water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

WATER RESOURCE CLASSIFICATION SYSTEM

UMZIMVUBU CATCHMENT PARTNERSHIP PROGRAMME

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PRESENTATION LAYOUT

- To provide the necessary information to engage with stakeholders on the Mzimvubu classification & Resource Quality Objectives (RQOs) study
- To inform stakeholders about classification process
- To update stakeholders about classification and RQOs study in the Mzimvubu catchment

PROTECTION OF WATER RESOURCES

- For different uses of water (domestic, industrial, agricultural etc.)
- To maintain good human health & the health of those living organisms (plants, animals, microbes etc.) existing in the water.
- For meeting basic human needs (drinking, bathing, cooking etc.)

- The focus is to set achievable protection measures by Classifying and determining the Reserve and Resource Quality Objectives (RQOs)

HOW DWS IS PROTECTING WATER RESOURCES

RESOURCE PROTECTION

- Setting management requirements in water resources (rivers, wetlands, estuaries & groundwater

- Managing and controlling activities impacting on water resources (abstraction of water & the disposal of effluents)

- Setting the rules for managing and controlling activities impacting on water resources through:
- Management Objectives (**Class & Resource Quality Objectives**)
- Human Needs & Aquatic Health (**Reserve**)

- Pollution sources
- Discharges
- Run-off (Agricultural, settlements, urban areas)
- Illegal water use – Water abstraction
- Licences
- Best Practices for water use

THE PURPOSE OF RESOURCE DIRECTED MEASURES (RDM)

- Ensure long term use of the water resources for current & future generations
  - Quality and quantity
- Informs water use authorisation (e.g licenses)
- Setting the management objectives in terms of:
  - Water Quality
  - Water Quantity
  - River and wetland habitat and biota (living organisms)

RESOURCE DIRECTED MEASURES (RDM) COMPONETS

- **Reserve**
  - Water for human well-being and aquatic ecosystem
    - (e.g if all the water in the country could be put into a bucket, the Reserve is the water that must always be left in the bucket for basic human and ecological needs)
- **Classification**
- Categorizing water resources into management classes
  - **Class I** – minimally used, minimally altered resource (A-B ecological condition of the water resource)
  - **Class II** – moderately used, moderately altered resource (C ecological condition of the water resource)
  - **Class III** – heavily used, significantly altered resource (D ecological condition of the water resource)
- **Resource Quality Objectives (RQOs)**
  - Requirements to satisfy the ecology
  - Requirements to satisfy the needs for different water users

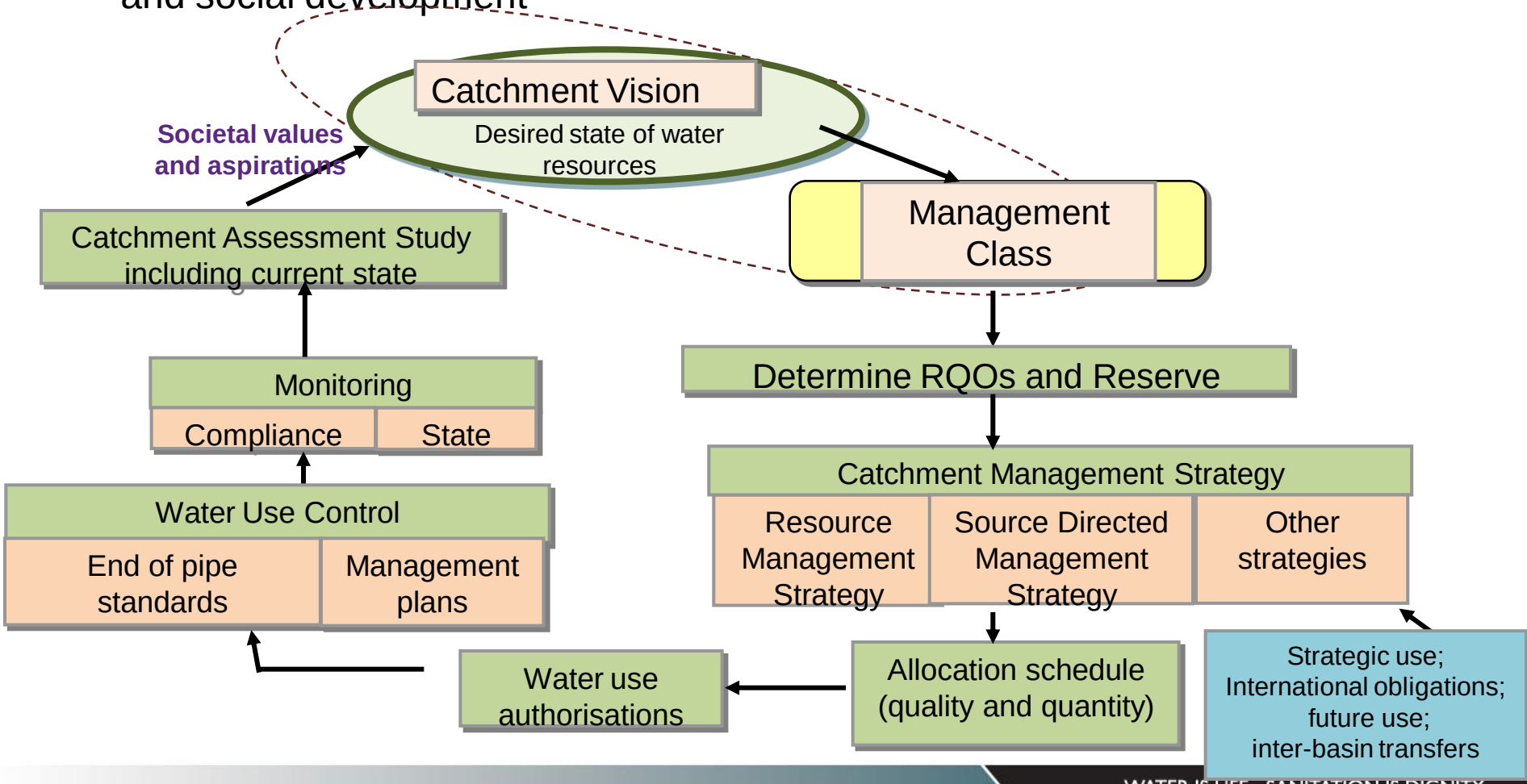
WATER RESOURCE CLASSIFICATION

- The classification of South Africa's water resources is required by the National Water Act (NWA) (No. 36 of 1998) (Chapter 3 regarding the protection of water resources)
- Regulation 810 published in Government Gazette No. 33541 dated 17 September 2010 defined the water resource management classes and a procedure (Water Resource Classification System – WRCS) to determine a Class.
- According to the NWA, once this WRCS has been gazetted all significant water resources must be classified.

WHY WATER RESOURCE CLASSIFICATION SYSTEM

Water Resource Classification System (WRCS) is part of an integrated approach to water resource protection and management

- To ensure long-term sustainable use of water resources
- To balance the need for long-term protection against the need for economic growth and social development



STUDY PROCESS

In accordance with the classification, Reserve and RQOs guidelines

1

Division of the Management Units (IUAs & RUs) & describing the Status Quo

Divided catchment into management units (IUAs) based on socio-economic/ land use characteristics/ water resources and defined Resource Units (RUs)

Data assessed Status quo understood

Catchment vision established

2

Link value and condition of water resources

Assess the contribution of using water resources

Understand the importance and value of water in order to assess the implications and consequences of protecting water resources

3

Ecological requirements of water resources understood and quantified

Determine how much water does the ecology need for the protection of water resources

How much water does the ecology require for different protection levels

4

Identification and evaluation of scenarios

Scenarios are different options for protection within each catchment

Evaluated against flow, water quality and socio-economics

Determine the minimum level of protection

5

Recommended Management classes & RQOs

Setting requirements to satisfy the ecology

Setting requirements which the different users require from water resources

6

Gazetting

To gazette Classes, Reserve and RQOs

Stakeholder engagement

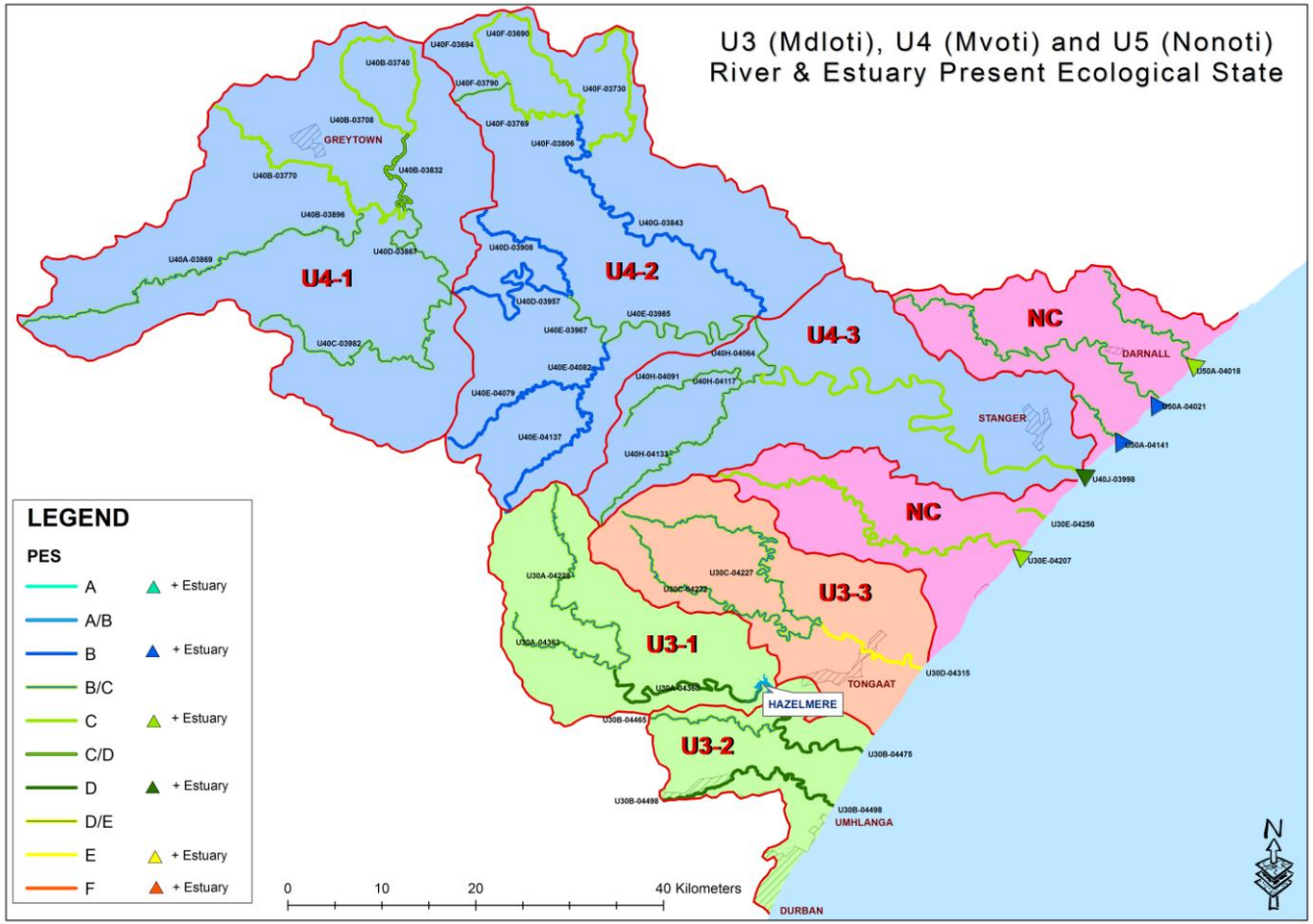
STEP 1: DIVISION OF THE MANAGEMENT UNITS (IUAs & RUs) & DESCRIBING THE STATUS QUO

- **Definitions**

- An Integrated Unit of Analysis (IUA) is an area with similar aspects that contains a number of points for assessment
- A Resource Unit (RU) is a section of river within an IUA which can be an Ecological Water Requirement site

- **Delineation of IUAs** (components used in breaking the area down into smaller units for assessment)
  - Catchment area boundaries (drainage regions and water resource systems)
  - Water resources & infrastructure (e.g dams)
  - Ecology (flow and quality)
  - Socio-economic zones
    - similar economic activities that contribute to the needs of the society's livelihood (e.g agriculture, industries)

Example: IUAs Delineated for parts of the Mvoti WMA



STEP 2: LINKING THE VALUE AND CONDITION OF THE WATER RESOURCE

- Assess the contribution of using water resources to community livelihood.
- Understand the importance and value of water.
- Models used – WIM & SAM
  - Scientific models seek to represent objects, events and physical processes in a logical and objective way.
  - They are used when its impossible or impractical to create experimental conditions in which scientists can directly measure outcomes.

Output of step 2

WATER IMPACT MODEL	SOCIAL ACCOUNTING MATRIX (SAM)
Used for Primary Sectors (e.g irrigation agriculture & commercial forestry)	Applied to the secondary (sugar mills and saw mills) and tertiary (tourism) sectors
Inputs: Amount of water used for production.	**Inputs**: number of jobs created and range of income within the area
Out puts • Direct: e.g the hectares cultivated impacts • Indirect: e.g fertilisers, seeds • Induced: e.g private consumption expenditure	**Output parameters**: • Gross Domestic Product (GDP) • Payments to Households • Employment creation

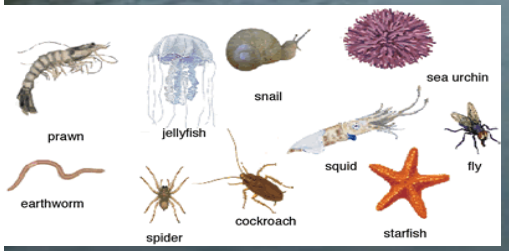
STEP 3: QUANTIFY EWRs & CHANGES IN NON-WATER ECOLOGICAL GOODS AND SERVICES (EGSA) ATTRIBUTES

- **EWR definition:** the flow and water quality needed to maintain the natural environment of a river in a particular condition.

- **EWR DETERMINATION**
- Determine flows in different seasons & water quality to satisfy the needs of the following:
  - Fish
  - Invertebrates
  - Geomorphology
  - Riparian Vegetation
  - Habitat Integrity (in-stream and riparian zones)

- **EGSA**: benefits of water resources

EXAMPLE OF ECOLOGICAL WATER REQUIREMENTS SITE



Ecological (Reserve) categories	River Health category	Description
A	Natural	Unmodified natural
B	Good	Largely natural with few modifications
C	Fair	Moderately modified
D	Poor	Largely modified
E	Seriously modified	Seriously modified
F	Critically modified	Critically or extremely modified

Benefits of water resources

- **Benefits that water resources offer people and why they should be protected**:
  - Supply primary resources (water for drinking/cooking etc., agriculture, construction and industry)
  - Regulatory (regulating sedimentation and erosion etc.)
  - Recreational/aesthetic (fishing, swimming etc.)
  - Cultural (baptism etc.)
  - Ecological functions (habitat for all forms of life. Birds, fish, insects, plants interact to form complex food webs that rely on water resources etc.)
  - Economic (farming and industry are major users of water as an input to their economic activities)

STEP 4: IDENTIFICATION AND EVALUATION OF SCENARIOS

- Scenarios are different options for protection within each catchment.
- They are evaluated against flow, water quality, and socio-economic activities.
- The minimum level of protection is determined.
- Different options are evaluated in order to come up with list of possible, feasible and achievable options.
- Evaluate different scenarios (options) with stakeholders, they provide comments.

STEP 5: RECOMMENDED MANAGEMENT CLASSES & RQOs

- DWA and stakeholders agree on the minimum level of protection
  - Determine what quantity and quality of water is needed to satisfy this level of protection
  - The assessment (flow, water quality & economic assessment) will tell whether the class is achievable or not
  - Then confirm a Class per management unit

- Setting requirements to satisfy the ecology

- Setting requirements which the different users require from water resources;

- Recommended classes and RQOs gazetted for a period of **60 days for** public comment.

Example of proposed water resource classes for Olifants

Integrated Unit of Analysis (IUA)		Proposed Management Class
1	Upper Olifants River catchment	III
2	Wilge River catchment area	II
3	Selons River area including Loskop Dam	II
4	Elands River catchment area	III
5	Middle Olifants up to Flag Boshielo Dam	III
6	Steelpoort River catchment	III
7	Middle Olifants below Flag Boshielo Dam to upstream of Steelpoort River	III
8	Spekboom catchment	II
9	Ohrigstad River catchment area	III
10	Lower Olifants	II
11	Ga-Selati River area	III
12	Lower Olifants within Kruger National Park	II

STEP 6: GAZETTING

- The objective is to present the relevant information from the classification, Reserve and RQOs processes to the Minister or his/her delegated authority for consideration.

- Minister or his/her delegated authority will gazette the following:
  - IUA classes
  - Reserve (s)
  - RQOs

- After gazetting, there should be a monitoring programme in place.

STAKEHOLDER ENGAGEMENT (Throughout Project Cycle)

- To improve the management process of the project.
- To build consensus and 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.

IMPLEMENTATION/IMPLICATION

- Once the Class is set, Reserve & RQOs in place, it is binding on all authorities or institutions when exercising any power, or performing any duty under the NWA.
- The decision on the class influences access to, the use of and benefits from water resources for all water users.
- The application of Gazetted Class, Reserve & RQOs will put measures to protect water resources in place like:
  - No longer Preliminary Reserves
  - Waste Discharge Charge System implementation – based on exceedance of RQOs
  - DWA might revise General Authorisation, Update Discharge Standards
  - User specifications e.g the limit for nutrients discharge per Resource Unit.
  - Monitoring & Reporting requirements in place
  - Updating Monitoring Programmes

THANK YOU