

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

Project Steering Committee 6 Background Information Document July 2021



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

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 sixth meeting to be held online on 28th of July 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 the Draft Gazette for the *Proposed Water Resource Classes and Resource Quality Objectives for Thukela Catchments in the Pongola-Mtamatvuna Water Management Area*.

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STUDY OBJECTIVE

Chapter 3 of the National Water Act, 1998 (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 within the study area. 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 1 to 6 and is working on Step 7. This Background Information Document outlines the draft gazette for water resource classes and RQOs.

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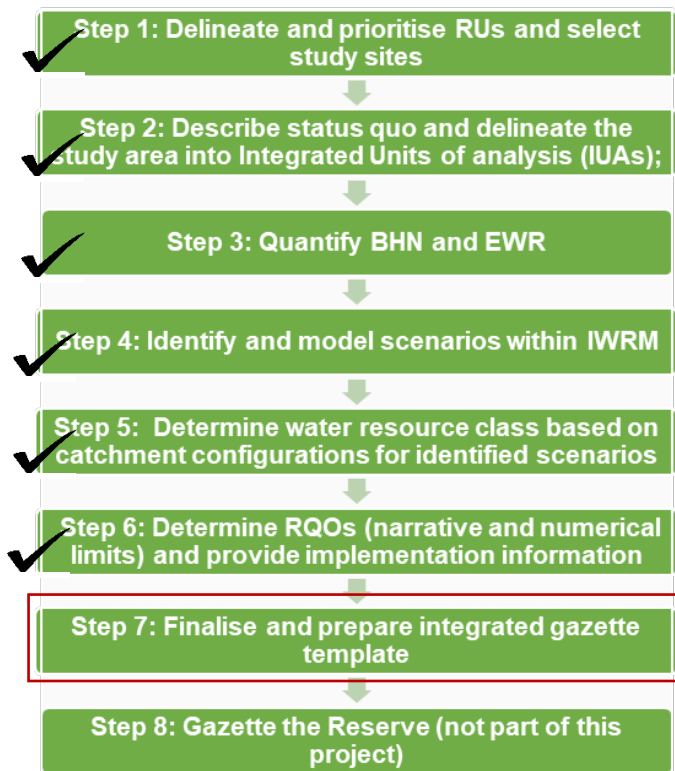


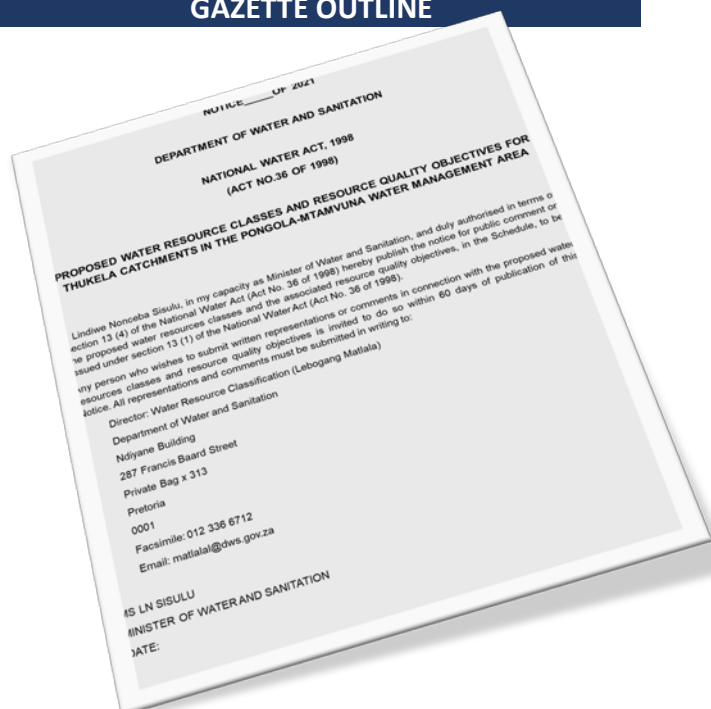
Figure 1: Integrated RDM Process

Why gazette the outcomes of the process?

The Government Gazette is the gazette of record of South Africa, the "official organ of Government" and is used by the government as an official way of communicating to the general public.

This allows many more people, not only those on the Project Steering Committee, who have an interest in the Thukela catchment to also give comment prior to the classes and Resource Quality Objectives being legislated.

GAZETTE OUTLINE



PREAMBLE

Recognizing that the Minister is required to use the promulgated Water Resource Classification System to determine the class and Resource Quality Objectives of all or part of a water resource considered to be significant; Recognizing that the protection of the quality of water resources is necessary to ensure sustainability of the nation's water resources in the interests of all water users; recognizing that the ultimate aim of water resource management is to achieve the sustainable use of water for the benefit of all users; therefore the Minister is determining the class of each significant water resource and the associated Resource Quality Objectives.

SCHEDULE

PROPOSED WATER RESOURCE CLASSES AND RESOURCE QUALITY OBJECTIVES FOR THUKELA CATCHMENTS IN THE PONGOLA-MTAMVUNA WATER MANAGEMENT AREA

1. DESCRIPTION OF THE WATER RESOURCE

Water Management Area: Pongola-Mtamvuna

Drainage Region: V Primary Drainage Region

River(s): Thukela System

DEFINITIONS

In this schedule any word to which a meaning has been assigned in the National Water Act, 1998 shall bear such meaning unless the context indicates differently.

- **Class I:** The configuration of Ecological Categories of the water resources within a catchment results in an overall condition of that water resource that is minimally altered from its predevelopment condition.
- **Class II:** The configuration of ecological Categories of the water resources within a catchment results in an overall condition of that water resource that is moderately altered from its predevelopment condition.
- **Class III:** The configuration of ecological Categories of the water resources within a catchment results in an overall condition of that water resource that is significantly altered from its predevelopment condition.
- **Ecological category:** Means the assigned ecological condition by the Minister to a water

resource that reflects the ecological condition of that water resource in terms of the deviation of its biophysical components from the natural reference condition.

- **Ecological Water Requirement:** The flow patterns (magnitude, timing, and duration) and water quality needed to maintain a riverine ecosystem in a particular condition. This term is used to refer to both the quantity and quality components.
- **Water Resource Class:** Represents the attributes required of different water resources by the water resource custodian (Department of Water and Sanitation).
- **Resource Quality Objectives:** The descriptive statements and numerical values for the biological, physical, and chemical attributes of the significant water resources throughout the catchments. They are narrative and qualitative statements that describe the overall objectives for the Resource Unit.
- **Resource Unit:** A stretch of river that is sufficiently ecologically distinct to warrant its own specification of an Ecological Water Requirement or Resource Quality Objective and as such the geographic boundaries of each must be clearly delineated. A resource unit is a section of a river that frequently has different natural flow patterns, reacts differently to stress according to their sensitivity, and requires individual specifications of the ecological requirements and Resource Quality Objectives appropriate for that reach, as compared to the rest of the river. The delineation of a catchment into resource units is done primarily on a biophysical basis, and where the hydrology, geomorphic characteristics (i.e., geomorphic zone), water quality attributes and river size remain relatively similar, as well as on the homogeneity of impacts. A Resource Unit is the basic unit of a water resource to which Resource Quality Objectives will apply.
- **Integrated Unit of Analysis:** Represents a homogenous catchment area of similar impacts and a broad-scale unit for assessing the socio-economic implications of different catchment configuration scenarios and to

report on the ecological conditions at a sub-catchment scale. An integrated unit of analysis must be considered in the determination of Resource Quality Objectives.

- **Present Ecological State:** The current health or integrity of various biological attributes of the resource, compared to the natural or close to natural reference conditions.
- **Recommended Ecological Category:** A category indicating the ecological management target for a water resource based on the ecoclassification that should be attained. Values range from Category A (unmodified, natural) to Category D (largely modified).
- **Target Ecological Category:** The ultimate target to achieve a sustainable system both ecologically and economically, considering the Present Ecological State and Recommended Ecological Category. The Target Ecological Category can be the same as the Present Ecological State or the Recommended Ecological Category. However, it may also be worse than the Present Ecological State if a system is targeted for development that will impact the present state, or better where a higher level of protection is needed.
- **Percentile:** Non-exceedance probability i.e., at the 95th percentile, 95 percent of values must be less than the value; and at 50th percentile 50, percent of values must be less than the value.

2. DETERMINATION OF THE CLASS OF A WATER RESOURCE IN TERMS OF SECTION 13 (1) (a) OF THE NATIONAL WATER ACT, 1998

1. Each integrated unit of analysis represents a homogenous catchment area of similar impacts and socio-economic zones. The water resources within an integrated unit of analysis are classified in terms of their extent of permissible utilization and protection as either Class I, indicating higher ecological protection and minimal utilization; Class II, indicating moderate protection and moderate utilization; or Class III, indicating sustainable minimal protection and high

utilisation. A resource unit is a stretch of river within an integrated unit of analysis that is sufficiently ecologically distinct to warrant its own specification of resource quality objectives. A node indicates the flow modelling points within an integrated unit of analysis and could serve as a sampling location for Resource Quality Objectives within a resource unit. The Recommended Ecological Category of a water resource refers to the ecological condition that must be attained and where the Recommended Ecological Category has not been determined the water resource is described in terms of its Present Ecological State.

- The proposed water resource classes for the Thukela catchments are listed in Table 1 according to the overall class per integrated unit of analysis and indicated in Figure 1.

Table 1: Proposed Water Resource classes for Thukela catchments

Integrated Units of Analysis		Recommended Water Resource Class
Number	Name	
1	Upper Buffalo	III
2	Ngagane River	III
3	Middle Buffalo	III
4	Lower Buffalo	II
5	Blood River	III
6	Sundays River	III
7	Upper Mooi River	III
8	Lower Mooi River	III
9	Middle/Lower Bushman's River	III
10	Upper Thukela River	III
11	Klip River	III
12	Middle Thukela River	III
13	Lower Thukela River	II
14	Escarpment	I
15	Thukela Estuary	II

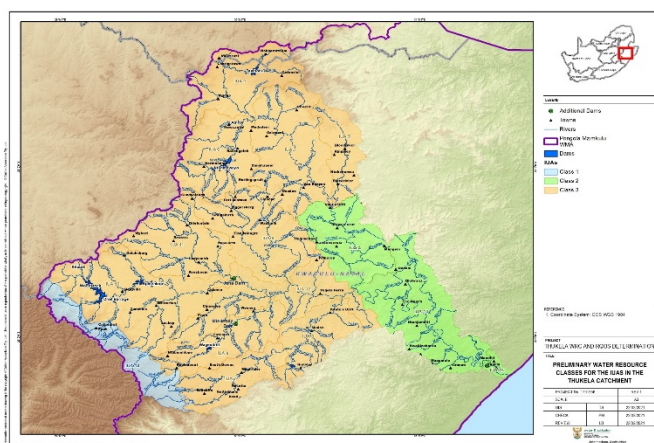


Figure 1: Proposed Water Resource Classes for the Thukela catchments

Table 2: Integrated Units of Analysis delineated for Thukela catchments

Integrated Unit of Analysis	Catchment area	Quaternary catchment
1	Upper Buffalo	V31A; V31B; V31C and V31D
2	Ngagane River	V31E; V31F; V31G; V31H; V31J; V31K
3	Middle Buffalo	V32A; V32B; V32C; V32D; V32E; V32F;
4	Lower Buffalo	V33A; V33B; V33C; V33D
5	Blood River	V32G; V32H
6	Sundays River	V60A; V60B; V60C; V60D; V60E; V60F
7	Upper Mooi River	V20A (lower portion); V20B (lower portion); V20C; V20D; V20E
8	Middle/Lower Mooi River	V20F; V20G; V20H; V20J
9	Middle/Lower Bushman's River	V70A (lower portion) V70C; V70D; V70E; V70F; V70G
10	Upper Thukela River	V11A (lower portion); V11C; V11D; V11E; V11F; V11H; V11J; V11K; V11L; V11M; 13A (lower reaches) V13B; V13C; V13D; V13E; V14A; V14B
11	Klip River	V12A; V12B; V12C; V12D; V12E; V12F; V12G
12	Middle Thukela River	V14C; V14D; V14E; V60G; V60H; V60J; V60K
13	Lower Thukela River	V40A; V40B; V40C; V40D; V40E; V50A; V50B; V50C; V50D (upper portion)
14	Escarpment	V20A (upper reaches); V20B (upper reaches); V70A (upper reaches); V70B; V13A (upper reaches); V11G; V11B; V11A (upper reaches)
15	Thukela Estuary and upstream Thukela reach	V50D

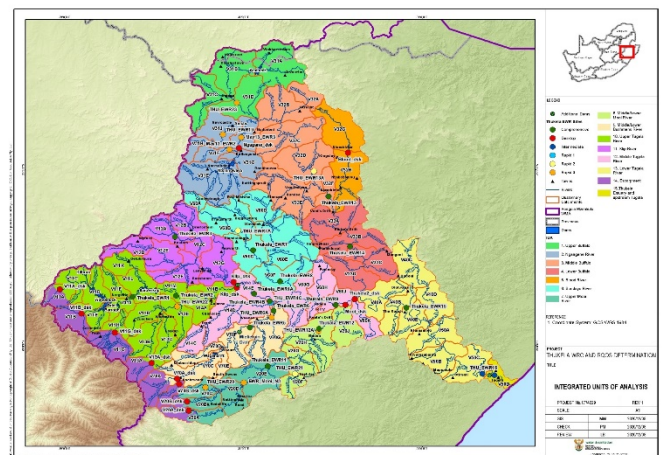


Figure 2: Integrated Units of Analysis delineated for the Thukela catchments

Table 3 of the draft gazette sets out the 75 Resource Units delineated for the Thukela catchments, also illustrated in Figure 3.

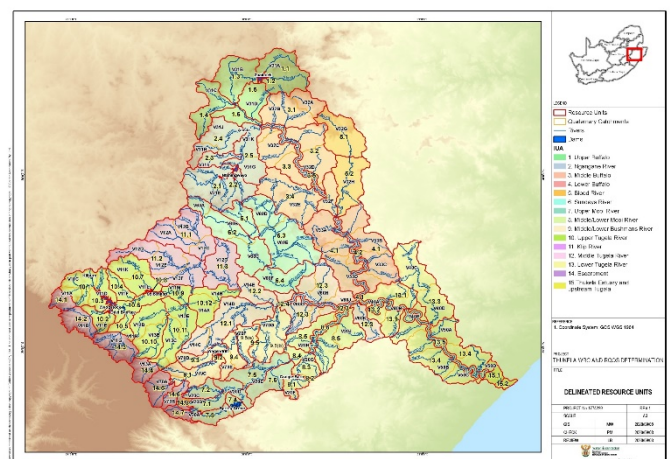


Figure 3: Resource Units of the Thukela catchment

Table 4 of the gazette summarises the Water Resource Classes per Integrated Unit of Analysis and Ecological Categories – Thukela catchments and

Table 5 of the gazette sets out:

(i) the listed Integrated Unit of Analysis in the Thukela catchments for which Resource Quality Objectives are proposed;

(ii) the selected Water Resources (Rivers, Wetlands, Dams and Groundwater) for which Resource Quality Objectives are proposed, and

(iii) reference to subsequent tables that list the proposed Resource Quality Objectives per selected sub-components (quantity, quality, habitat, biota, or groundwater) per Resource Unit.

List of Tables in the draft Gazette

- Rivers and Dams: Tables 6 to 20
- Wetlands: Table 21
- Groundwater: Tables 22 – 36
- Estuary: Table 37

NEXT STEPS

The next steps involve processes for requesting Ministerial approval to gazette for public comments for 60 days.