Determining the Water Resource Classes and Resource Quality Objectives in the Thukela River Catchment

Project Steering Committee 5
Background Information Document
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water & sanitation
Department:
Water and Sanitation
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PURPOSE OF THIS DOCUMENT

The purpose of this background information document (BID) is to assist members of the Project Steering Committee (PSC) in preparing for the fifth meeting to be held online on 28th of April 2021.

This BID contains information recapping the outputs of the process to date and which are inputs to the determination of draft Resource Quality Objectives and Numerical Limits.

This BID should be read in conjunction with Report No: RDM/WMA04/00/CON/CLA/0221, Department of Water and Sanitation, South Africa. April 2021. *Determination of Water Resource Classes and associated Resource Quality Objectives in the Thukela Catchment: Draft Resource Quality Objectives and Numerical Limits Report.*

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STUDY OBJECTIVE

Chapter 3 of the National Water Act, (Act 36 of 1998) provides for the protection of water resources through the implementation of Resource Directed Measures (RDM) which include the classification of water resources, setting the Reserve and determining Resource Quality Objectives (RQOs).

The key aims of this study are to co-ordinate the implementation of the Water Resource Classification System (WRCS) published as Regulation 810 in September 2010 for determination of water resource classes and associated RQOs in the Thukela catchment. The study is linked to the preliminary Reserve determination studies and other water resource management initiatives. Where the preliminary Reserve is available and relevant, the information has been adopted and where needed, within the ambit of this study, gaps have been filled.

The water resource classes and associated RQOs will assist the Department in ensuring that water resources within the Thukela catchment are protected to achieve equitable share in a sustainable manner. In determining classes and associated RQOs, socio-economic factors and ecological goals are being considered, by evaluating the magnitude of impacts in the present, as well as proposed future developments. The water resource classes and associated RQOs will also assist the Department in the authorisation of future water uses, operation and management of the system and the evaluation of the magnitude of the impacts of the present and proposed developments, as well as ensure that economic, social, and ecological goals are attained.

WHERE ARE WE IN THE PROCESS?

Figure 1 outlines the process being followed illustrating the integrated Framework of the Gazetted steps for Classification, Reserve and RQO Determination (DWS, 2017). The current study has completed Steps 4 and 5 and is working on Step 6. This Background Information Document outlines the approached followed in determining the draft Resource Quality Objectives and numerical limits that will ultimately be gazetted.

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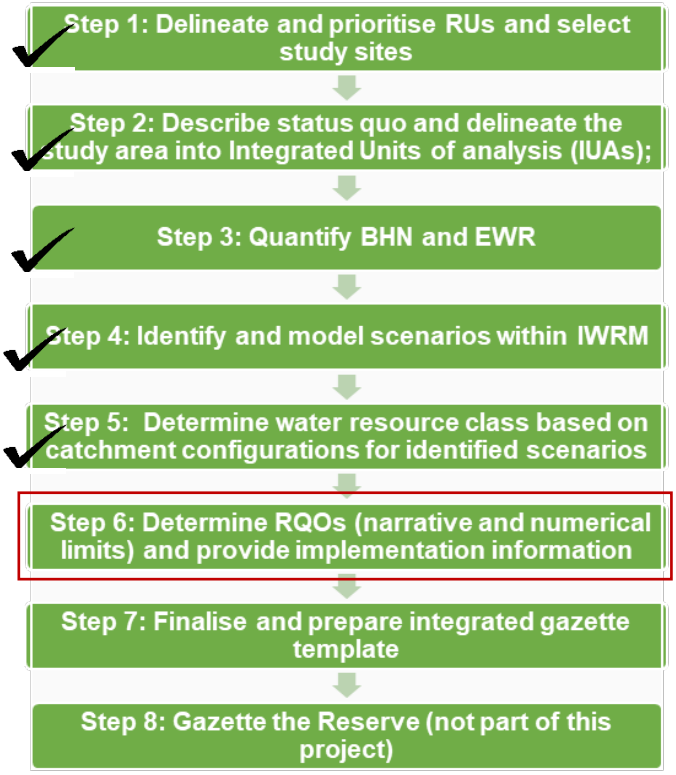

Figure 1: Integrated RDM Process

RECAP: Integrated Units of Analysis (IUA)

As part of the classification process, the IUAs for the catchment were delineated and the Ecological Water Requirements (EWR) sites and river nodes were specified. These outputs from the classification process form the basis for the RQO determination process, and primarily for the RU definition.

Fifteen (15) IUAs were delineated and are detailed in Study Report: RDM/WMA04/00/CON/CLA/0320 and illustrated in Figure 2.

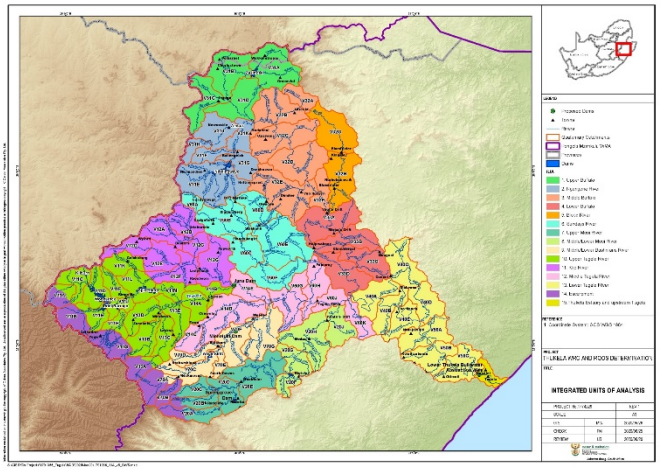

Figure 2: Integrated Units of Analysis

RECAP: Delineation of Resource Units and Prioritisation

Delineation and prioritisation of Resource Units (RU) was required as it is not always appropriate to set the same RQOs for all water resources in a catchment. The RUs delineated and presented in *Preliminary Resource Units Selection and Prioritisation Report,* Number: RDM/WMA04/00/CON/CLA/0520, are aligned to the IUA boundaries to prevent overlap. Based on a range of characteristics and considerations described in the report, seventy five (75) RUs were delineated in the Thukela catchment (Figure 3).

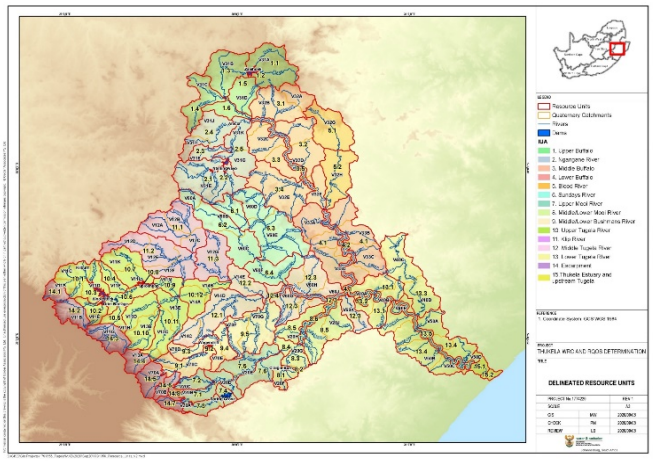

Figure 3: 75 Resource Units identified

Based on the priority ratings obtained through application of the RU prioritisation tool, 52 river and dam priority RUs were selected for RQO determination (Figure 4), and various groundwater and wetland areas were also prioritised. Prioritisation was based on position of RUs within an IUA, importance of the RU to users, threat posed to water resource quality for users and the environment, ecological considerations, practical constraints, and management considerations.

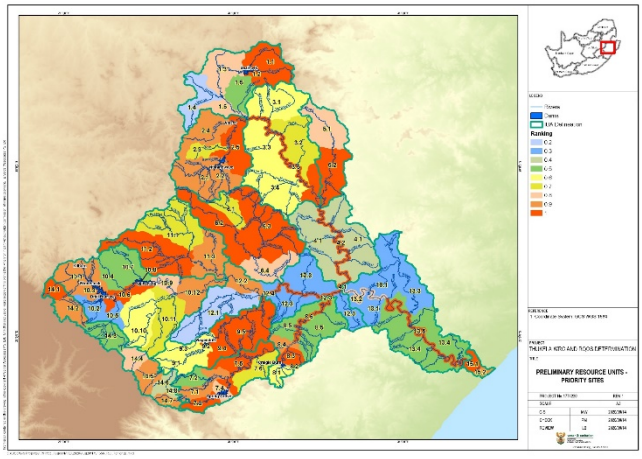

Figure 4: RU prioritisation rankings

Priority Groundwater Areas

Five areas in the Thukela Catchment have been marked as reporting high rated impact conditions that will require clearly defined resource quality objectives for medium and long-term groundwater management protocols – they are as follow:

- RUs V32B to V32D (IUA 3),
- RUs V60A, V60B, V60C, V60D and V60E (IUA 6),
- RUs V11M, V13E and V14A (IUA 10),
- RU V70C (IUA 9), and
- RUs, V11C, V11D, V11F and V11J.

Priority Wetland Areas

The Thukela catchment includes a number of protected wetland systems and areas (Figure 5).

- Groenvlei
- Wakkerstroom (Figure 5)
- Boschoffsvlei (Figure 10)
- Blood River Vlei
- Upper Bloed
- Boschbergvlei
- Paddavlei
- Stillerust
- Hlatikulu
- Scawby, Dartmoor, Melmoth
- Ntabamhlope
- Highmoor

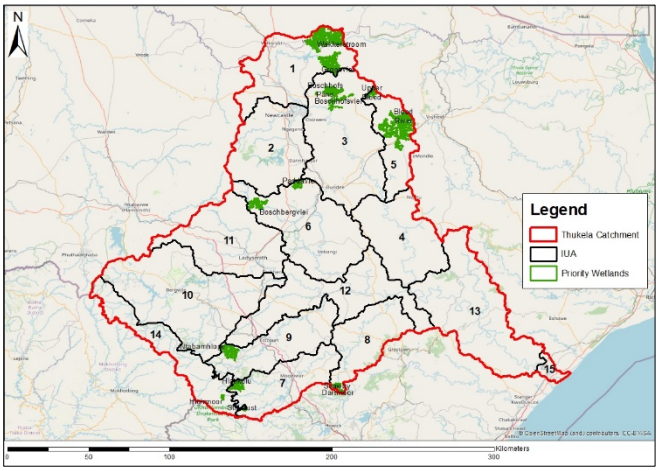

Figure 5: Priority wetlands

Figure 6: Wakkerstroom wetlands

RECAP: Prioritisation of Sub-components and Selection of Indicators

The selection of components and the identification of proposed sub-components and indicators for which RQOs are set, had two key objectives:

- To identify and prioritise sub-components including habitat, quantity, quality, and biota that may be important to users or the environment; and
- To select those sub-components and associated indicators such as flow, salinity, fish, and invertebrates, for which RQOs and numerical limits should be developed.

Components that may be important to either the users or the environment were prioritised and include those shown in Table 1.

Table 1: Components included

Component	Rivers	Dams	Wetlands	Estuary	Groundwater
Quality					
Quantity					
Biota					
Habitat					
Hydrodynamics					
Water Level					
Protection zones					

RECAP: Proposed Resource Classes

As part of the classification component of this study proposed water resource classes have been set.

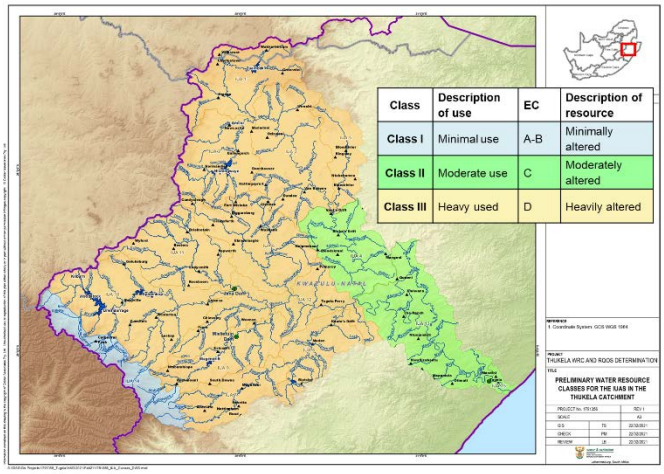

Figure 7: Proposed Water Resource Classes

DRAFT RESOURCE QUALITY OBJECTIVES AND NUMERICAL LIMITS

Resource Quality Objectives (RQO) have to be determined for significant water resources as the means to ensure a desired level of protection. The outputs of the abovementioned steps have all informed the draft RQOs which include a narrative and, where applicable, a numerical limit.

The purpose of RQOs is to provide limits or boundaries for biological, physical, and chemical attributes which should be met in the receiving water resource in order to ensure protection.

In determining RQOs it is important to recognise that different water resources will require different levels of protection. In addition to achieving the Water Resource Class (Figure 7), the RQOs determined will ensure that the needs of all users and competing interests who rely on the water resources are considered.

Figure 8: Sampling in the catchment

The report: Department of Water and Sanitation, South Africa. February 2021. Determination of Water Resource Classes and associated Resource Quality Objectives in the Thukela Catchment: Draft Resource Quality Objectives and Numerical Limits Report (Report No: RDM/WMA04/00/CON/CLA/0221) describes the draft Resource Quality Objectives (RQO) and numerical limits for rivers, dams, wetlands, groundwater, and the estuary in the Thukela Catchment.

Detail is given per resource unit and IUA and includes the context and the rationale, where applicable, on the proposed RQOs and numerical limits formulated to guide and provide understanding to the reader on the reasoning and context to the proposed RQOs for each of the prioritised RUs. The tables are however too numerous to include in the BID.

Figure 9: Fish species in the Bloukrans River

- The RQOs proposed in the report provide a set of objectives that are based on available data, information, previous studies ad actual date collected in the field (Figures 8 and 9), the Water Resource Classification component and inputs from external specialists and stakeholders.
- These proposed RQOs and associated numerical limits have been taken through various stakeholder consultation processes and are based on guidance received and best available information sources at the time of development.
- The Implementation Plan to follow will be developed around the inputs received and will aim to put forward a plan that will enable the Department of Water and Sanitation to work in collaboration with the various relevant Government Departments and external organisations in the Thukela catchment, to work towards the achievement of the RQOs, and fill gaps that may still exist.

Figure 10: Boschoffsvlei Pans

NEXT STEPS

The next step in the study will be to:
Gazette the draft Resource Quality Objectives and Numerical Limits for comment by mid-July 2021.