Classification of Significant Water Resources and Determination of Resource Quality Objectives for Water Resources in the Usutu to Mhlathuze Catchments

Project Steering Committee meeting no. 4
Background Information Document
13 April 2023

water & sanitation
Department:
Water and Sanitation
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PURPOSE OF THIS DOCUMENT

The purpose of the background information document (BID) is to inform stakeholders about this study that will determine Water Resource Classes and Resource Quality Objectives (RQOs) for significant water resources in the Usutu to Mhlathuze Catchments.

This BID contains the following:

- A brief overview of the Water Resource Classification System (WRCS).
- An indication of study progress.
- The consequences of operational scenarios in terms of economics, ecosystem services, ecology and user water quality.
- A selection of preferred scenarios, and linkages of the scenarios to draft Water Resource Classes.
- The proposed Water Resource Classes.

Through this process, water resources within the catchments will be classified in accordance with the Classification System and RQOs will be determined.

Stakeholders are invited to participate in the process by contributing information at meetings and workshops, or by corresponding with the stakeholder engagement office or the technical team at the addresses provided below:

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BACKGROUND

The National Water Act, 1998 (Act No. 36 of 1998) (NWA) is founded on the principle that National Government has overall responsibility for and authority over water resource management for the benefit of the public. It also requires that the nation's water resources be protected, used, developed, conserved, managed and controlled in an equitable, efficient and sustainable manner.

In order to achieve this objective, Chapter 3 of the NWA provides for the protection of water resources through the determination of Resource Directed Measures (RDM).

The Chief Directorate: Water Ecosystems Management of the Department of Water and Sanitation (DWS) is responsible for the determination of RDM which includes the classification of water resources, determination of the Reserve and RQOs in line with the Water Resource Classification System (WRCS). These protection measures aim to ensure that a balance is sought between the need to protect and sustain water resources on one hand and the need to develop and use them on the other.

The DWS is progressively determining water resources classes, Reserves and RQOs for all river systems in South Africa to ensure their protection and sustainable use, with the Usutu to Mhlathuze Catchments being among one of the current systems to be classified and RQOs determined.

The Project Steering Committee (PSC) is represented by various sectors of society and meets on a regular basis to steer this study in the acceptable scientific direction. Members of the PSC provide feedback to the constitutions / organisations which they represent.

Information documents (such as this document) are developed and made available to stakeholders to inform discussions especially at PSC meetings. This study's final results will be presented at a public meeting before the gazetting process commences, which will provide further opportunity for comment.

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WHAT IS THE WATER RESOURCE CLASSIFICATION SYSTEM?

The WRCS is a set of procedures for determining the three protection measures which are:

- Reserve
- Water Resource Classes
- Resource Quality Objectives

The implementation of the WRCS requires consideration of the social, economic and environmental landscape in a catchment in order to assess the costs and benefits associated with utilization versus protection of a water resource.

The Classification process is a consultative process that allows stakeholders to participate in the setting of the Classes.

The outcome of the Classification process will be the approval of the water resource classes and Catchment Configuration for each delineation unit of Classification, the Integrated Unit of Analysis (IUA).

Water resources must be classified into the following:

Class I water resource is one which is minimally used, and the overall ecological condition of that water resource is minimally altered from its predevelopment condition.

Class II water resource is one which is moderately used, and the overall ecological condition of that water resource is moderately altered from its predevelopment condition.

Class III water resource is one which is heavily used, and the overall ecological condition of that water resource is significantly altered from its predevelopment condition.

Once the classes have been established, RQOs are determined to give effect to the Classes established. These protection measures will be gazetted in a government gazette and are binding on all authorities or institutions.

The Usutu-Mhlathuze study will follow a project plan which is based on the Integrated Steps for Classification and determining RQOs.

WHAT ARE RESOURCE QUALITY OBJECTIVES?

Resource Quality Objectives are a set of narrative and/or numerical management objectives defined for any particular resource.

RQOs encompass four components of the resource:

- Water quantity
- Water quality
- Habitat integrity
- Biotic characteristics

RQOs are important management objectives against which resource monitoring will be assessed. Monitoring of set RQOs will provide an indication as to whether the Class is being maintained or achieved.

AN OVERVIEW OF THE STUDY AREA

Please refer to the previous BIDs for a complete overview of the study area.

INTERGRATED PROCEDURE FOR DETERMINING THE WATER RESOURCE CLASSES AND SETTING RQOs: THE STUDY PLAN

The following tasks are undertaken for determining the water resource classes and for setting the RQOs. Tasks 1 - 3 have been completed. Tasks 4 and 5 are currently underway. The duration of the study is 30 months – December 2021 to May 2024.

Task 1	**Delineate Resource Units and Integrated Units of Analysis and describe the status quo of the water resources**	
Task 2	**Prioritise Resource Units and select study sites**	
Task 3	**Quantify Basic Human Needs and Ecological Water Requirements**	
Task 4	**Identify and evaluate scenarios within Integrated Water Resource Management**	
Task 5	**Determine Water Resource Classes based on Catchment configurations for the identified scenarios**	
Task 6	**Determine RQOs (narrative and numerical limits) and provide implementation information for stakeholder review**	
Task 7	**Input into legal notice and Gazette the Class configuration and RQOs**	

STUDY APPROACH

This study focuses on the Classification of significant water resources (rivers, wetlands, groundwater and the estuaries) and determining associated RQOs in the Usutu to Mhlathuze catchments.

The process begins by defining the current state of the water resource (or part thereof) in terms of the ecological and biophysical elements. A detailed status quo assessment of the catchment (water resource quality, water resource issues, existing monitoring programmes, infrastructure, institutional environment, socio-economics, sectoral water uses and users) is undertaken to understand the current conditions.

The catchment is then delineated into Integrated Units of Analysis (IUAs), where the catchment area is divided into basic units of assessment for the Classification of water resources, and into Resource Units (RUs, i.e. smaller units) for determining ecological water requirements (EWR or the Ecological Reserve). The assessment of EWRs is undertaken as Step 3 of the process. These steps form Tasks 1, 2 and 3 of the Study Plan.

A process of modelling, taking into account the protection requirements and development demands, is undertaken to understand consequences of different development scenarios on the state of resources (Tasks 4 and 5 of the Study Plan). A consultative process will then be undertaken, whereby the outcomes of the scenario analysis are discussed, taking into account the ecological, social and economic aspects, to define a future desired state of a water resource, namely the Water Resource Class. Resource Quality Objectives are then determined to ensure that the Classes that have been set can be met (Task 6 of the Study Plan). Once the consultation on the proposed classes and RQOs is complete, they are gazetted (Task 7 of the Study Plan).

TASK 4: IDENTIFY AND EVALUATE SCENARIOS WITHIN INTEGRATED WATER RESOURCES MANAGEMENT

Task 4 requires the identification and description of operational scenarios within IWRM, as well as the evaluation through determining the consequences of scenarios on the ecological and socio-economic environment. PSC 3 (December 2022) was dedicated to the identification and description of operational scenarios. PSC 4 and this BID will focus on the evaluation of the scenarios. The overarching aim of the scenario evaluation process is to find the appropriate balance between the level of environmental protection and the use of the water resource to sustain socio-economic activities. Scenarios are water resource management options available for a particular water resource that satisfy protection and use and further development and includes the water quality, quantity and distribution requirements to support ecosystem functioning. Once the preferred scenario has been selected the water resource class is defined by the level of environmental protection embedded in that scenario. There are three main elements (variables) to consider in this balance, namely the ecology, ecosystem services and economic benefits obtained from the use of a portion of the water resource. The scenario evaluation process therefore estimates the consequences that a set of plausible scenarios will have on these elements by quantifying selected metrics to compare the scenarios on relative bases with one another. Several scenarios were identified for discussion and consideration by the stakeholders and presented during PSC 3, December 2022. Based on the input received from stakeholders on the scenarios, the following scenarios were agreed on. Note that a Climate Change (CC) scenario was run for all sites.

The following **river scenarios** have been assessed:

Site	River Scenarios per EWR site
Amatigulu	Climate change
Nseleni	Climate change
Black Mfolozi	Climate change
White Mfolozi	Climate change
	Historic Firm Yield (HFY) abstracted from upstream dams, no EWR
	Historic Firm Yield abstracted from upstream dams, with EWR
	Raised Klipfontein Historic Firm Yield abstracted from upstream dams, with EWR
Mkuze	Climate change
	Present day with increased upstream domestic use
	Present day with increased return flows due to increased irrigation supplied from Pongolapoort Dam
Pongola	Climate change
	Present day with increased upstream domestic use (upgraded Fritzgewaardt Water Treatment Works (WTW)
Assegaai	Climate change
	Present day with increased upstream domestic use
	Present day with EWR
	Present day, no EWR
Ngwempisi	Climate change
	Present day with increased upstream domestic use
	Present day with EWR

The following **estuary scenarios** have been assessed in addition to the Climate Change scenario run per estuary:

Site	Description
Amatigulu (north & south)	Reduction of present day MAR by 10%
	Reduction of present day MAR by 20%
	Reduction of present day MAR by 30%
	Increase of present day MAR by 15%
Siyaya	Reduction of present day MAR by 15%
	Increase of present day MAR by 15%
	Restoration scenario
Mlalazi	Present day including the upgrade of the Mtunzini WWTW increased to a 1.5 ML/d plant
	Present day including additional demand of 10% on present day MAR supplied by Eshowe Dam with an increased capacity of 15 million m^3.
	Present day reduced by 10% through abstraction from lower reaches of river
	Present day reduced by 20% through abstraction from lower reaches of river
	Scenario 3 including additional demand of 10% on present day MAR supplied by Eshowe Dam with an increased capacity of 20 million m^3
	Restoration scenario
Mhlathuze	Increase of present day MAR by 15%
	Increase of present day MAR by 10%
	2030 year projected water requirements on the system (including increased transfer from Thukela to Goedertrouw Dam)
	2040 year projected water requirements on the system (including increased transfer from Thukela to Goedertrouw Dam)
Nhlabane	Present day including EWR releases from Lake Nhlabane as obtained from MWAAS (DWAF, 2009)
	Restoration (Rest) and Restoration/intervention (Rest/Int) scenarios

ECONOMIC CONSEQUENCES OF SCENARIOS

Economic consequences of operational scenarios were assessed for the study area. Note that the present day Mean Annual Runoff (MAR) includes the water allocated for irrigation and commercial forestry. As it is possible to decrease the land use as water is curtailed, the consequences are only calculated for those two water use sectors. The removal of water from industries and other water users such as urban domestic use and mining was not considered a practical option and thus not determined. It can however be accepted that a curtailed volume of water and therefore product, will impact negatively on the product-related industries and other activities.

By converting the curtailed water volumes by means of an economic multiplier of direct Gross Domestic Product (GDP) and employment, consequences are expressed in potential impact on direct GDP and direct employment. This then shows the results after curtailment of the on-farm cultivation and selling of trees to forward users.

As an example, if water is curtailed from sugar cane, less sugar will be produced and all the people involved in all the different supply chains will have to lay off staff members or spend additional capital to optimise the operations. Moreover, this will have a socio-economic impact on household incomes in the production areas and beyond. This will also be the case if commercial forestry operations are curtailed. The feasibility of the saw and paper mills will be in danger, which will lead to additional negative social impacts.

As this catchment does not have many options to improve water flow to the natural habitat, curtailment sites are relatively low and curtailment scenarios not severe, however, every hectare of lower production may result in negative socio and economic consequences.

River Economic Consequences

Reference	Scenario	Baseline Direct GDP	Baseline Direct Labour	After curtailment Direct GDP	After curtailment Direct GDP	% Curtailed Direct GDP	% Curtailed Direct Labour
		Rand Millions	Numbers	Rand Millions	Numbers	Percentage	Percentage
WM1_CC	Climate Change	73	5 475	72	5 451	1.8%	0.4%
MK1_CC	Climate Change	138	4 626	137	4 609	0.6%	0.4%
MK1_2040	Domestic use	138	4 626	138	4 624	0.1%	0.0%
UP1_CC	Climate Change	149	12 815	148	12 812	0.1%	0.0%
UP1_2040	Domestic use	149	12 815	148	12 815	0.0%	0.0%
AS1_CC	Climate Change	110	12 479	110	12 479	0.0%	0.0%
AS1_2040	Domestic use	110	12 479	107	12 431	2.3%	0.4%
NG1_CC	Climate Change	277	33 110	276	33 105	0.1%	0.0%
NG1_2040	Domestic use	277	33 110	277	33 110	0.0%	0.0%
NG1_EWR	EWR (Jericho yield drops)	277	33 110	277	33 108	0.0%	0.0%

As the present water situation has already made provision for irrigation, the curtailment effect was limited where the relatively highest curtailment was in the IUA in the Assegaai (AS1_2040) and White Mfolozi (WM1_CC) where the GDP was reduced in both scenarios by about 2% and direct employment by 0.4%.

Estuary Economic Consequences

Reference	Scenario	Baseline Direct GDP	Baseline Direct Labour	After curtailment Direct GDP	After curtailment Direct GDP	% Curtailed Direct GDP	% Curtailed Direct Labour
		Rand Millions	Numbers	Rand Millions	Numbers	Percentage	Percentage
MA1_CC	Climate Change	23	1 219	20	1 181	13.4%	3.1%
NS1_CC	Climate Change	187	6 625	165	6 432	12.2%	2.9%
MLA_CC	Climate Change	8	871	8	870	0.8%	0.1%

The estuary scenarios that resulted in curtailment for irrigation and commercial forestry were the climate change scenarios of Amatigulu (MA1_CC) and Nseleni (NS1_CC). The were reduced by about 12% - 13% for GDP and direct employment by about 2% - 3%. In the MA1_CC a much higher curtailment occurs due to the high value crop of citrus in that scenario area. The NS1_CC was the consequence of a high amount of water volume curtailment of irrigated vegetables and sugar cane.

Reference	Scenario	Baseline Direct GDP	Baseline Direct Labour	After extension Direct GDP	After extension Direct GDP	% Extend Direct GDP	% Extend Direct Labour
		Rand Millions	Numbers	Rand Millions	Numbers	Percentage	Percentage
MHL_2040	Increased water flow for irrigation if there is arable land available	87	6 093	86	6 076	1.3%	0.3%

In an estuary scenario where the water volume was extended for irrigation agriculture, a proxy was developed if it was economic feasible for expansion of irrigation. By making use irrigation sugar cane as it was the main crop already cultivated in that area, the direct GDP increased to 1.3% and direct employment 0.3%.

WATER QUALITY (USER) CONSEQUENCES OF SCENARIOS

It is understood that water quality consists of the following two broad components:

- **Ecological**, i.e. as part of the EWR or Reserve process. A standard process is followed for scenario evaluation. Ecological Specifications or EcoSpecs are the output of the Reserve process.
- **Users**, i.e. water quality related to users or role players other than ecology, for example: Domestic Use, Agriculture - Stock Watering, Agriculture – Irrigation, Industrial - Category 3 and Recreation - Intermediate Contact. UserSpecs are defined.

The potential impact of river scenarios on user water quality focuses on identifying users and driving water quality variables, and assessing a potential impact on those variables. The assessment is highly reliant on background information on water users in the catchment and previously set objectives for water quality (where available); identifying water quality hotspot areas (either priority pollution or protection areas); identifying primary users and driving water quality variables; and testing this information with the Technical Task Group (conducted on 3 November 2022). An impact rating of selected scenarios on water quality at identified sites for the driving user(s) are assigned, and scenarios ranked in terms of potential impact.

Note that impacts on user water quality are not included in the Water Resource Class Decision Support System (WRC-DSS), that is the multi-criteria analysis approach used for determining integrated scenario consequences and Water Resource Classes. Water quality would be double-accounted if included as an additional separate component in the WRC-DSS, as it is already incorporated as follows:

- Part of ECOLOGICAL consequences (as ecological water quality);
- a service identified in ECOSYSTEM SERVICES;
- and in the ECONOMICS consequences assessment in terms of water treatment costs (where applicable).

ECOSYSTEM SERVICES CONSEQUENCES OF SCENARIOS

Natural habitats and ecosystems provide a range of environmental goods and services that contribute to human well-being. River systems and their associated use values are of particular importance. For operational purposes this study follows the approach defined in the 2005 Millennium Ecosystem Assessment and classifies ecosystem services along functional lines using categories of provisioning, regulating, cultural, and supporting services.

The value of ecosystem services to riverine and estuarine systems was examined. This was done for the purpose of understanding the magnitude and significance of change under scenarios proposed. This included a profile of ecosystem services associated with each site, keeping in mind they represent a wider area, and thereafter assessed against the planning scenarios applicable to the site. A list of the relevant ecosystem services that were found in the various reaches examined, and deemed to be significant, was generated as a table. These were cross-checked with the biophysical experts that formed part of the project team.

The biophysical specialists then identified the potential change, against a normative value expressed as “1”, that each of the key ecosystem services may undergo in each of the scenario clusters. The potential change is noted as a factor and used in later calculations. For example, no change = 1, a 50% increase = 1.5, and a 20% decrease = 0.8.

The scenario impact on various ecosystem services were then amalgamated into overall categorisation of provisioning, regulating, cultural, and supporting services. The scenarios are also weighted with respect to the importance of the services at each EWR site. As such, the score given to each of the services is examined against the nature of the particular EWR site and associated area. In an instance where regulating services, for example are deemed to be important, then these services are given a higher weight. The same goes for the other services. All weightings are normalised against a base score of 1. Where all four services are deemed to be of equal importance, a score of 0.25 would be allocated to each.

The process to determine an integrated ranking of the different scenarios required determining the relative importance of the different EWR sites. Here the perceived vulnerability of households dependent on the provisioning aspect of ecosystem services played a major role. Again all scores are normalised against a base score of 1.

RIVER ECOLOGICAL CONSEQUENCES OF SCENARIOS

The ecological consequences (rivers) of the scenarios are evaluated at the key biophysical nodes (EWR sites) by determining the impact on the Ecological Category (EC). The process to determine the ecological consequences consists of analysing the scenario's flow regime and determining how the biophysical components (drivers: geomorphology and physico-chemical variables; responses: fish, riparian vegetation and macro-invertebrates) will respond to these changes. A range of models are then applied and the predicted Ecological Category for each component determined. An EcoStatus (overall Ecological Category) can also then be determined.

Once this information is available for each scenario at each EWR site, scenarios must be ranked from better to worse considering the change in ecological state at the EWR site. The ranking illustrates the degree to which a scenario meets the Recommended Ecological Category (REC) or one can describe it as the degree to which the ecological objectives which is represented by the REC are met. The scoring of one to zero is defined as follows:

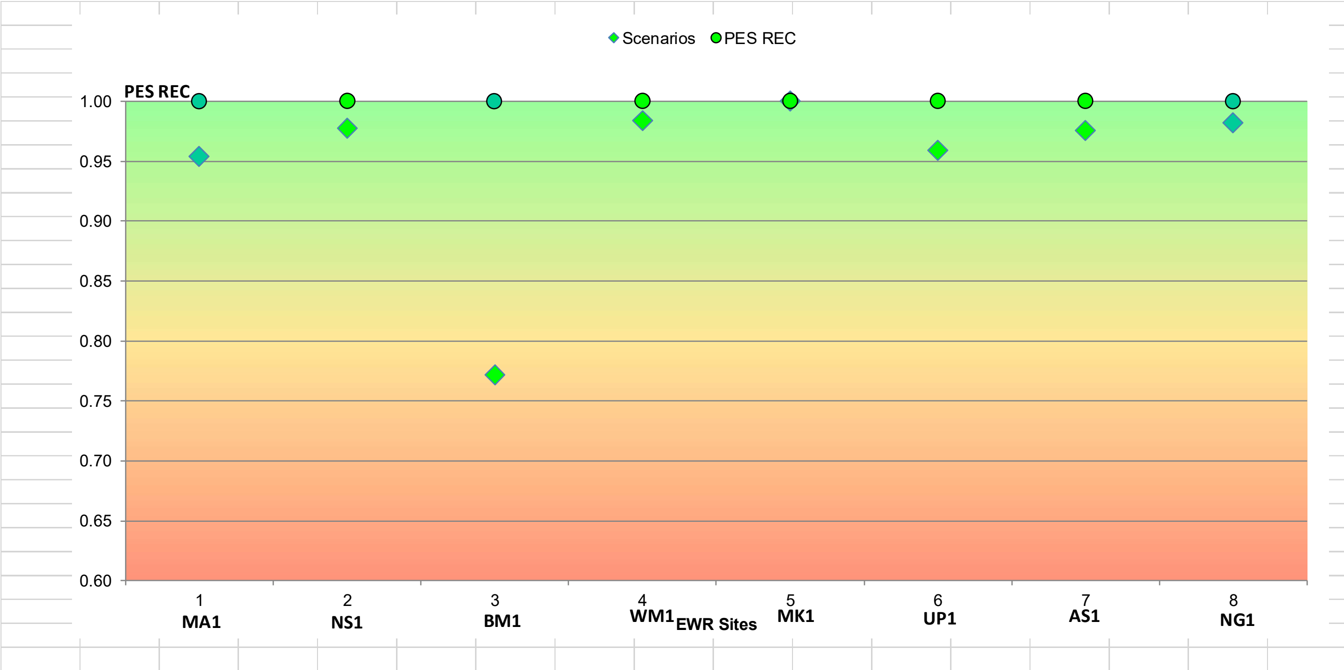
- 1: REC is met for all components*
- 0: REC is not met at any component and each component would be evaluated individually as zero.

**Components: Drivers (physico-chemical, geomorphology) and responses (fish, macro-invertebrates, and riparian vegetation).*

There are few major operational and development scenarios that would impact on rivers and EWR sites, and therefore require evaluation. Of those identified, Scenario: Climate Change were often marginally 'worse' than the other scenarios. All scenarios meet the REC and it is therefore recommended that the REC becomes the Target Ecological Category (TEC) and that RQOs are set for the REC.

It must be noted that EWR MK1 (Mkuze River) requires improvement to achieve the REC, but these improvements are NON-FLOW RELATED. These improvements will be identified, and recommendations made as part of the RQO process.

The results of the analysis are summarised in the figure below. Note that the green shading of the circles and diamonds related to a C EC and the turquoise shading a B/C.



ESTUARY ECOLOGICAL CONSEQUENCES OF SCENARIOS

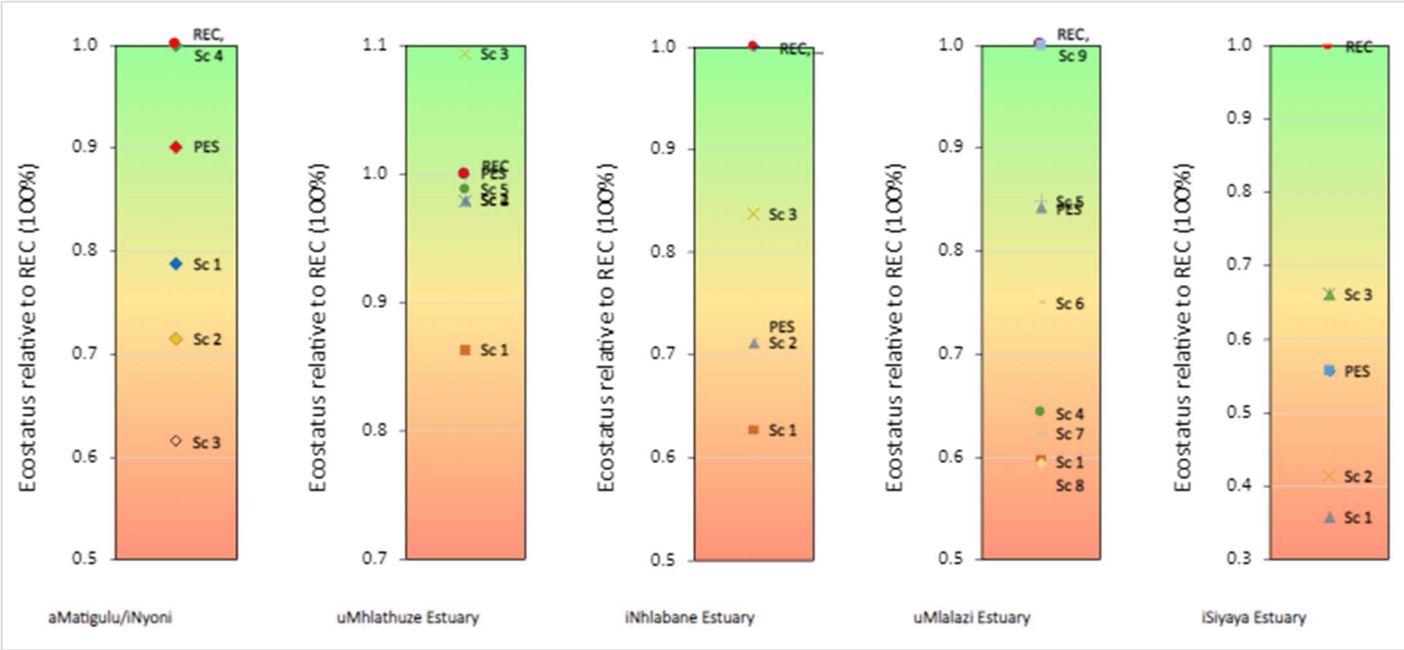
The ecological consequences of the scenarios on the estuaries of the region are assessed by determining the impact on the Ecological Category of the systems.

The process consists of analysing the scenario's flow regime and determining how the biophysical components (drivers: hydrodynamics, water quality and physical processes and biotic response components: microalgae, macrophytes, invertebrates, fish and birds) will respond to these changes. The Estuarine Health Index is then applied, and the predicted Ecological Category determined.

Once this information is available for each scenario at each estuary, scenarios are ranked from better to worse considering the change in ecological state. The ranking illustrates the degree to which a scenario meets the REC, with a score of 1 indicating all requirements of the REC are met.

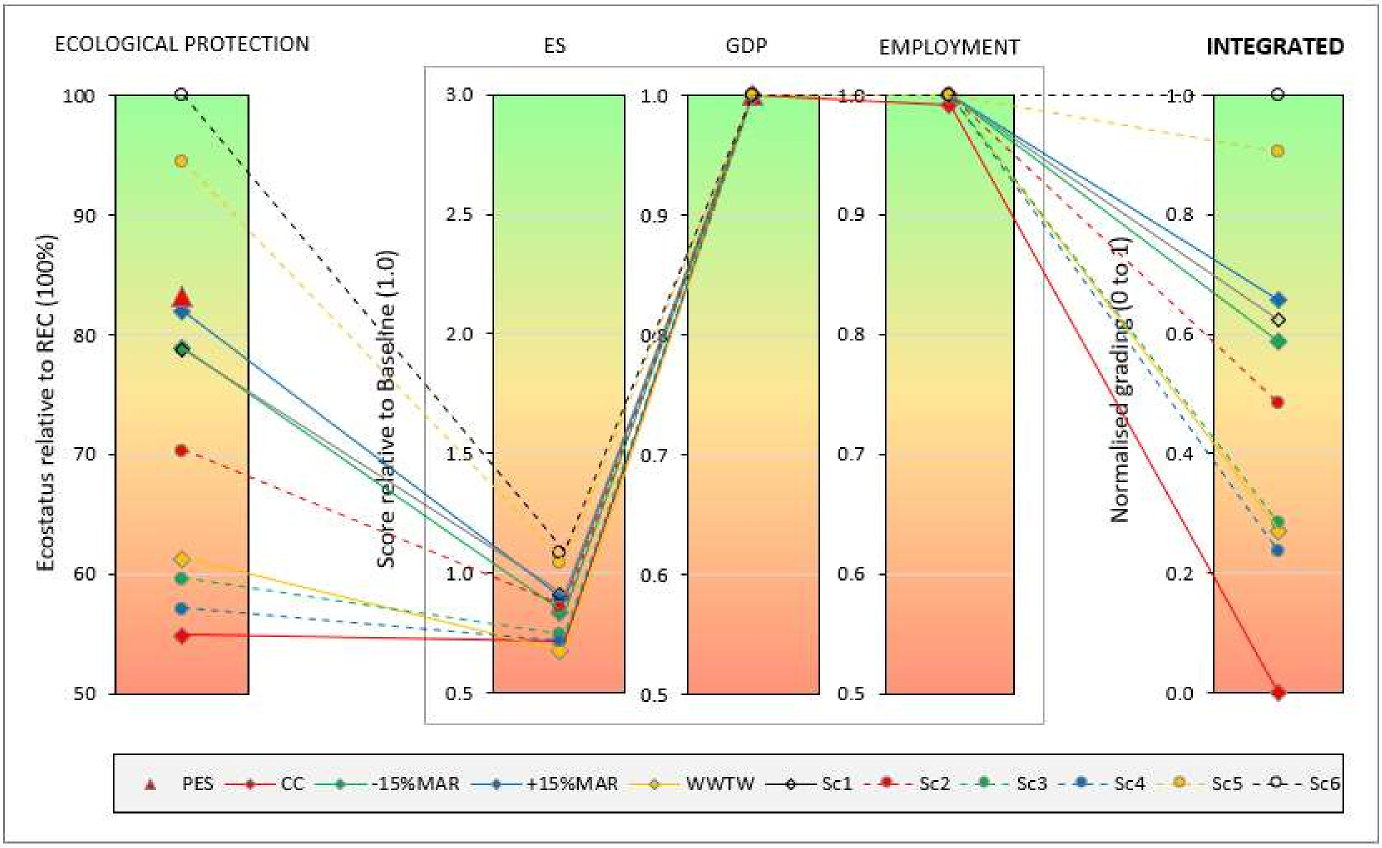
There are few major operational and development scenarios that would impact on the estuaries, and therefore require evaluation. Of those identified, Scenario: Climate Change were in most cases the 'worst' scenarios because of declining base flows and a decrease in high flows and floods. In most cases the "Restoration scenario" that represents an increase in low flows to the estuaries, were the recommended flow scenario. These increased flows were either required to meet biodiversity obligations (aMatigulu/iNyoni: B/C to B, uMlalazi: B/C to A/B, iSiyaya: D/E to C, or are in Protected Areas and should be an A or B EC) or to restore estuaries in a highly degraded state (e.g. iNhlabane: E to D). The exception is the highly modified uMhlatuze Estuary (Maintain Present Ecological State (PES): D), where the extensive tidal exchange results in insensitive to flow modification. All system require NON-FLOW RELATED measures to increase or maintain condition as most systems are on a negative trajectory. The waste water scenario for uMlalazi Estuary has severe consequences, i.e. a 20% decline in condition, and cannot be recommended.

Apart from uMhlatuze Estuary, given the high flow requirements associated with the RECs, the TECs and associated RQOs will need to be determined through the stakeholder engagement process. The results of the analysis are summarised in the figure on page 8.



INTEGRATION OF CONSEQUENCES AND LINKS TO WATER RESOURCE CLASSES

The overall grading of scenarios (from best to worst) was assessed by integrating the consequences of the four components: ecology, ecosystem services (ES), economy (GDP) and employment, by applying multi-criteria analysis (MCA) techniques. This method is ideal for comparing scenarios where the outcomes of the drivers are quantified using dissimilar variables. In this analysis, using the ecological status is rated relative to the REC scenario (termed 'ecological protection'), with the REC assigned a value of 100%; ES are expressed relative to present conditions (Baseline, which is assigned a value of 1.0); economic consequences are derived for GDP and employment in rand- and number of people-terms, respectively, and they too are expressed relative to a Baseline value of 1.0. A graphical example of the output from the Water Resource Class Decision Support System is shown below for IUA W13 using a 'traffic diagram', which displays the graded scenarios per component and overall. The integrated grading is normalised, i.e. best = 1 and worst = 0.



RECOMMENDED WATER RESOURCE CLASSES AND CATCHMENT CONFIGURATION

Based on the above recommendations, the following preliminary water resources classes are derived and recommended. Note that the Climate Change (CC) scenario was run for every IUA (rivers and estuaries), while additional scenarios vary depending on IUA and river vs estuary. Short scenario descriptions may therefore be shown on the table rather than a scenario number.

IUA	WATER RESOURCE CLASS per scenario												
	PES	**REC**	Climate Change	Scenarios which vary with IUA									**Prelim. Class**
W11	II	I	II	-20%MAR III	-30%MAR III	+15%MAR I							I
W12-a	I	I	I										I
W12-b	II	II	II										II
W12-c	III	III	X	+15%MAR III	2030 III	2040 III							III
W12-d	X	III	X	EWR X	Rest X	Rest/Int III							III
W12-e	X	III	III										III
W13	II	I	III	-15%MAR II	+15%MAR II	WWTW III	Sc1 II	Sc2 II	Sc3 III	Sc4 III	Sc5 I	Sc6 I	I
W21	II	II	II	HFYnoEWR II	HFYEWR II	KLPEWR II							II
W22	II	II	II										II
W23	I	I	I										I
W31-a	II	I	II										I
W31-b	II	I	II	2040 II	IRR II								I
W32-a	I	I	I										I
W32-b	II	II	II										II
W41	II	I	II										I
W42-a	II	II	II	2040 II									II
W42-b	I	I	I										I
W44	III	III	III										III
W45	III	II	III										III
W51-a	III	II	III										II
W51-b	III	III	III										III
W52	II	II	II	2040 II	EWR II	noEWR II							II
W55	I	I	I										I
W57	I	I	I										I
W70-a	I	I	I										I
W70-Muzi Swamps	II	II	II										II
W70-b	I	I	I										I
St.Lucia	III	I	III										I

Note: 'X' refers to the ecological category criteria for a Class III having not been met.

THE WAY FORWARD

Once classes have been finalised, the next task will start determining RQOs to provide the quantitative and qualitative objectives to ensure that the Target Ecological Categories (TEC), associated with the Class can be monitored and measured. Compliance and giving effect to the Class can thus be ensured.

Abbreviations and Acronyms

BID	Background Information Document
CC	Climate Change
DWS	Department of Water and Sanitation
EC	Ecological Category
ES	Ecosystem Services
EWR	Ecological Water Requirements
GDP	Gross Domestic Product
HFY	Historic Firm Yield
IUA	Integrated Unit of Analysis
IWRM	Integrated Water Resource Management
MAR	Mean Annual Runoff
MCA	Multi-criteria analysis
MWAAS	Mhlathuze Water Availability Assessment Study
NWA	National Water Act
PES	Present Ecological State
PMC	Project Management Committee
PSC	Project Steering Committee
RDM	Resource Directed Measures
REC	Recommended Ecological Category
RQOs	Resource Quality Objectives
RU	Resource Unit
SQ	Sub Quaternary
TEC	Target Ecological Category
WRC-DSS	Water Resource Class Decision Support System
WRCS	Water Resource Classification System
WTW	Water Treatment Works
WWTW	Waste Water Treatment Works

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