



Classification of water resources and determination of the Resource Quality Objectives (RQOs) in the Inkomati Water Management Area (WMA)

Public meeting Minutes

Date and time: Wednesday, 12 June 2013 at 08:30 for 09:00

Venue: Bundu Country Lodge, Nelspruit/White River Road – White River

Meeting objectives:

- Announce the study to be undertaken in the Inkomati WMA
- Share the study objectives and processes and how it links to studies already undertaken in the WMA
- Obtain the expectations and needs related to the classification process
- Obtain comments and inputs from stakeholders to roll-out the study
- Confirm the vision for the WMA and introduce the <u>principle</u> of Integrated Units of Analyses (IUAs)
- Discuss the formation of the Project Steering Committee and stakeholder engagement

Facilitator: Dr Thomas Gyedu-Ababio

1.	Welcome, introductions and objectives of the meeting	
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	Dr Thomas Gyedu-Ababio, Inkomati Catchment Water Agency (ICMA), welcomed all attendees to the meeting. He stated the objectives of the meeting as it was printed on the agenda which was distributed before the meeting and also at the meeting.	
	He introduced officials from the Department of Water Affairs (DWA), ICMA board and the professional service providers. He stated that the ICMA and DWA are working hand in hand on this study together with the team of professional service providers. He introduced Ms Mohlapa Sekoele as the Project Manager for the study from DWA.	
2.	Attendance and apologies	
	A list of attendees and apologies is attached as Appendix A.	Appendix A
3.	Acceptance of agenda	
	Stakeholders accepted the agenda as it was circulated and tabled.	
4.	Background to water resource classification and the determination of RQOs to be undertaken in the Inkomati WMA	Appendix B
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	Ms Mohlapa Sekoele, DWA gave an overview of the study and explained the concept of Resource Quality Objectives (RQOs) and the classification of water resources. She further explained the purpose of RQOs and the classification of water resources within the Inkomati Water Catchment Area (ICMA). Key aspects of the project were introduced and these included: • How the study will proceed;	

	Steps to be followed; andStakeholder management.	
	See Appendix B for a copy of her presentation.	
	How does the classification of water resource and the determination of	
5.	Resource Quality Objectives fit into the Catchment Management Strategy for the Inkomati CMA?	Appendix B
	 Mr Marcus Selepe, ICMA gave an overview of the ICMA, its functions and the process undertaken to compile a Catchment Management Strategy for the ICMA. The following items were discussed by him in his presentation: The Catchment Management Strategy has been finalised but has been put on hold pending finalisation of the revision of National Water Resources Strategy (National Water Resource Strategy); The vital attributes of the WMA; Threats which included public discontent and poor land and water use planning; and The vision for the ICMA. See Appendix B for a copy of his presentation. 	
6.	Expectations and needs for the implementation of the Water Resources Classification System in the Inkomati WMA	Appendix B
	Dr Thomas Gyedu-Ababio said that the presentations delivered provided a background to the expectations and needs for the study and listed them as follows: • Allow constructive consultation, cooperation and partnering with government, industry, municipalities, agriculture and other stakeholders wherever possible; • Supporting the advancement and application of scientific knowledge; • Buy-in: DWA/ICMA operating rules in the management of the Management Classes; • Promoting and supporting an appropriate level of enforcement of the National Water Act; • Active involvement in independent water resources monitoring; • Promoting the responsible use of technology in water resources improvement; • Celebrating and promoting the ICMA's water resource management qualities and values as appropriate to sustain a healthy sense of pride and stewardship; • Venturing beyond our WMA boundaries when needed to understand external factors impacting our resources, to gain useful knowledge and promote sharing of information. He asked participants to share their needs and expectations. Several participants asked general questions which are captured under point 8. The following were listed as stakeholder expectations and needs for this Inkomati Classification study: • Water users need to understand why we need Management Classes and Resource Quality Objectives and the needs to be greater efforts around enforcement of the Classes; • A clear process that addresses disparity and taking into consideration water use licenses and implications on them as a result of Resource Quality Objectives; • Better understanding of transfers in and out of the system and the associated socio-economic implications thereof; • The Usuthu River should be included in the study process; • Taking forward of the preliminary Reserve.	

7.	Inkomati Classification and RQO study combined with the Status Quo and principles on visioning for the Inkomati WMA	
	Mr Stephen Mallory, IWR Water Resources presented an overview of the project plan and study tasks as well as notes on the status quo which included the following items: • Water resource; • Water quality; • Land use; • Economy; • Ecology; and • Ecosystem services	
	He also discussed the preliminary delineation of Integrated Unit of Analysis, principles with regards to this and the importance of the visioning process. See Appendix B for a copy of his presentation and a copy of the maps provided and the questionnaire which was included in the documentation packs.	
8.	Facilitated Discussion	
	The sections below present the comments, questions and issues raised by participants at the meeting. The contributions made at the meeting were categorised in the topics listed below.	
8.1	Determination of the Reserve	
	8.1.1 Ms Felicity Henman Weir (Environmental Auditor): Has the Reserve for groundwater and wetlands been determined for the Inkomati WMA? Mr Stephen Mallory (IWR Water Resources): The preliminary Reserve which includes groundwater and wetlands has been determined a few years ago. This study will assist in confirming the preliminary Reserve and once the significant resources have been classified the Reserve will, as part of the process, be gazetted.	
	8.1.2 Mr Clemens Kiessig (Barberton Mines): Did the project team follow all the seven steps as per Ms Sekoele's presentation to determine the preliminary Reserve and was this published in the government gazette? Ms Shane Naidoo (DWA): The preliminary Reserve has not yet been gazetted. Currently there is no requirement to gazette a preliminary Reserve.	
	8.1.3 Dr Sharon Pollard (AWARD): There is a project that Mr Mallory might be interested in which entails developing an integrated water quality system for the whole Crocodile River and this includes funding which has been contributed by various water users. Mr Stephan Mallory (IWR Water Resources): Indicated that he is aware of the project and will be working closely with that study team.	
	8.1.4 Dr Sharon Pollard (AWARD): A second project of relevance to the Classification is a WRC study into eco-systems services which was piloted in the Sabie Sand catchment Mr Stephen Mallory (IWR Water Resources): Requested that the reports from this WRC study be made available to the study team.	
	8.1.5 Mr Mpho Makhawu (Bushbuck Ridge Water): The presentation indicated that the ecological environment of the water resource will be understood and quantified based on the ecological requirement that is already conducted within the preliminary Reserve. Is this study undertaken to determine the Management	

Classes? Are we going to determine another Reserve within the catchment or will the ecological Reserve be used to determine the Management Classes?

Ms Shane Naidoo (DWA): The preliminary Reserve does not define a Management Class, but defines ecological categories or ecological conditions. Once the Management Class is set, the preliminary Reserve will be relooked to see if it will give effect to the set class. If it does not give effect to the Management Class being set, then the preliminary Reserve will be revised.

8.1.6 Prof. Kevin Rogers (Wits University): The project team must always use the correct terminology as per the National Water Act. The term "ecological Reserve" as it has been referred to by the DWA and their consultants is confusing stakeholders. It is not a Reserve for the ecology but a Reserve for the ecological goods and services to society. The Reserve is for people and not the ecology. We need to ensure that we stop perceiving the Reserve as the first point of call for more water, there are many ways of improving water use in the catchment and these need to be examined. Poor people are going to be negatively impacted as they rely on the Reserve for goods and services. The determination of a Reserve is not a matter of distinction between ecology and jobs. Consultants must refrain from using the term 'ecology' but rather refer to it as goods and services. River regulation is not a matter of good water diluting with poor quality water. The processes that takes place in a naturally functioning river removes many of the pollutants, this is one of the biggest services that we get from the ecosystem.

Mr Stephen Mallory (IWR Water Resources): We will discuss the use of terminology with the Department of Water Affairs.

The term 'ecological Reserve' is used in the National Water Act and extensively in the National Water Resources Strategy. If there is confusion as to what this means then this will be addressed.

8.1.7 Mr Francois Roux (ICMA): There is a misconception that the Reserve stops at the Resanno Garcia border before it goes into Mozambique. They want to use the Reserve as the water according to the international obligations. The Reserve cannot stop at the border. Mr Roux requested clarification on how this matter will be taken forward.

Mr Stephen Mallory (IWR Water Resources): Agrees that the Reserve cannot stop at the border, but it should be noted that in terms of the Mozambican Water Act, there are no legal requirements to have a reserve. The international agreements specify it as a single minimum flow which is not our concept of a Reserve.

8.2 Classification of Resource Quality Objectives (RQOs)

8.2.1 Dr. Koos Pretorius, (FSE): In hindsight of the Olifants River WRCS study, I would like to suggest that once this process for the Inkomati WMA has been completed, water users need to understand what is meant by integrated water use management and the importance of classifying RQOs.

We certainly hope that this study will result in improved understanding of IWRM amongst stakeholders

8.2.2 Mr Francois Roux (ICMA): It is confusing that the Reserve study was undertaken six years ago and the classification study is currently being undertaken. These processes need to complement each other.

Ms Shane Naidoo (DWA): The preliminary Reserve will be relooked at and confirmed through this study, thus the processes do complement each other.

8.2.3 Ms Patience Nyakane-Maluka (ICMA): Will the classification study have any significant impacts in terms of global warming?

Mr Stephen Mallory: The classification study will be based on the current climate. I have researched the effects of global warming in relation to water resources in the Inkomati WMA and it seems that the global circulation models still give quite diverse

	results. Hence the impact of climate change is uncertain. What does seem more certain is that the temperature is rising and this will affect the crops as they will need more water. Perhaps a discussion regarding global warming and the classification study should be referred to a future Project Steering Committee (PSC) meeting. 8.2.4 Mr Sabelo Magagula (Sugar Cane Grower): It has been indicated in Mr Mallory's presentation that Swaziland is not using its full allocation of water, what is going to happen if Swaziland uses all of its allocated water? Mr Stephen Mallory (IWR Water Resources): Currently the irrigators within the Inkomati are getting an assurance of supply of approximately 80%. So if Swaziland uses all of their allocated water, the assurance of supply to the Inkomati irrigators will be less. 8.2.5 Mr Sabelo Magagula (Sugar Cane Grower): Will the study increase the capacity of water flowing into Mozambique? If the water flow is going to be increased, is there enough reserve for South Africa? Mr Stephen Mallory (IWR Water Resources): The classification study will not affect the water flow to Mozambique. The water flows are stipulated in terms of the international agreements between the countries which are approved by the Ministers of Water Affairs of each country.	
8.3.	Study Area	
	8.3.1 Dr Koos Pretorius (FSE): It is understood that the Usuthu River will become part of the Inkomati catchment but that it is not within the scope of this study. Should the Usuthu River not be included as part of this process? Ms Shane Naidoo (DWA): When this project was initiated the boundaries were still under consideration which is why the Usuthu River is not part of this study area. Considering that Usuthu River might become part of the Inkomati WMA, the DWA has initiated the process to include the Usuthu River. However, the Usuthu River is not part of this contract and this specific study. 8.3.2 Ms Patience Nyakane-Maluka (ICMA): There is a distinction between the Sabie River and Sand River. As such the project team must refrain from referring to the Sabie and Sand River as one river. Mr Stephen Mallory (IWR Water Resources): The Sand River is a tributary of the Sabie River, hence when we speak of the Sabie River catchment it includes the Sand River. It is however acknowledged that the Sand River is different to the Sabie river in many respects and it will be treated as a separate entity in this Classification study.	
8.4.	Integrated Unit of Analysis (IUAs)	
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	8.4.1 Prof. Kevin Rogers (Wits University): What is Integrated about an Integrated Unit of Analysis? Mr Stephen Mallory (IWR Water Resources): We refer to it as integrated as multidisciplinary approach is taken in determining the IUAs, for example, water resources, water quality, economics, ecology, etc. We perceive it as an integrated water resources management concept. 8.4.2 Mr Francois Roux (ICMA): The preliminary IUAs seem to be broad in scale, what is going to happen to the ecologically sensitive areas as well as the small tributaries within the large IUAs? How are we going to incorporate these in the model because we are going to lose some of the important ecologically sensitive areas? We raised similar concerns during the Olifants study and we were told	
	that additional nodes will be made and will be incorporated but we still have not received any information to that effect.	

Refer to the response to question 8.4.3 8.4.3 Dr Koos Pretorius (FSE): Reiterated Mr Roux's concern about losing the ecologically sensitive areas within the IUAs. The fundamental problem with these is the difference between consultation and collaboration. In other words there is an agreement between all stakeholders involved. This study is supposedly driven by collaboration rather than consultation. It was easy to say that the additional nodes will be introduced but every node that is introduced needs to be monitored in future. In the upper Olifants catchment there are very sensitive areas between coal mines and these are classed as Class 3. The nodes that are supposed to protect these areas are not present. Within the IUAs there is a sub IUAs and there will be different RQOs that are being set. Mr Stephen Mallory (IWR Water Resources): There are modelling nodes within the IUAs which are done at a finer scale but I am not certain on how these are applied within the Resource Quality Objectives. Suggested that a discussion regarding the scale of the IUAs be debated at a future PSC meeting. While there will be between 30 and 40 IUAs in the Inkomati WMA, an IUA is not necessarily a uniform entity. An IUA can be (and will in this study) be represented by several sub-catchments. These sub-catchments will each have an Ecological Category assigned to it to protect ecological sensitive areas. Therefore, as an example, while an IUA might have a Class 2 assigned to it, the detailed specification for the IUA could specify one subcatchment in an A category, 2 in a B and 1 in a C. 8.5 **Budget Allocation** 8.5.1 Prof. Kevin Rogers (Wits University): How much budget was allocated for this project? Ms Shane Naidoo (DWA): It is unreasonable to provide the budget at this meeting as we are still at the inception phase and we are trying to determine the work programme. Once that work programme has been determined then the inception report can be finalised. The final inception report will provide a breakdown of the budget allocated for this study. 8.6 Socio-Economic matters 8.6.1 Dr. Koos Pretorius (FSE): The Usuthu River transfers into the Inkomati which then transfers into the Olifants River. There is no reciprocal exchange of development from the benefits of water from the Olifants River. How is this going to be assessed in the Socio-economic assessment? What are the chances of replacing that water from another catchment for the Inkomati catchment so that we can use that water for socio-economic development? Mr Stephen Mallory (IWR Water Resources): The Classification Study will certainly consider the socio-economic implications of transfers into and out of the catchment. However, it is not the mandate of this study to decide on the merits of these transfers. This issue must be taken up at a national level. 8.6.2 Dr Sharon Pollard (AWARD): One of the items we discussed at the Olifants Catchment was why is the Gross Domestic Product (GDP) used as the main indicator of the economic activity within this catchment? People need to understand why this is used as a benchmark. Mr Stephen Mallory (IWR Water Resources): GDP is one of the aspects to be considered and not the only aspect. Several other factors will be considered.

	8.6.3 Dr Sharon Pollard (AWARD): The majority of economic assessments do not reflect the reality of South Africa. About 68 % of people within the Sabie Sand catchment are unemployed but they contribute towards the informal economic sector. Although the informal economic sector is a small scale sector, the water uses from the informal sector needs to be taken into consideration for this study. Mr Stephen Mallory (IWR Water Resources): The consultant that will be in charge of the economic component will take note of the informal economic sector within this catchment. 8.6.4 Prof. Kevin Rogers (Wits University): It should be taken into consideration that the informal economic sector keeps money within the Inkomati catchment and the formal economic sector takes money out of the catchment. 8.6.5 Dr Koos Pretorius (FSE): The GDP should not be the only measurement of economic activity within the catchment, we need to discuss the issue of GDP before the reports are finalised as this has previously created issues in the Olifants study. Mr Stephen Mallory (IWR Water Resources): Since the economic evaluation is clearly a major issue, a separate Focus Group meeting is suggested during which the methods of economic evaluation will be debated. 8.6.6 Ms Lillian Masilela (ICMA): Mr Mallory's presentation indicated that 80 % of water is allocated for domestic use but only 22% of the allocated water is used. Concerned that there have been service delivery issues regarding water within the catchment, was there a reason why water was underutilised? This raises a concern because there is an issue of water scarcity within the catchment. According to Mr Mallory's presentation, Inyaka dam is mainly utilised for domestic	
	purposes but we have witnessed community members from Bushbuckridge	
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	The water supply problems are due to water services problems and not a shortage of water resources. However, if the water resource is not carefully managed dams could be drawn down to empty during severe droughts. Threats within the catchment 8.7.1 Ms Lindiwe Chuma (SanParks): What measures has the ICMA undertaken to reduce the threats as mentioned by Mr Selepe in his presentation? Mr Marcus Selepe (ICMA): As part of this study, objectives will be set which will become targets that we can achieve together in order to deal with the threats listed in the presentation. 8.7.2 Ms Nonceba Noqayi, (Nkomati Basin Water Authority): What are the measures that will be undertaken by the ICMA in terms of compliance and enforcement with regards to water quality issues within the catchment? Mr Selepe invited Ms Noqayi to have a personal discussion with him during the tea break.	

	information will be taken to the forums where discussions can take place in several languages and in more simplified terms. 8.8.2 Mr Sabelo Magagula (Sugar Cane Grower): Supports the notion of using simplified terms to explain the purpose of the study. 8.8.3 Dr. Eddie Riddell (UKZN, Centre for Water Resources): The information on previous studies must be simplified so that all stakeholders can fully understand and relate to the study. The next meeting should be about the building blocks of water accounting aspects and how this relates to people. 8.8.4 Mr Greg Beyers (TSB): Simplify the presentation so that those at grassroots level can fully comprehend the purpose of the study so that we can get the value from undertaking this study.	
	8.8.5 Dr Koos Pretorius (FSE): Indicated that the forums within the upper Komati are dysfunctional and non-existent.	
8.9	Effects on the environment	
	8.9.1 Mr Philip Owen (South African Water Caucus): There is more than 400 million cubic metres of water utilised by the timber plantations annually. When there is drought irrigation farmers can be curtailed but that does not happen with timber plantations. The soil biomass and grass have been affected due to the immense fires caused by the timber plantations. The timber plantation industry poses negative impacts on the quality of water. There is a movement to replant timber plantations within the Sabie River catchment and Bushbuckridge. The SA Water Caucus will oppose this replantation. There needs to be a distinction between timber plantations and forests. Requested that stakeholders who have an influence within the timber plantation industry to consider diversifying within the compartments, because it is the lack of diversity within the timber plantation that poses negative impacts on the environment. Mr Stephen Mallory (IWR Water Resources): We will add these on the list of water quality issues - this is related more to forest management.	
8.10	Visioning for the Inkomati WMA	
	8.10.1 Mr Themba Nkosi (Iqopha-Mlando Co-Operative): How is the visioning process going to be undertaken? Dr Thomas Gyedu-Ababio (ICMA): The visioning process will be discussed at the PSC meeting and rolled-out from there.	
8.11	Additional stakeholders to be included in the study	
	 8.11.1 Dr Thomas Gyedu-Ababio (ICMA) asked which other key stakeholders that should have been represented at the meeting. Attendees indicated that the following stakeholders need to be involved: Eskom; Authorities from Mozambique and Swaziland- (Dr Thomas indicated that they have been invited); Traditional leaders (Upper Nkomati); Bushbuckridge Local Municipality-(Have sent an apology); Chamber of Mines; Forestry Sector; Agricultural Sectors; 	

- Department of Health;
- Academic and research organisations;
- Tourism sector; and
- Funeral parlours
- 8.11.2 Mr Vusi Mnyandu (Manguni's Poultry): The geographical representation must also be taken into consideration when selecting members of the PSC.

8.12 Other

- 8.12.1 Dr Koos Pretorius (FSE): Requested a list of abbreviations used by presenters be made available to all stakeholders.
- 8.12.2 Prof Kevin Rogers (Wits University): Suggested that abbreviations should not be used.
- 8.12.3 Ms Patience Nyakane-Maluka (ICMA): The presentation by Mr Mallory indicated that the Inkomati has a rainfall that ranges between 500 and 1200 millimetres (mm) per annum, does this mean that the whole catchment is within the highest rainfall range? It was also indicated that the Sand sub catchment is dry, requested clarification on how dry is the Sand sub catchment.

Mr Stephen Mallory (IWR Water Resources): The average rainfall for South Africa is under 500mm per annum, anything that falls below this level is considered to be low and anything above 600mm is regarded as high rainfall. When you get a rainfall above 600 mm rivers will flow all year round. Anything less than 600 mm results in dry or seasonal rivers. We will make the rainfall map available so that stakeholders can see which areas within their catchment are dry and which are within the higher rainfall areas.

- 8.12.4 Ms Lillian Masilela (ICMA): Requested the project team to distribute hard copies of the presentation to all stakeholders.
- Dr Thomas Gyedu-Ababio (ICMA): Hard copies of the presentation will be made available at the forums.
- 8.12.6 A concern was raised that the funeral parlour workers use the Inyaka dam to wash their pans.
- 8.12.7 Ms Lillian Masilela (ICMA): Concerned that the Water Service Authorities from the ICMA are not present at the meeting.

Dr Thomas Gyedu-Ababio (ICMA): The issue of non-attendance from the ICMA service authorities will be addressed.

8.12.8 Dr Sharon Pollard (AWARD): The International Association for Public Participation (IAP2) has a useful framework that gives guidelines on consultative and collaborative processes. She proposed that the project team must ensure that they communicate to stakeholders on what is expected of them and the steps that will be undertaken going forward. This is third time in South Africa that we are testing this process, so we are learning as we go along.

9. Establishment of the Project Steering Committee

The PSC is not a statutory but a voluntary body. If people are elected to be part of the PSC they must note that there is no stipend that will be offered as part of being a member of the PSC. People who will serve on the PSC are expected to do the following:

- Guide how the process will be undertaken;
- Provide input on behalf of their constituencies;
- Provide strategic direction on the desired state of the water resources,
- Provide technical input;

- Provide feedback to their constituencies; and
- Facilitate grievance mechanisms of the people they are representing.

Dr Thomas Gyedu-Ababio asked all attendees on who should be part of the PSC. He reiterated that they need PSC members who will add value to the process and who will be committed. Requested attendees to provide sector names, and those sectors will elect an individual whom they want to represent them at the PSC.

Attendees indicated that the following constituencies need to serve on the PSC:

- Mining;
- Commercial farmers/ Emerging Farmers
- NAFCOC;
- Traditional leaders:
- Resource Directorate Measures (DWA)
- Government departments;
- Conservation/ Environment:
- AFASA:
- Undertakers/ Funeral Parlours
- Non-governmental organisations;
- DWA (Compliance and Monitoring Directorate);
- Mozambique and Swaziland;
- Academic / Technical (Ethnologist, Aquatic and hydrology specialists)
- Eskom,
- Industry,
- Tourism;
- Municipalities;
- Forestry;
- Water services providers;
- Water User Associations/ Irrigation Boards;
- Community Based Organisations;
- ICMA:
- KOBWA;
- TRAC;
- Home based Care Workers:
- Business/Industry.

Dr Thomas Gyedu-Ababio requested stakeholders to complete the PSC nomination form and submit it to the consultants by the end of June 2013.

Dr Koos Pretorius suggested that the PSC nomination form be completed at their respective forums which will be taking place before the end of June 2013

Mr Nhlanhla Khoza, Bushbuckridge water enquired on how many people they can nominate for the PSC. Dr Thomas Gyedu-Ababio responded only one representative per constituency must be nominated.

It was indicated that an email will be sent to all attendees regarding the submission of the nomination form. Attendees were also encouraged to complete the nomination forms and submit them at the registration table.

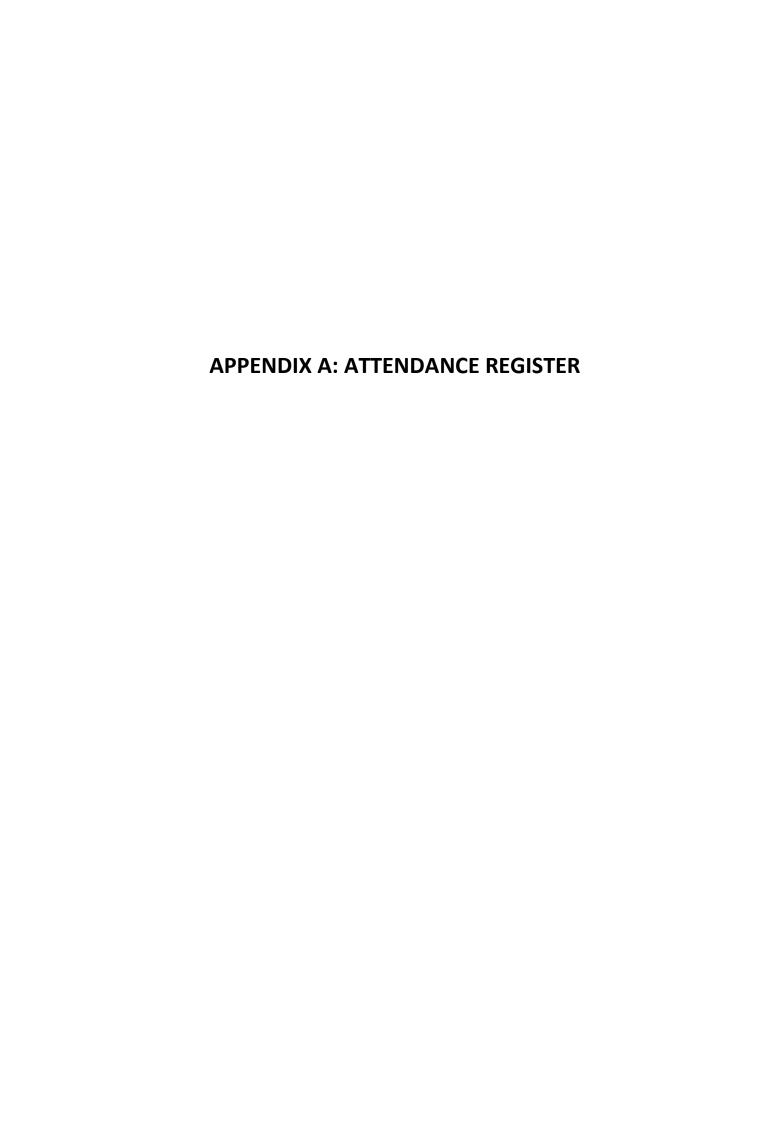
10. How should we communicate progress made on this study?

Dr Thomas Gyedu-Ababio asked all stakeholders on how they would prefer to be communicated to regarding the progress of the study. The progress of the study will be communicated through the forums, PSC. The project will organise another public meeting and all stakeholders will be invited.

Additional methods of correspondence that were proposed by stakeholders are as follows:

	Post	
	Newsletter;	
	SMS; and	
	Facebook and Twitter.	
11.	Summary	
	Dr Thomas Gyedu-Ababio summarised the proceedings of the day to all participants. The summary presented by him is incorporated in the points above.	
12.	Next Step and Closure	
	Dr Thomas Gyedu-Ababio discussed the way forward as follows:	
	Establishment of the PSC and the Inaugural PSC meeting;	
	 Collation of information arising from catchment visioning exercise; 	
	Finalisation of the stakeholder engagement plan;	
	Finalisation of IUAs delineation;	
	Finalisation of the Status Quo Report; and	
	Compilation of the Issues and Responses Register	
	Dr Thomas Gyedu-Ababio indicated that logistics regarding the next meeting will be discussed at the PSC meeting. He also thanked everyone for attending meeting and for their inputs.	

• Please note, the paragraphs above in bold italics were added to the minutes as additional comments and were not recorded as part of the meeting discussions.



Inkomati WRCS: Attendance Register of the public meeting 12 June 2013

	endance Register of the p	_	
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Themba Khumalo	Get hands dirty Co-op	079 124 9099	thelowkhumalo@gmail.com
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APPENDIX B: PRESENTATIONS



DETERMINATION OF WATER RESOURCE CLASSES AND ASSOCIATED RESOURCE QUALITY OBJECTIVES IN THE INKOMATI WMA

PUBLIC MEETING

Date: 12 JUNE 2013

Time: 09:00

Venue: Bundu Country Lodge, Nelspruit

Mohlapa Sekoele







PRESENTATION CONTENT

- > The Water Resource Classification System (WRCS)
- Resource Quality Objectives (RQOS)
- Study Area
- Process for the classification of water resources and determination of the Resource Quality Objectives in the Inkomati WMA







LEGAL MANDATE

- The classification of South African water resources is required by the National Water Act (NWA) (No. 36 of 1998) (Chapter 3 regarding the protection of water resources)
 - Class
 - Reserve (Preliminary)
 - Resource Quality Objectives

(RDM-Set objectives for the desired condition of water resources)

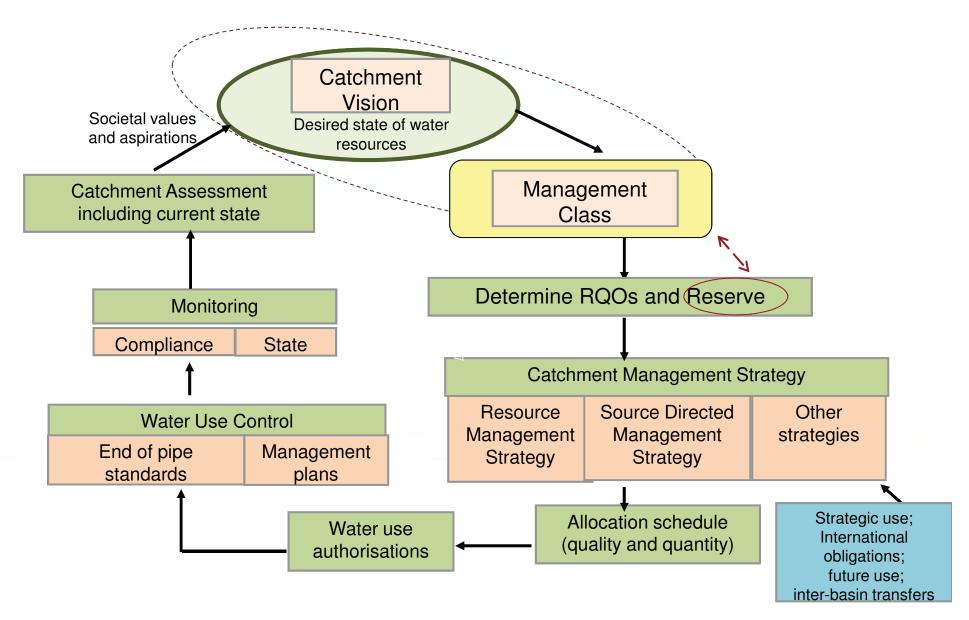
- Regulation 810 published in Government Gazette No. 33541 dated 17 September 2010 defined water resource management classes and the procedure to determine a Class
- According to the NWA, once the WRCS has been gazetted all significant water resources must be classified







INTEGRATED WATER RESOURCE MANAGEMENT





CLASSIFICATION SYSTEM

- ➤ The WRCS provide guidelines and procedures for setting different MC (MCs);
- MC describes what state the water resources need to be in to satisfy beneficial use;
- MC facilitates the balance between protection and use of the water resources;
- MC is defined by taking into account the social, economic & ecological landscape;
- Process requires co-operation & transparency with all stakeholders.





THREE MANAGEMENT CLASSES (MC)

Classes	Description of use	Ecological categories
Class I	Minimally used	A-B
Class II	Moderately used	С
Class III	Heavily used	D & lower

Ecological Category (EC) - means the assigned ecological condition to a water resource in terms of the deviation of its biophysical components from a predevelopment condition.





RESOURCE QUALITY OBJECTIVES (RQOS)

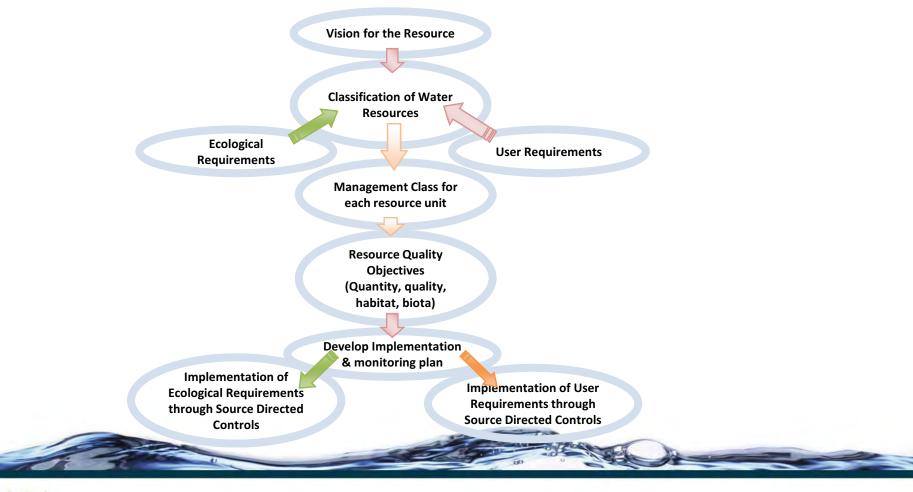
- RQOs are numeric or descriptive statements of conditions which should be met in the receiving water resource;
- RQOs represent the requirements for water quantity, quality, and habitat and biotic integrity to be maintained in aquatic ecosystems.
- ➤ They are targets that can be measured/audited, and can be used as benchmarks to monitor a combined resource that may have several licensed users.
- RQOs provide measurable goals that give direction as to how the resources need to be managed.







THE LINK OF RQOS WITH WATER RESOURCE CLASSIFICATION







Classification and RQOs Determination

The determination of classes and RQOs is a step-wise process consisting of:

- Assessment of the study area and delineate the IUAs
- Identify and evaluate the scenarios
- > Setting of the class, userspecs and ecospecs
- Stakeholder engagement







HOW WILL CLASSES AND RQOS ASSIST IN THE MANAGEMENT OF THE CATCHMENT?

- > The catchment vision requires a desired state of the water resources
- RQOs will give effect to the implementation of the MCs
- There will be management framework describing the following:
 - >The extent to which every significant water resource can be used, and
 - ➤ The level of protection every significant water resource will be afforded.
- Develop plan of action for implementation of recommended classes and RQOs which must include a monitoring programme.







DETERMINATION OF CLASSES AND RQOS IN THE INKOMATI WMA





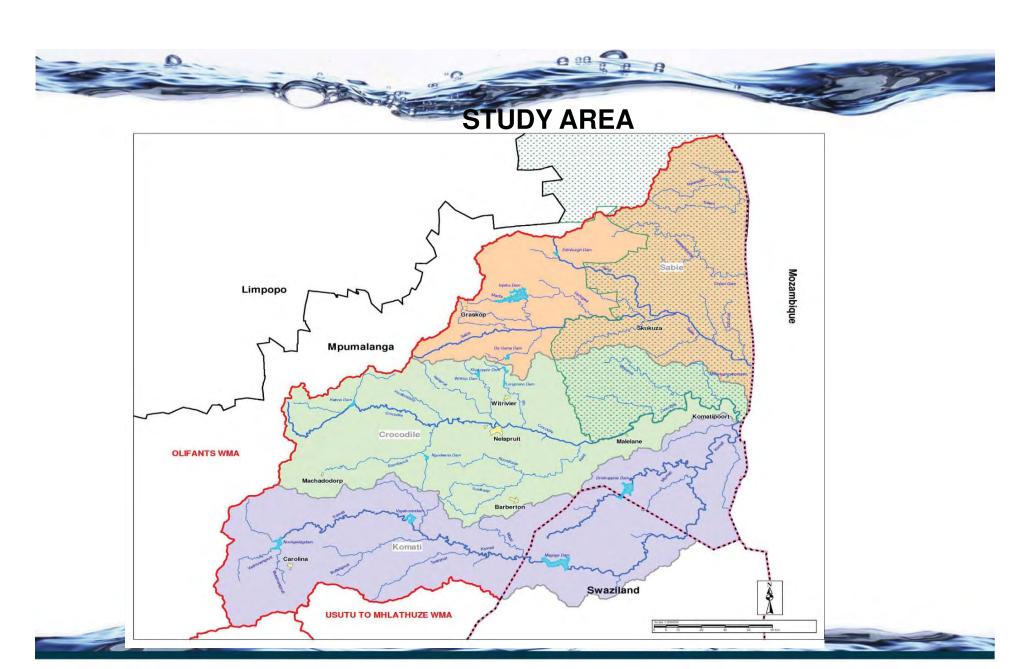


DETERMINATION OF CLASSES AND RQOS IN THE INKOMATI WMA

- > The study was initiated in April 2013: still in the inception phase
- Timeframe: 24 months
- > IWR Water Resources was appointed to assist DWA
- ➤ The objective of the study is to determine classes and RQOs in the Inkomati WMA











GUIDING PRINCIPLES ON THE PROJECT

- > Alignment with the existing work and current studies
- Transparency and Stakeholder engagement
- Consultation and collaboration
- The classification and determination of the RQOs are step-wise processes







STUDY PROCESS

In accordance with the classification and RQOs guidelines: 7 step process applies



Divided catchment into management units (IUAs) based on socio-economic/land use characteristics/water

Data assessed Status quo understood

resources(IUAs)

Catchment vision initiated

2

Link value and condition of water resources

Goods and services assessed

Economic Framework for decision making developed 3

Ecological requirements of water resources understood and quantified

How much water does the ecology require for different protection levels

4&5

Identification and evaluation of scenarios

Set of scenarios tested for sustainability and evaluated

Understand the implications of different protection levels

6

Recommen ded
Manageme
nt classes

&RQOs

To set EcoSpecs and user specs 7

Gazetting

To gazette
Classes,
Reserve
and
RQOs

Stakeholder engagement

April 2013 to March 2015



STAKEHOLDER ENGAGEMENT







PURPOSE OF THE STAKEHOLDER ENGAGEMENT PLAN

- To engage with stakeholders on the determination of the Management Classes & RQOs in the Water Management Area
- To extend stakeholder engagement to all the key stakeholders
- To have one-on-one meetings with the key stakeholders who could not attend the workshops
- To communicate Communication Plan for the study







OBJECTIVES OF THE STAKEHOLDER ENGAGEMENT PLAN

- To improve the management process of this project.
- •To reduce the potential for future conflict.
- •To enable the Department and stakeholders to share knowledge and expertise.
- •To inform and educate stakeholders about the Department's function and responsibilities.





TARGETED STAKEHOLDERS

- > Agriculture Agri SA, NAFU, Irrigation boards, Tvl Agric Union of SA
- Emerging Farmers
- Mining COM and mining houses
- Industries Eskom, SAPPI, TSB Sugar, etc
- Local government local and district municipalities in WMA
- Conservation SANBI, Sanparks, WESSA, Bird Life Africa
- NGOs Federation of Sustainable Environment,
- Regulators DWA & DEA (regional and national), DMR, Department of Agriculture, Land Affairs
- > Water Service Authorities/Providers- SembCorp, BCT Water, etc.



TARGETED STAKEHOLDERS [Cont.]

- ➤ Information/Academic institutions libraries, universities
- Unions & House of Traditional leaders
- Catchment Forums & WUA
- > Civil society and the environment representatives
- Community members (public at large)



COMMUNICATION METHODS/ APPROACH

- Direct –Stakeholder meetings
 - Distribution of documents and presentations for comments
- Interviews One-on-One meetings
- Printed Documents BID, Newsletters & Brochures
- Electronic media DWA website: www.dwa.gov.za/rdm/WRCS/default.aspx

ICMA website: www.inkomaticma.co.za

E-mail (database list)

Stakeholder engagement to be driven by the ICMA





OUTCOMES OF THE STAKEHOLDER ENGAGEMENT

- Updated data sources
- Issues and response register
- Updated stakeholder database
- Final technical reports







THANK YOU







WAY-FORWARD

- > Establishment of the PSC & Inaugural PSC meeting
- > Collation of information arising from catchment visioning exercise
- > Finalisation of the stakeholder engagement plan
- > Finalisation of IUAs delineation
- > Finalisation of the Status Quo Report
- > Compilation of the Issues & Responses Register





- Non-statutory, voluntary body;
- Serve as representatives of the stakeholder bodies and organisations and report back to them on an ongoing basis regarding the study decisions and results;
- To guide the project in all stages as it unfolds;
 - Provide technical inputs and support on behalf of the sector it represents
 - Provide strategic direction and guidance on the study process and tasks
- Oversight body for water resource management within WMA





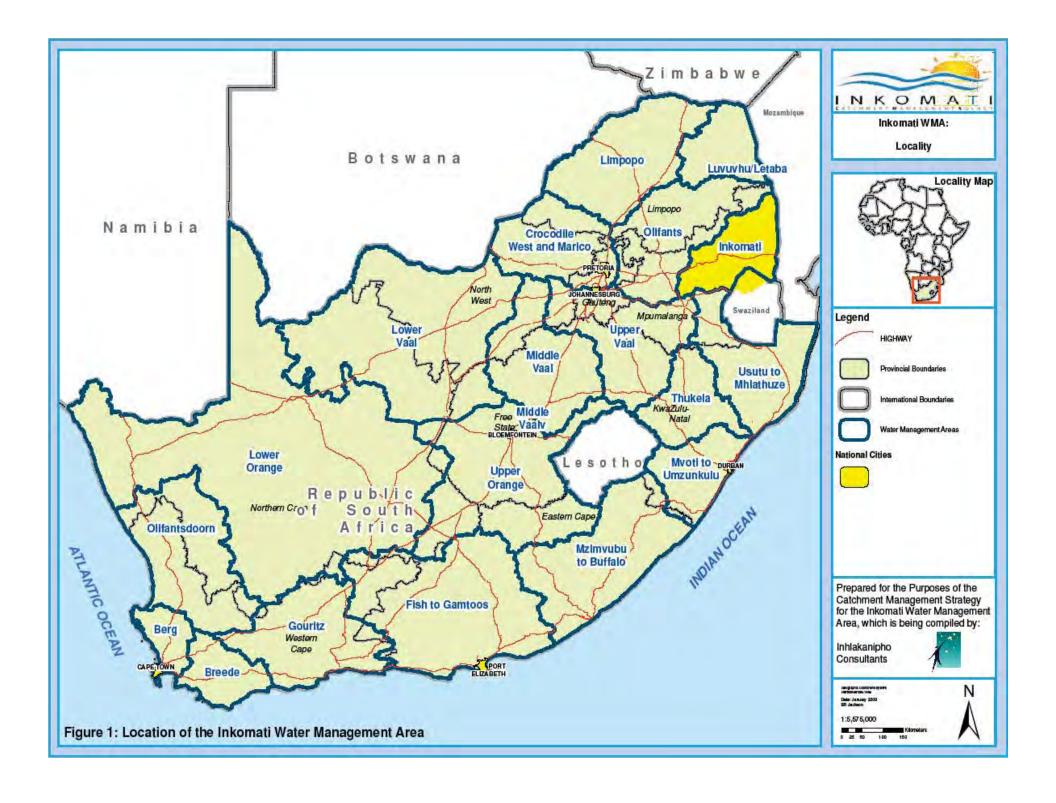
Catchment Management Strategy

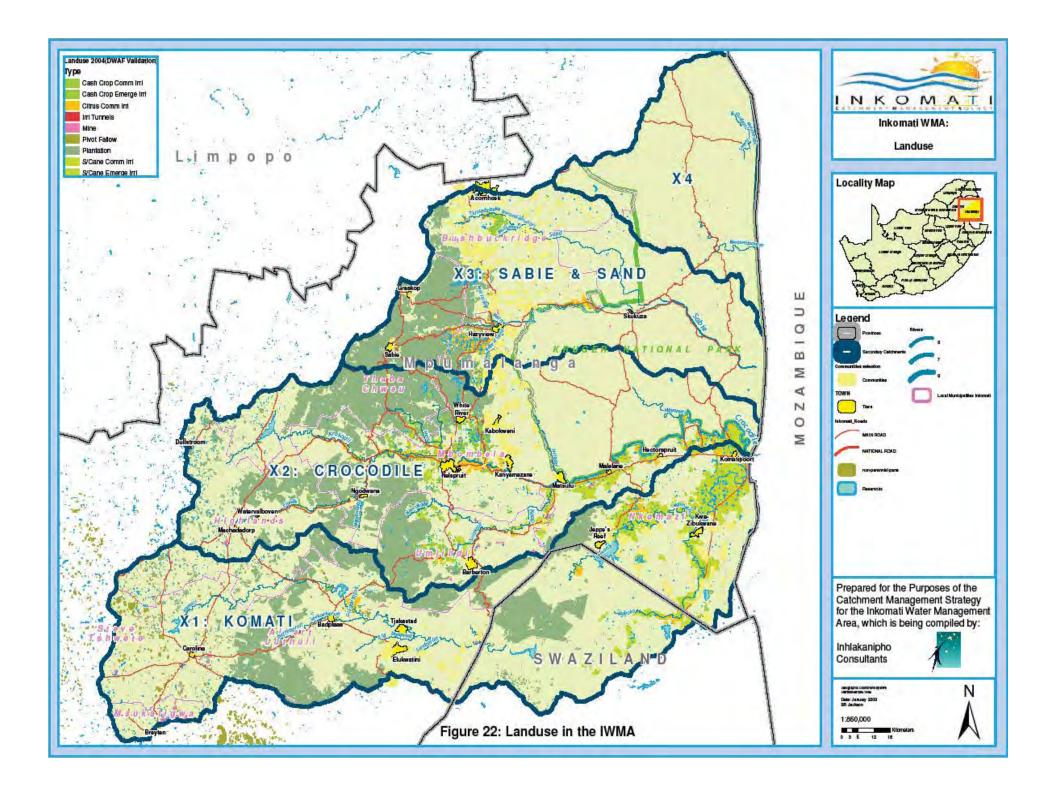
Stakeholder Consultation:

12 June 2013

Marcus Selepe







Strategic Adaptive Management Process

- Values
- Vital attributes
- Threats
- Context for the management of IWMA

Values

- Acknowledge interdependence of responsibilities for caring for the resource
- Decisions, actions and outcomes subject to evaluation against goals, indicators and timeframes
- Management is adaptive, open to critique and outcomes driven.
- Decisions within our mandate are justified on basis of best available social, technical, economic, environmental and governance knowledge



Vital Attributes of the WMA

- Livelihood is linked to health of rivers and tributaries
- Rainfall is variable in space and time
- Rivers are important source of water for Swaziland and Mozambique
- The catchment is a critical element of internationally renowned tourist attraction area
- There are still large disparities in access to water and current water allocations do not meet domestic and economic needs.



Threats

- Public discontent, scepticism
- Poor land and water use planning
- Non-compliance by developers and mining
- Lack of enforcement
- Non-implementation of the reserve
- Insufficient water use charges
- Shortage of skilled technical personnel









Context for management of the IWMA

- Inkomati economy is highly dependent on water
- Irrigation based agriculture and forestry provide most jobs in the catchment
- Poor municipal waste management results in decreased water quality and fitness for use
- Poorly managed mining activities impact on the quality of both ground and surface water
- There is poor enforcement and variable monitoring of water quality, quantity and illegal use



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



Allocation Priorities

- The Reserve preliminary
- International obligations
- Strategic use
- Inter-catchment transfers
- Allocable water

The Inkomati Catchment Management Agency

Classification of Water Resources in Inkomati WMA

Bundu 12 Jun 2013



Introduction

- WRC protection and development
- The Zonation analogy
- Three possible class distinctions according to water quality parameters landuse, water quantity and community expectations
- This will protect the surface water resources and promote responsible management of the Inkomati WMA



What is it about/Why?

- Balancing development, use and protection
- Classification is a difficult process to understand
- Water use authorisation is currently being done based on the preliminary Reserve Setting MCs will assist the DWA/ICMA to do this on a better footing
- According to the National Water Act (NWA)
 water must be managed on a catchment
 basis so classification is following that
 route



Objectives of this workshop

- Announce the study to be undertaken in the Inkomati WMA
- Share the study objectives and processes and their links to other studies in the WMA
- Obtain the expectations and needs of the classification process
- Obtain inputs and comments from stakeholders
- Confirm the vision of the WMA and introduce the principle of integrated units of analyses (IUAs)
- Discuss the formation of the PSC and stakeholder engagement



House rules

- Tolerance diverging views
- Agree to disagree
- Don't use platform to settle scores
- Don't expect answers to all our questions/demands – e.g. water services issues
- Cell phones
- Ablutions
- Time table
- Name, organisation before a question



Expectations and needs for the implementation of WRCS

- Allow constructive consultation, cooperation and partnering with government, industry, municipalities, agriculture and other stakeholders wherever possible
- Supporting the advancement and application of scientific knowledge
- Buy-in: DWA/ICMA operating rules in the management of the MCs
- Promoting and supporting an appropriate level of enforcement of the NWA
- Active involvement in independent Water Resources monitoring
- Promoting the responsible use of technology in WR improvement
- Celebrating and promoting the ICMA's WRM qualities and values as appropriate to sustain a healthy sense of pride and stewardship
- Venturing beyond our WMA boundaries when needed to understand external factors impacting our resources, to gain useful knowledge and promote sharing of information

What are your expectations and needs?

 When the process is complete people will have to understand what WRCS is all about and what the enforcement procedures are
 A clear and correct process to be followed
 Usuthu be included in the process

Questions

- When is the Classification we are doing now going to be reviewed? Don't we have a kind of short term, medium term evaluation so that we can recommend changes?
- We have received enough water for the past few years. Are we classifying on the basis of water availability only?
- How do we factor in the water quality aspects?
 Will the water quality affect the classes in anyway; now or in the future?
- What will the possible changes be in the WMA after 20 yrs?

What have we learnt today?

- Why do we have to classify our water resources (go through the process of water resources classification)?
- In your opinion, what should be considered in the process of water resources classification?
- What is your understanding of Resource Quality Objectives (RQOs)?
- RQOs will give effect to the implementation of the MCs. What is your understanding of this statement?
- The process is a stepwise one (7). When (during the process) can we develop the catchment vision for the resource?
- When/which steps (of the 7) are stakeholders to be involved?
- Why do you think stakeholder involvement in this process is necessary?
- Why do we need a steering committee and who should be members of this committee?



What have we learnt today?

- What will/does the status quo (situational assessment) in this process cover?
- What is the difference between fully allocated and fully utilised as implied at this workshop?
- Outline the main water quality problems in the Inkomati WMA
- List the problem areas in the IWMA in terms of ecology
- Name the main employment sectors in the Inkomati WMA
- What do you understand by the term <u>reserve</u> as used in this workshop?
- Where/how does the Catchment Management Strategy talk to the Classification/Management Classes
- What is your understanding of the classification process?
- What do you want your catchment to look like in the next 20 yrs?

PROJECT STEERING COMMITTEE: DRAFT TERMS OF REFERENCE AND MEMBERSHIP

Classification of Water Resources in Inkomati WMA

STEERING COMMITTEE (PSC)

- Non-statutory, voluntary body
- Oversight body for water resource classification within IWMA
- To guide the project in all stages
- To provide inputs on behalf of constituencies
- To provide feedback to constituencies and submit 'grievances' and information to study team from constituencies
- Assist DWA/ICMA to interact with stakeholders in all aspects of the study

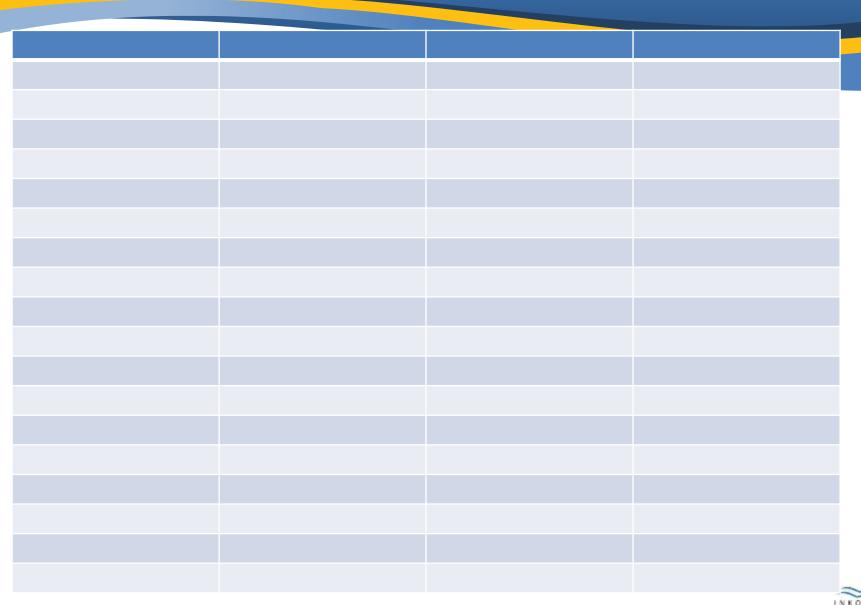


THE OBJECTIVES

- Provide strategic direction and guidance on the study process and tasks;
- Guide the study team on the desired state of water resources within the Inkomati WMA;
- Provide technical input and information support to the process where available
- Provide direction on the significant water resources to be classified;
- Provide input to the technical process;
- Serve as representatives of the stakeholder bodies and organisations and report back to them on an ongoing basis regarding the study decisions and results



PSC MEMBERSHIP



Sector Representation

- Mining
- Commercial farmers
- Traditional leaders
- Government departments
- Conservation/ Environment
- Emerging farmers / Afasa
- Non-governmental organisations
- DWA
- Moz and Swaziland
- Academic / technical

- Industry (including Eskom)
- Tourism
- Municipalities
- Forestry
- Water services providers
- Community based organisations
- ICMA
- Water User Associations / irrigation boards
- Nafcoc / business / trac
- Kobwa

Sector Representation

- Mining
- Commercial farmers
- Traditional leaders
- Government departments
- Conservation/ Environment
- Emerging farmers
- Non-governmental organisations
- DWA

- Industry
- Tourism
- Municipalities
- Forestry
- Water services providers
- Community based organisations
- ICMA
- Others

THE WAY FORWARD

- Establishment of the PSC & Inaugural PSC meeting
- Collation of information arising from catchment visioning exercise
- > Finalisation of the stakeholder engagement plan
- Finalisation of IUAs delineation
- > Finalisation of the Status Quo Report
- > Compilation of the Issues & Responses Register



THANK YOU



Classification & RQO determination of water resources in the Inkomati Water Management Area

Public meeting 12 June 2013

BACKGROUND TO THE STUDY



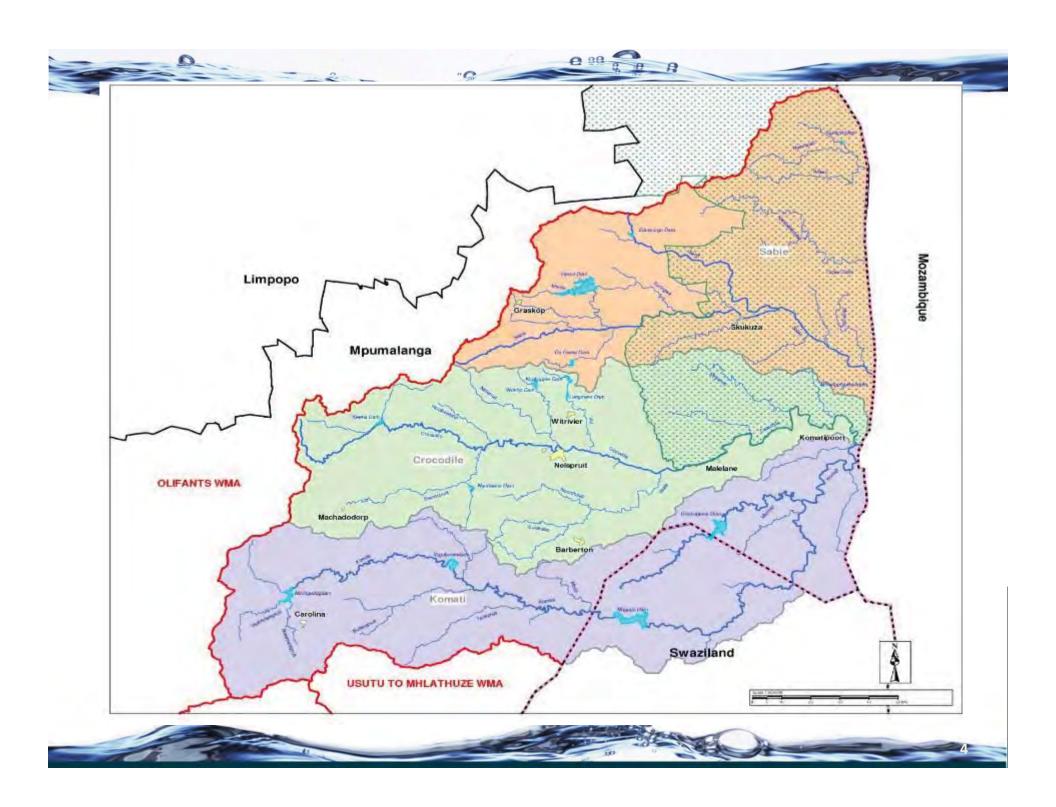


PROJECT PLAN AND STUDY TASKS

- The study has a duration of two years ending April 2015.
- Two processes are involved, namely
 - Classification of the Water Resource
 - Resource Quality Objectives
- The study will be carried out in distinct steps following a prescribed process
- The aim of the project is to determine the Class of the water resources on the Inkomati WMA



- The study area consists of the Inkomati Water Management Area.
- There are three distinct and largely independent catchments in the WMA:
 - The Komati River
 - The Crocodile River, and
 - The Sabie River





PROJECT PLAN AND STUDY TASKS

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TECHNICAL STEPS

1. Status quo, catchment delineation

3. Quantify Ecological Water Requirement & links to Ecological goods and Services

4&5. Develop & evaluate scenarios in IWRM

6. RQO

OTHER STEPS

Visioning

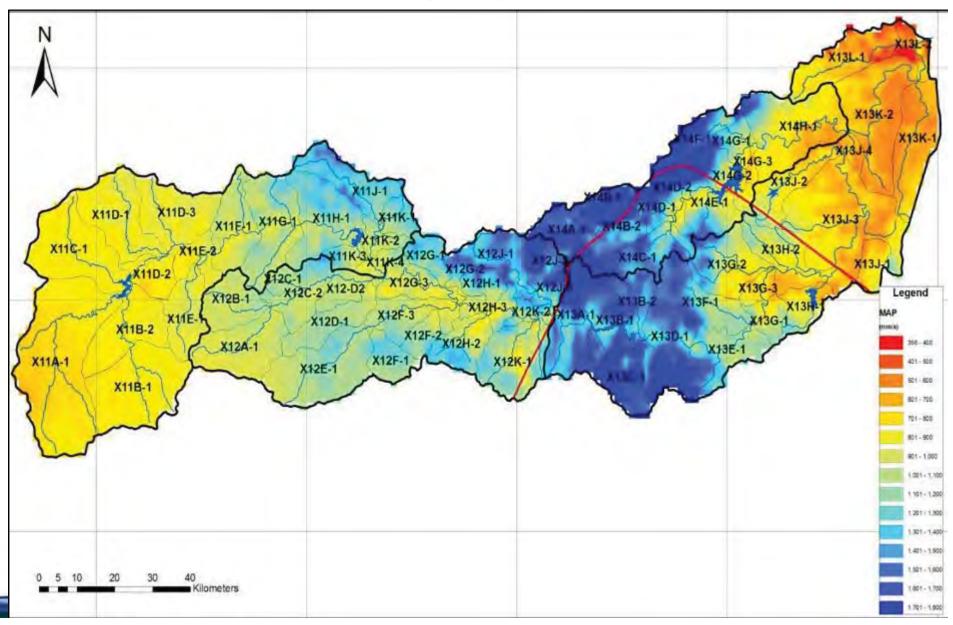
7. Gazetting



- The Status Quo of the Inkomati will be determined during the first 3 months of this study and described in a report.
- The Status Quo will cover the following aspects:
 - Water Resources
 - Water Quality
 - Economy
 - Ecology
 - Ecosystem services
- Based on information available from previous studies, a brief overview of the Status Quo of the Inkomati is provided here:









Komati

- The Komat catchment has an interesting location in that it rises upstream of Swaziland, flows through Swaziland, and back into South Africa.
- The Komati catchment has relatively high rainfall (500 to over 1 600 mm/annum)
- The Mean Annual runoff from the catchment is estimated to be 1 357 million m³/annum



Summary of water use

 Water use in the Komati catchment is estimated to be as follows:

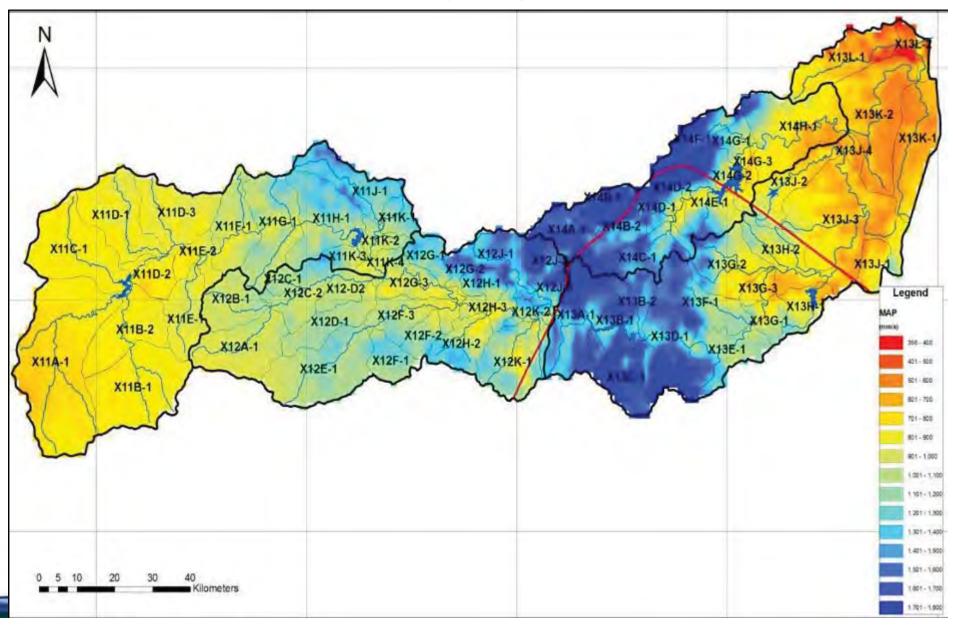
Sector	Allocation (million m³/annum)	Actual use (million m³/annum)
Domestic	88	21
Strategic	106	106
Industrial	11	11
Irrigation	642	~ 500
Total	847	638



- There are significant transfers out of the Komati catchment:
 - -~100 million m3/a to the Olifants catchment
 - ~170 million m3/a to the Mbuluzi catchment
 - ~ 9 million m3/a to the Crocodile catchment



Dams

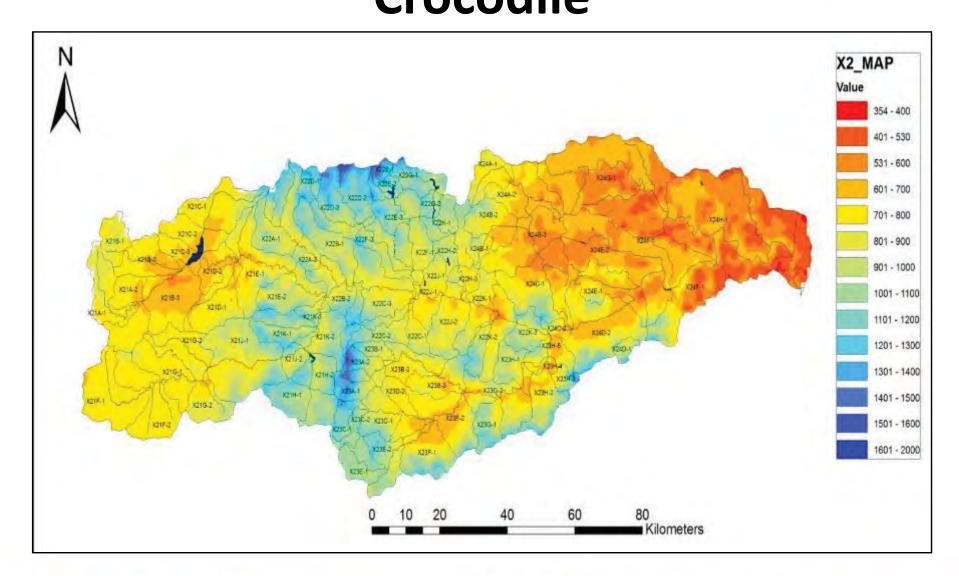




Land use activities

- In addition to direct abstractions, there is an estimated 1 203 Km² of forestry in the Komati catchment.
- This reduces the runoff from the catchment by an estimated 117 million m³ /annum.







Overview of the Crocodile catchment

- The Crocodile catchment also has relatively high rainfall (450 to over 1 400 mm/annum)
- The Mean Annual runoff from the catchment is estimated to be 1 136 million m³/annum



Crocodile catchment

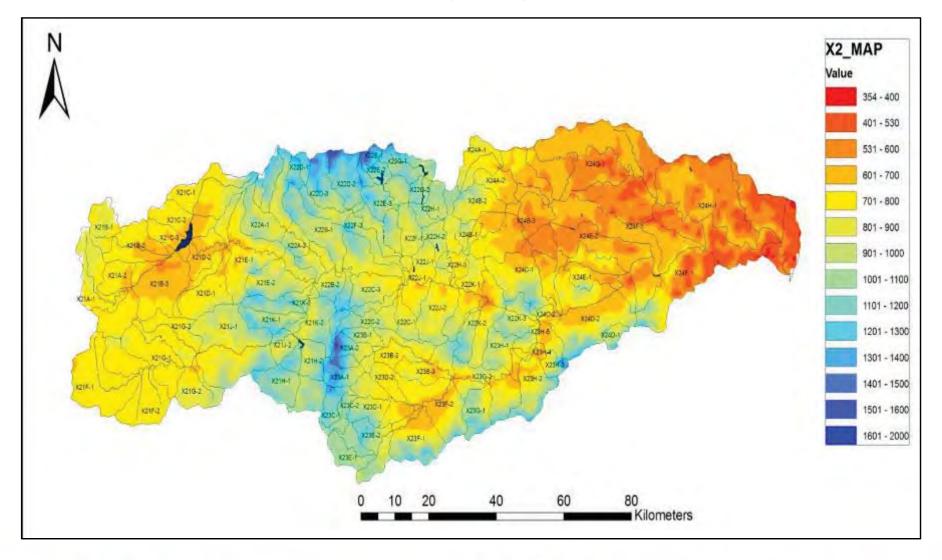
 Water use in the Crocodile is also dominated by irrigation but domestic and industrial use are also significant.

Sector	Allocation (million 3 / annum)	Actual use (million 3 / annum)
Domestic	45	52
Industrial	22	22
Irrigation	480	~ 400
Total	539	465





Dams





Landuse activities

- In addition to direct abstractions, there is an estimated 1 941 Km² of forestry in the Crocodile catchment.
- This reduces the runoff from the catchment by an estimated 157 million m³ /annum.



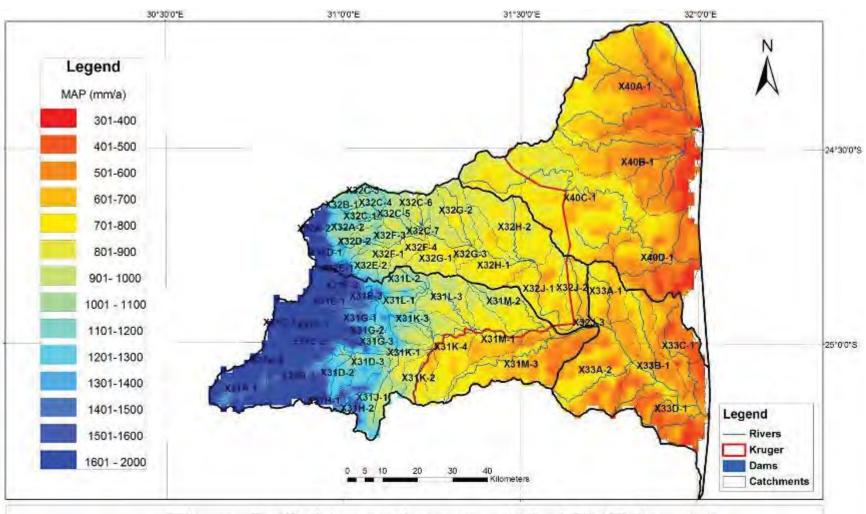


Figure 3: Sabie catchment gridded MAP (mm/a)



Overview of the Sabie catchment

- The Sabie catchment also has relatively high rainfall (500 to over 1 600 mm/annum)
- The Mean Annual runoff from the catchment is estimated to be 676 million m³/annum

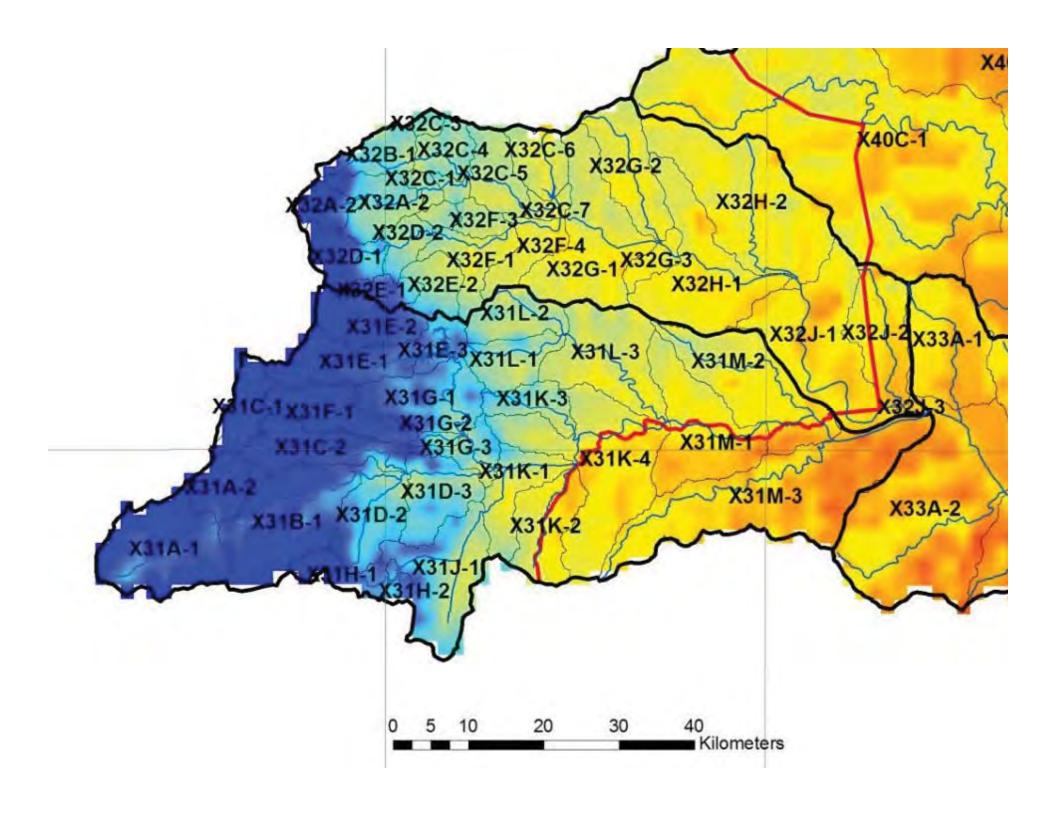


Sabie catchment

 Water use in the Sabie is also dominated by irrigation but domestic use has grown dramatically over the last 10 years

Sector	Allocation (million m /annum)	Actual use (million 3 / annum)
Domestic	44	40
Industrial	1	1
Irrigation	80	~ 70
Total	125	111







Landuse activities

- In addition to direct abstractions, there is an estimated 853 Km² of forestry in the Sabie catchment.
- This reduces the runoff from the catchment by an estimated 95 million m³ /annum.

SUMMARY AND CONCLUSION (WATER RESOURCES)

- The Inkomati WMA is well endowed with water
- However, due to rapid development since the 80's the water resource is fully utilised in the Komati and Crocodile catchments
- The water resource in the Sabie catchment is not yet fully utilised but has been fully allocated. These allocations will be taken up shortly to improve delivery of water services in the Sand River catchment.

Water Quality

- Several of the recent studies have analysed the water quality situation, although not in great detail.
- From these studies, the problem areas in the Inkomati are known. They are:
 - Lower Elands River (SAPPI effluent)
 - Upper Komati (AMD)
 - Middle Crocodile (Nelspruit urban effluent)
- Modelling of these problem areas will be undertaken if it will add value to the project



- The economy will be evaluated in terms of the contribution to GDP and employment creation within each zone
- The value of water to each sector will be evaluated
- The impact of scenarios can then be evaluated socioeconomic terms
- This work was done as part of previous studies but will be updated as part of this Classification Study



- The ecological Reserve has been determined throughout the Inkomati WMA
- The determination of the Komati River was completed in 2006 while that of the Crocodile and Sabie was completed in 2010.
- In general, the ecology of the rivers in the Inkomati are in a good state with many undeveloped catchments in a near to pristine state.



Possible problem areas are:

- The lower Komati downstream of the confluence with the Lomati River
- The lower reaches of the Crocodile River
- The high ecological catgegory assigned to the Sabie River (A/B) will become increasingly difficult to maintain with increasing domestic water requirements.
- Pressure to reinstate forestry and re-vitalise irrigation in the Sand River will put the ecology of this river under stress.



- The Present Ecological State of all river reaches in the Inkomati WMA have been determined at a fine resolution as part of a previous project.
- This will be used as a starting point as part of this Classification process.



- Ecosystem Services considers benefits that rural communities can derive directly from the river.
- These can be categorised as provisioning services:
 - Fishing
 - Riparian trees and shrubs
 - Medicinal herbs and plants
 - Grazing in the riparian zone
 - Crop cultivation in the flood plain
 - Fibres for making baskets and mats



- Cultural services, such as
 - Cultural and ritual use of rivers
 - Aesthetic or historical importance
- Regulating services
 - Water quality



PROJECT PLAN AND STUDY TASKS

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TECHNICAL STEPS

- 1. Status quo, catchment delineation
- 3. Quantify Ecological Water Requirement & links to Ecological goods and Services
 - 4. Develop & evaluate scenarios in IWRM

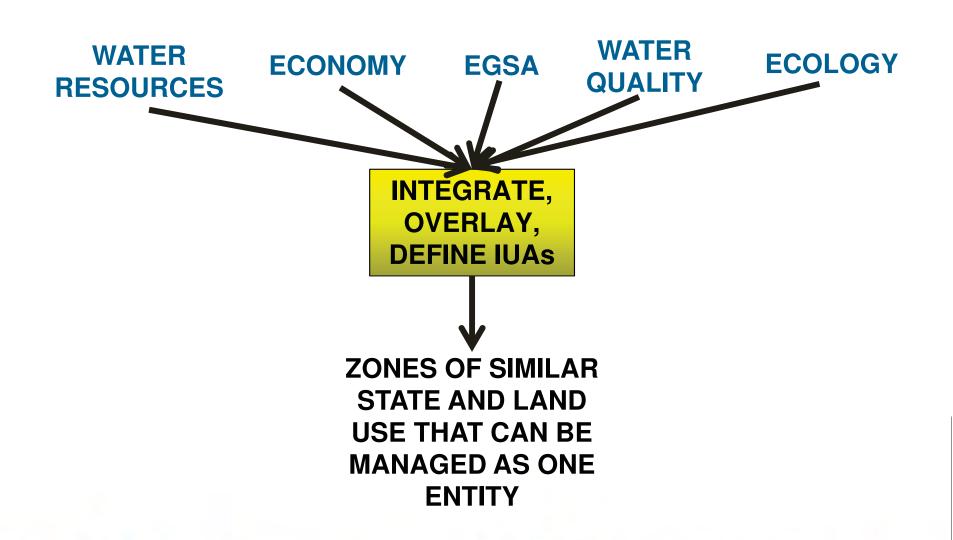
6. RQO

OTHER STEPS

2. Visioning

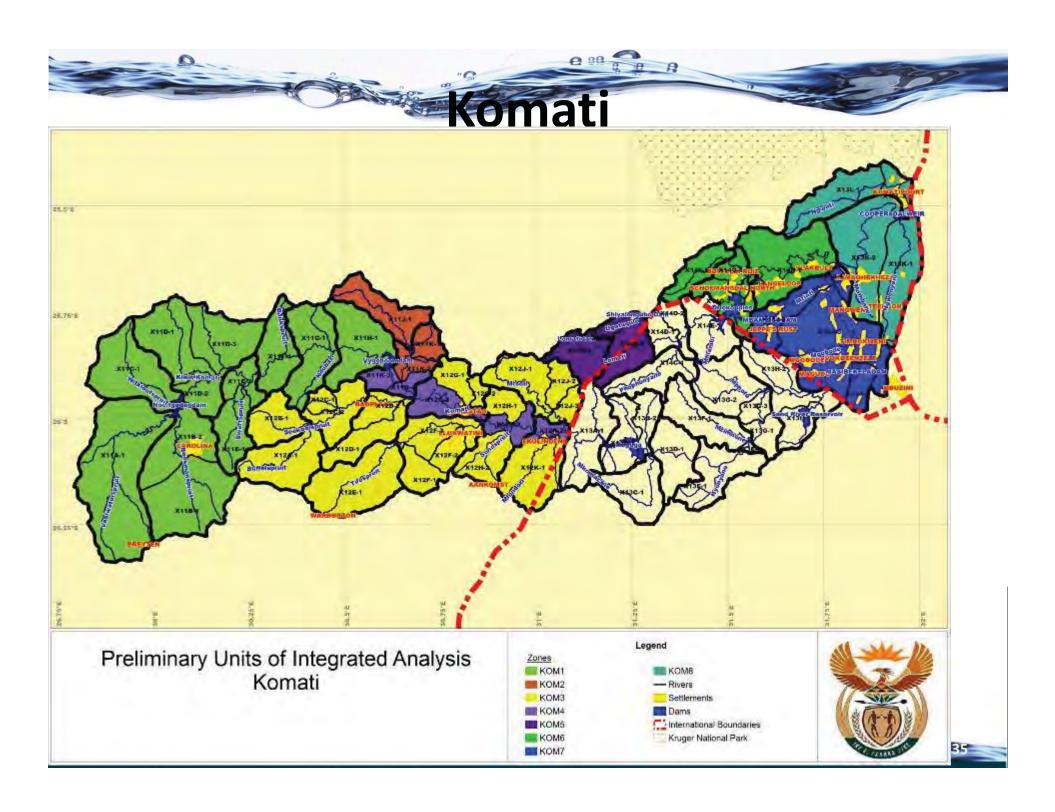
8. Gazetting

DELINEATE THE CATCMENT INTO INTEGRATED **UNITS OF ANALSYIS**



PRELIMINARY INTEGRATED UNITS OF ANALYSIS

- Based on a preliminary catchment delineation, we have:
 - 37 preliminary IUAs
 - 9 in the Komati
 - 14 in Crocodile
 - 15 in the Sabie/Sand





KOM1:

- This IUA consists of the catchment upstream of the Vygeboom dam and includes the Nooitgedacht Dam. Water is transferred from these dams to power stations in the Olifants catchment. There are several coal mines in this catchment and acid mine drainage is impacting negatively on the water quality of the catchment, especially the upper reaches where towns such as Carolina rely on the water resource.
- There is limited irrigation and forestry in this IUA.



 This IUA consists of the Gladdespruit catchment which is a major tributary of the Komati River. This IUA is charaterised by large areas of forestry. There is a large Nickel mine in this catchment and limited irrigation. Surplus water from this catchment is diverted into the Vygeboom Dam contributing to the yield of this dam.



• The remaining major tributaries (Teesrpuit, Seekoeisrpuit, Buffelsspruit, Mtosoli and Mlondizi) of the Komati River comprise this IUA. There are significant areas of forestry in the high-lying areas of these catchments and rural development in the lower reaches. There is limited irrigation in this IUA.



 The main stem of the Komati River downstream of the Vygeboom Dam and down to the border with Swaziland. The rapidly expanding villages and towns in the area are dependent on water from this river reach. There is limited irrigation in this IUA.



 The Lomati River upstream of Swaziland. There are two significant dams in this IUA, the Lomati and Shialongubu dams.
 Water is transferred from these dams to the Kaap River. There is a significant amount of forestry in the IUA.



 The Lomati River downstream of Swazilamd. This IUA included the Driekoppies Dam and is charecterised by large areas of irrigation (mostly sugarcane) supplied from the Driekoppies Dam. There are also siginificant domestic water requirements in the IUA.

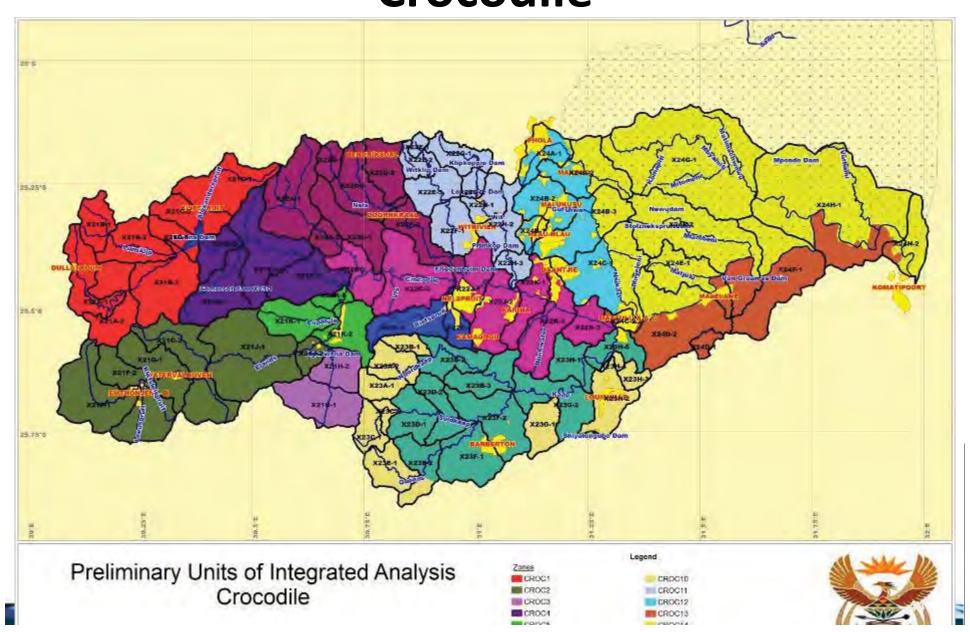


• The Komati River downstream of Swaziland. This IUA has large areas of irrigation supplied mostly from Maguga dam. There are also significant domestic water requirements in the IUA.



 This IUA lies downstream of the confluence of the Lomati and Komati River. The large areas of irrigation in this area can receive water from either the Driekoppies or Maguga Dams. There are a large number of weirs constructed on this river reach. There is a minimum flow rquirement from this IUA to meet international requirements.







 This IUA consists of the catchment of the Kwena Dam. There are significant areas of forestry in this IUA but limited irrigation.
 There are a large number of trout dams in this catchment which could create water quality issues.



 The upper reaches of the Elands River up to the Ngodwana paper mill. There are large areas of forestry in this IUA but limited irrigation. Domestic use is limited. The smelter located near Machadodorp is a concern with regard to water quality.



• CROC3

 This IUA consists of the catchment of the Ngodwana River and contains the Ngodwana Dam. There are large areas of forestry in the IUA.



 The Crocodile River downstream of the Kwena Dam to the confluence with the Eland River. This IUA has siginificant areas of forestry in the high-lying areas and irrigation in the valley, supported by releases from the Kwena Dam.



• CROC5

 The Elands River downstream of the Ngodwana paper mill. Due to effluent discharged into the Elands River by the paper mill, this river reach has water quality concerns. There are siginifcant areas of forestry and limited irrigation in this IUA.



 This IUA contains two major tribuatries of the north of the Crocodile River, namely the Houtbosloop and the Nels River. Both these tributaries are characterised by large areas of irrigation and forestry.



 The tributaries to the south of the Crocodile river comprise this IUA and contains the town of Nelspruit. There are significant areas of forestry and limited irrigation. Urban and industrial development is impacting on the water quality of the receiving Crocodile River.



 The main stem of the Crocodile River downstream of the confluence with the Elands River to the confluence with the Kaap River. This IUA is charaCterised by large areas of irrigation supported by releases from the Kwena Dam. There are also large abstractions for domestic use from this river reach. Due to the discharge of domestic effluent in this river reach, water quality is a concern.



• The main stem of the Kaap River, characterised by large areas of irrigation supplied from run-of-river.



• The headwater tributaries of the Kaap River characeterised by large areas of forestry.



• The White River catchment which inloudes the town of White River and the Witklip, Klipkopjes, Longmere and Primkop dams. This catchment is highly developed with irrigation but there are also significant areas of forestry in the upper reaches. Due to the urban and industrial development, water quality is a concern.



• This IUA consists of the Nsikasi River, a tributary of the Crocodile River. Irrigation and forestry in the IUA are insignificant since it is dominated by urban/rural development. Water supply to this area is problematic and water quality is a concern.

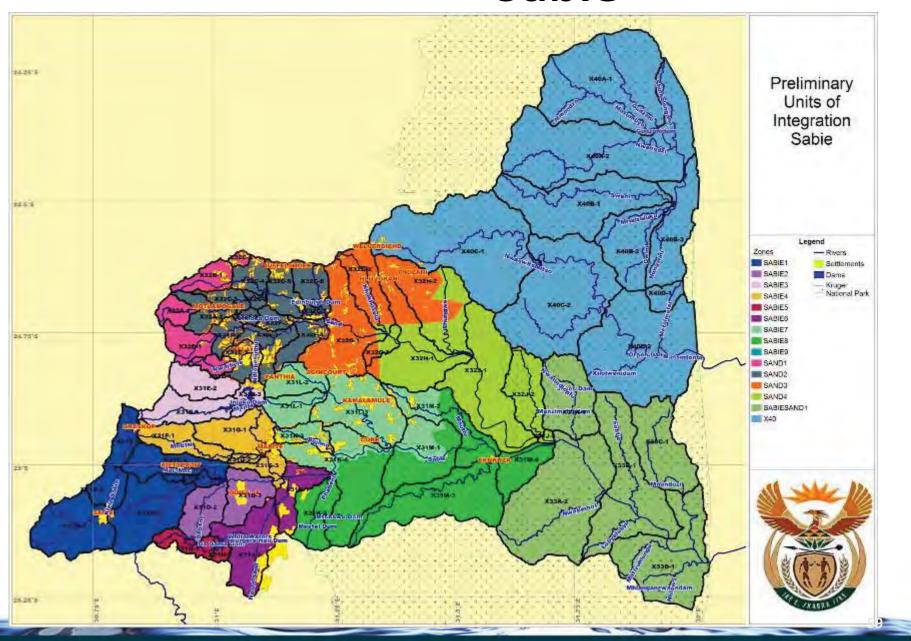


 The main stem of the Crocodile River donstream of the confluence with the Kaap. There are large areas of irrigation in the IUA supported by releases from the Kwena Dam.



• This IUA includes all the areas that lie within the Kruger National Park.







• The upper reaches of the Sabie River. This IUA is characterised by large area of forestry and very little other development.



 This IUA consists of the areas of the upper Sabie to the confluence with the Marite River that are highly developed in terms of irrigation and includes the Sabaan River, a tributary of the Sabie. Irrigators obtain their water from the Sabie River and from the numerous farm dams in this IUA.



• The catchment of the Inyaka Dam. This IUA contains large areas of forestry but limited irrigation. In addition to the Inyaka Dam, the catchment also contains the smaller Maritsane Dam.



• The catchment downstream of the Inyaka Dam including the Motitisi River. This IUA also contains large areas of forestry but limited irrigation. There is significant rural development in the IUA with water requirements supplied from the Inyaka Dam.



 The catchment of the Da Gama Dam. There are large areas of forestry in this IUA but no other development.



 The catchment downstream of the Da Gama. There are significant areas of irrigation in this IUA, supplied from the Da Gama Dam. There are also large areas of rural development with problematic water supply. The rural water requirements are supplied from the Sabie River.



 This IUA consists of the drier tributaries to the Sabie outside of the Kruger National Park. These tributaries include the Benjani and Saringwa rivers. The areas is too dry for forestry or irrigation. There are a number of villages in the IUA with problematic water supply.



 This IUA consists of the catchments within the Kruger National Park.



• The main stem of the Sabie River, which supports large abstraction for domestic use as well as irrigation.



SAND1

• This IUA consists of the high-lying regions of the Sand River catchment. There were large areas of forestry in this area but much of this was removed in the late 90s. There are now plans to replant about 4 000ha of this forestry. The tributaries rising in this area are all perennial with high base flows and sustain the flow through the Sand River into the Kruger National Park.



SAND2

 The area immediately downstream of the SAND1 IUA comprise this IUA and is characterised by large scale rural development and some irrigation supplied from run-of-river flows. The domestic water requirements have been met from run-of-river abstractions and groundwater in the past but are now being replaced by water supplied from the Inyaka Dam.



SABIESAND1

• The area downstream of SAND2 which consists of private game farms.

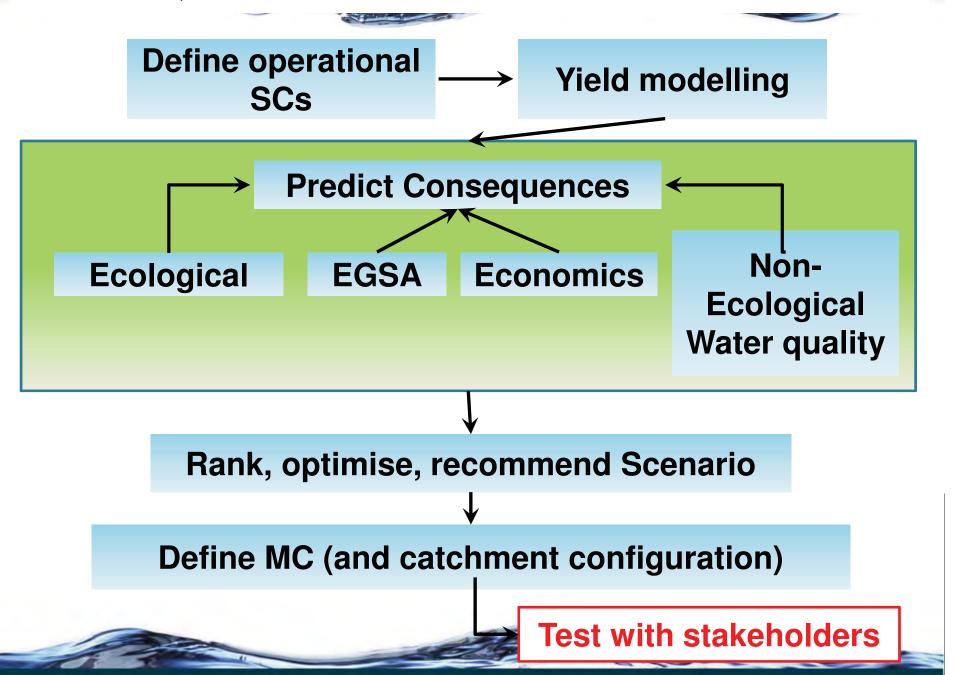


X40

 This IUA consists of the X40 catchment. This area also lies within the Kruger National Park but does not have the benefit of the large natural base flow derived from the Sabie catchment.



CONSEQUENCES OF OPERATIONAL SCENARIOS





Resources Quality Objectives

- The determination of resources quality objectives follows the same multi-step process of Classification.
- The outcome of RQO is the Ecological classification and the Ecological Specification

Visioning

- Visioning is a required step in both the Classification and the Resource Quality Objectives process.
- Visioning is a process of 'articulating society's aspirations for the future of the Inkomati WMA'
- Hence, visioning is required to find out how stakeholders see the future of the Inkomati WMA in terms of the trade-off between growth and development on the one hand and ecological protection on the other.



- While visioning was done on a broad scale as part of the Catchment Management Strategy, it now needs to be done at a finer scale for Classification.
- The scale at which visioning is done for Resource Classification are so-called 'Integrated Units of Analysis'.
- These are determined jointly by establishing units with similar characteristics for the following categories:
 - Water resources management
 - Economic
 - Water Quality
 - Ecology
 - Social aspects (goods and services)



- Ultimately a Water Resources Class will be determined for each of these units following a rigorous stakeholder process.
- A questionaire and information document has been made available for stakeholders to give their input into the visioning relating to each of the IUA.



- The purpose of this study is to determine the class of the water resource.
- A class which maximises environmental protection (Class 1) will entail less water for growth and development with possible associated consequences (reduced economic growth, less jobs)
- A class which minimises environmental protection (Class 3) will maximise water for growth and development but will impact on goods and services for riparian users, the ecology of the river and eco-tourism.