the purposes of monitoring and IWRM and operational management and,
- d) ensures findings are incorporated into a process of review, learning and design of follow-up activities.

MANAGING FLOW

- Research and implement relevant management systems, information systems and programmes for integrated river operations in the face of Climate Change
- Generate, and track progress towards long term goals for progressive realisation of the reserve and international obligations.

MANAGING WATER QUALITY

- Implement accessible and transparent water quality and ecosystem monitoring systems in cooperation with the KNP and MTPA.

GENERATING AND MANAGING KNOWLEDGE

One of the initial functions of the ICMA is to investigate and advice as well as to co-ordinate the related activities of water users and of the water management institutions. Action programmes in this respect are:

- Identify monitoring & information institutions and formalise agreements
- Collect, manage, produce, store and disseminate data in appropriate formats and operationalise an integrated and iterative system for IWRM reflection, learning, and review.
- Participate in national and international IWRM networks, forums, conferences etc

ACHIEVING COMPLIANCE AND ENFORCEMENT

- Operationalise transparent and accessible systems for monitoring compliance, and actions against transgressors

CHAPTER 10: FINANCIAL STRATEGY

The legislative mandate covering this strategy is:

- National Water Act No.36 of 1998 (refer appendix attached for a detailed reference)
- National Pricing Strategy for Raw Water Use Charges, 16 March 2007
- Public Finance Management Act 1 of 1999

The Water Resource Management Charge covers all activities related to the protection, use, development, conservation, management and control of the water resources within the Water Management Area (WMA). Currently water use charges are set and recovered by DWA and the ICMA is funded from the National Revenue Fund via the main account from the DWA budget and the trading account (water use charges) via the Mpumalanga Regional Office of DWA. The current water use charges do not cover the above costs and are subsidized from the National Revenue Fund.

In future the ICMA must be compensated for the WRM functions performed as per sections 19, 20, 79 and 20 of the NWA together with the functions assigned and or delegated to it by the Minister of DWEA. It is clear that the ICMA will never totally recover costs from water users and become 100% self sufficient due to the many non-income generating functions to be performed and permanently financed or subsidised from the national exchequer.

This finance sub strategy has the same objectives that shape the Pricing Strategy (GN No. 201 of 16 March 2007) being the following:

- **Social equity** – Water use charges coupled to grants for financial assistance will contribute to social equity and redress of the imbalances of the past
- **Ecological sustainability** – Currently the cost of managing the Reserve should be paid for by all registered and billable users in terms of Section 56(2) (a) (iv) of the NWA. The Pricing strategy should be amended in this regard, because this common good should be funded from the National Revenue Fund.
- **Financial sustainability** – Adequate revenue must be generated to fund the annual cost related to the WRM.
- **Economic efficiency** – Water use charges must be set to reflect its scarcity value, to ensure is conserved and that some water used for low value purposes is redirected to alternative high value purposes.

Tariff setting and accountability

WRM Charges will be made from an Abstraction Unit charge, a Waste Discharge charge and other charges as agreed to by the Minister. The PFMA requires that the institution has systems that ensure the effective management of finances.

Way forward

The IWM costs must be ring fenced to distinguish between the income generating and the non income generating water management functions. The charges and tariffs will have to be increased over a period of time to ensure all the costs related to the income generating management of water use are covered. It will in the interim be necessary for the water use function to be subsidised by DWA. The ICMA must develop systems to:

- Implement the Waste Discharge Charge system.
- Obtain allocation on the national fiscus for non-recoverable costs e.g Resource Poor Farmers.
- Establish partnerships with current water institutions
- Ensure maximum recovery and collection of revenue.
- Finalise the verification process for data cleansing with the Regional Office of DWA

PART D: INTEGRATION SUB STRATEGY

CHAPTER 11: COOPERATIVE GOVERNANCE

Stakeholders have identified water as a cross-sectoral issue that requires cooperative governance processes be established and maintained to achieve collaboratively articulated values and objectives, and to ensure that single sectors, organisations or individuals do not engage in activities that conflict with values and objectives.

ACHIEVING EQUITY

Coordinate activities to increase access to water for resource poor farmers (infrastructure and extension support).

Stakeholders were clear that the many different programmes aimed at addressing inequities in access to water were not being effective. The ICMA will facilitate coordination of these programmes and promote voluntary resource sharing and skills transfer between the historically disadvantaged and historically advantaged.

Facilitate innovative solutions to the water services backlog

Ensuring that these rights are met is the responsibility of local government, but the ICMA has an obligation to take reasonable steps to ensure that the realisation of this right is possible. The lack of water services provision to the historically disadvantaged is seriously hindering equity objectives in the catchment and, although the provision of water services is distinct from water resource management, the ICMA will strive to help municipalities and other Water Services Authorities find innovative ways to overcome the water services backlog.

MANAGING FLOW

Promote coordinated river operations

Managing flow via river operations to give effect to the reserve and ensure water availability for development, requires integrated planning and actions of many different organisations. Institutional relationships that are based around river operations (e.g. with PRIMA, KJOF and Crocodile River Operations committee) are an integral part of the broader participatory IWRM decision-making system that the ICMA will develop in collaboration with its stakeholders.

Facilitate awareness campaigns and practical initiatives across sectors to decrease water losses and increase water use efficiencies.

The ICMA must embark on intensive water education programmes in collaboration with DWA and other agencies.

MANAGING WATER QUALITY

Institute a cooperative system to ensure that spatial/ development planning explicitly considers water resources and their long-term sustainability.

Uncontrolled and poorly planned developments were identified by stakeholders as a serious threat to the Inkomati catchment and in particular, to the water quality. The ICMA must now strive to raise the profile of water resources within the catchment, regionally, and nationally so that sufficient political will is mobilised to promote controlled and well-considered development.

Establish a clear system (communication lines, roles, responsibilities) for timely and effective management of pollution incidents.

The ICMA will strive to ensure that the roles and responsibilities for reporting, and dealing with, pollution incidents are clear to all stakeholders and develop a publically visible way of dealing with pollution incidents and transgressors.

Facilitate awareness campaigns and practical initiatives across sectors to decrease water quality degradation.

Specific sectors must be targeted in specific ways, depending on their pollution profiles, and educational requirements.

GENERATING AND MANAGING KNOWLEDGE

Build knowledge sharing/research networks nationally and internationally, and (2) Consolidate data and information sharing networks to meet operational and monitoring requirements.

ACHIEVING COMPLIANCE AND ENFORCEMENT

- Investigate different enforcement needs and potential methods across the catchment
- Develop and implement an innovative, practical and transparent system for identifying and dealing with transgressors