

9 WATER RESOURCE PROTECTION

Chapter 3 of the National Water Act, 1998 (Act No. 36 of 1998) prescribes measures that aim to balance protecting and utilising water resources for social and economic development. The Act makes use of two different mechanisms to find the right level of protection, i.e., Resource Directed Measures (RDM) and Source Directed Controls (SDC). RDM provides descriptive and quantitative goals to ensure water resource protection, while SDC specifies the criteria for controlling source impacts such as waste discharge and abstraction of water.

The demands on water resources are growing as the economy expands and the population increases; therefore, for the country to continue to develop economically whilst meeting the wide-ranging needs for water, critical steps must be taken to ensure the protection of the water resources. In recent years, South Africa's water resources have been under increasing threat due to pollution, which has resulted in rapid demographics and increased socio-economic development. The degradation of the ecosystem may lead to a reduction in ecosystem services, such as reduced capacity to generate water and loss of food production. The protection of water-related ecosystems is mainly to ensure that ecosystem services continue to be available to society.

The Department's goal is to enhance protection and ensure the sustainable use of water resources. Several measures aimed at protecting water resources, preventing pollution, mitigating its effects, and balancing the need to use water as a factor of production to enable socioeconomic growth and development have been implemented by the Department. These measures are Resource Directed Measures (RDM) as prescribed by the NWA to ensure comprehensive protection of water and Source Directed Controls (SDC) that form a link between the protection of water resources and regulation of water use.

9.1. Resource Directed Measures

Chapter 3 of the Act prescribes three Resource Directed Measures, which aim to achieve a balance between protecting the water resources and utilising the water resources for social and economic development. The Resource Directed Measures are:

- > The classification of significant water resources
- > The determination of the Reserve
- > The setting of Resource Quality Objectives

The linkages between the above three resource-directed measures are presented in Figure 9.1.



Figure 9.1: Linkages between the Resource-Directed Measures

9.1.1. Classification of significant water resources

Water Resource Classification System (WRCS) was formally prescribed through Regulation 810, published in the Government Gazette (GG 33541 of 17 September 2010). This system prescribes processes to be followed to determine RDM. This system categorises water resources according to specific water resource classes that represent a management vision for a particular catchment. The water Resource Classification process considers a catchment's social, economic, ecological and environmental landscape to assess the costs and benefits associated with utilization versus protection of a water resource. Water Resource Classification defines three water resource classes based on the extent of use and the alteration of the ecological condition of water resources from the pre-development condition, as given in Table 9-1 below.

Classes	Description of use	Ecological Category	Description of water resource
Class I	Minimally used	A-B	Minimally altered
Class II	Moderately used	С	Moderately altered
Class III	Heavily used	D	Heavily altered

Table 9-1 Water Resource Classes

*Ecological Category (EC) - the assigned ecological condition of a water resource in terms of the deviation of its biophysical components from a pre-development condition

The classification of water resources represents the first stage in the protection of water resources and determines the quantity and quality of water required for

ecosystem functioning as well as maintaining economic activity that relies on a particular water resource.

9.1.2. Resource Quality Objectives

The Act states that the purpose of Resource Quality Objectives (RQOs) is to establish clear goals relating to the quality of the relevant water resources, and it stipulates that in determining RQOs, a balance must be sought between the need to protect and sustain water resources and the need to use them.

RQOs are numerical and/or narrative descriptors of conditions that must be met to achieve the required management scenario provided during the water resource classification. Such descriptors relate to the:

- (a) Water quantity, pattern, timing, water level and assurance of instream flow;
- (b) Water quality, including the physical, chemical, and biological characteristics of the water;
- (c) Character and condition of the instream and riparian habitat; and
- (d) Characteristics, condition and distribution of the aquatic biota.

Once determined, the RQOs will give effect to the water resource classes set.

DWS has progressively conducted studies to determine water resource classes and the associated RQOs in several catchments. Table 9-2 indicates the status of water resource classification and RQO studies in South Africa as of September 2024.

Table 9-2: Status of water resource classification and RQO studies as of September2024

Study Area	Status	Government Gazette No.
Olifants-Doorn	The Department finalised and gazetted the	GG 39943 of 22 April 2016
Olifants	associated Resource Quality Objectives.	
Upper Vaal		
Middle Vaal		
Lower Vaal		
Letaba	The Department finalised and gazetted the	GG 40531 of 30 December
Inkomati	associated Resource Quality Objectives.	2010

Study Area	Status	Government Gazette No.
Mvoti to Mzimkhulu	The Department finalised and gazetted the water resource classes together with the associated Resource Quality Objectives.	GG 41306 of 08 December 2017
Crocodile (West) Marico, Mokolo, and Matlabas	The Department finalised and gazetted the water resource classes together with the associated Resource Quality Objectives.	GG 42775 of 18 October 2019
Breede-Gouritz	The Department finalised and gazetted the water resource classes together with the associated Resource Quality Objectives.	GG 43726 of 18 September 2020
Mzimvubu	The Department finalised and gazetted the water resource classes together with the associated Resource Quality Objectives.	GG 43015 of 14 February 2020.
Berg	The Department finalised and gazetted the water resource classes together with the associated Resource Quality Objectives.	GG 43872 of 06 November 2020
Thukela	The Department finalised and gazetted the water resource classes together with the associated Resource Quality Objectives.	GG 48187 of 10 March 2023
Usuthu to uMhlathuze	The Department published the notice containing the proposed water resource classes together with the associated proposed Resource Quality Objectives for public comments on 21 June 2024. The closing date for receiving comments was 16 September 2024. Preparations for publishing the final gazette is currently underway and the final gazette is scheduled to be published by April 2025.	GG 50840 of 21 June 2024
Keiskamma and Fish to Tsitsikamma Catchments	The technical process for the determination of water resource classes and the associated Resource Quality Objectives in the study area commenced in September 2021 and is scheduled to complete in November 2025.	Not applicable yet, study still in progress
Luvuvhu	The technical process for the determination of water resource classes and the associated Resource Quality Objectives in the study area commenced in September 2021 and is scheduled to complete in September 2025.	Not applicable yet, study still in progress

Study Area	Status	Government Gazette No.
Upper Orange	The technical process for the determination of water resource classes and the associated Resource Quality Objectives in the study area commenced in October 2023 and is scheduled to complete in October 2026.	Not applicable yet, study still in progress
Lower Orange	The technical process for the determination of water resource classes and the associated Resource Quality Objectives in the study area commenced in September 2023 and is scheduled to complete in September 2026.	Not applicable yet, study still in progress

Figure 9.2 below depicts the status of water resource classification and Resource Quality Objectives studies in South Africa as of September 2024. It should be noted that after the completion of the technical processes for the determination of water resource classes and the associated RQOs in a particular river system, a legal notice for the proposed water resource classes and the associated proposed RQOs is published in the Government Gazette for 60 days public commenting period. The public comments received are considered in order to finalise the water resource classes and the associated RQOs. Once the Minister of Water and Sanitation approves the final water resource classes and the associated RQOs for the respective river systems, these are published in the Government Gazette and become binding on all institutions and authorities.



Figure 9.2: Status of Water Resource Classification and RQO studies as of September 2024

9.1.3. Reserve determinations

The Department is systematically determining the Reserve for significant water resources at various levels of confidence ranging from desktop to comprehensive. The level of Reserve determination depends on the type of impact and the magnitude of water resources to be impacted on, as well as the importance/status of the water resource, the credibility and the availability of the quantity and quality of data available to run the models.

The Reserve for surface water resources (i.e. rivers, wetlands and estuaries) has been determined at desktop, rapid, intermediate and comprehensive levels. Similarly, the Reserve for groundwater resources (aquifers) has also been determined at desktop, rapid, intermediate and comprehensive levels. The Reserve studies for both surface and groundwater conducted thus far have been plotted spatially, and Reserve maps have been developed for South Africa, as presented in Figure 9.3 and Figure 9.4. These maps have been made available to the Provincial offices to assist in the decision-making process for processing Water Use Authorisation applications.



Figure 9.3 : Surface Water Reserves determined as of September 2024



Figure 9.4: Groundwater Reserves determined as of September 2024

• Present Ecological State, Ecological Importance & Sensitivity Database, 2013

The Present Ecological State (PES) and Ecological Importance and Sensitivity (EIS) have initially been determined for all main stem rivers in the 1 946 Quaternary catchments in South Africa (Kleynhans, 1999). The 2011 PES/EIS update included the PES and EIS for main stem rivers and their tributaries, as well as important wetlands. Both the 1999, 2007 and 2014 PES/EIS databases are based on, amongst others the high confidence Reserve information that has been extrapolated to areas where there was no sufficient data.

The D: Reserve Determination (D: RD) has initiated a study to review the 2014 PES/EIS database. The main objectives will include updating the current PES/EIS 2014 database as reported in the previous State of Water Report (National State of Water Report 2023). The new study will follow the same principles, procedures, concepts, and assessment methods as implemented previously to allow for compatibility and comparison of data and sites. The study will assess the instream and riparian components of rivers and instream wetlands, such as floodplains and instream valley bottom wetlands, per sub quaternary reach (SQR). It will also address the estuaries that form part of the bottom of a river reach in a sub-quaternary reach.

The Present Ecological State (PES) and its Ecological Importance (EI) and Ecological Sensitivity (ES) for the identified water resource reaches within the 147 Secondary Catchments in South Africa will be assessed at a desktop level, using all data that has become available since 2011. For updating the 2014 PES/EIS, the water resources have been divided into 5 groups covering the entire country (sub divided, as per the 2014 study) to allow for trend analysis, i.e., assessing the change in the PES values from then to now. An additional team that is responsible for the technical support and the overall management of the 5 teams, named Group 0 was established as follows:

- Group 0: Technical Support (Spreadsheet Development, Database Management)
- Group 1: Limpopo, Olifants, Inkomati/Usuthu
- Group 2: Inkomati/Usuthu, Pongola/Mtamvuna
- Group 3: Vaal, Orange
- Group 4: Mzimvubu/Tsitsikama
- Group 5: Breede/Gouritz; Berg/Olifants

Each group is led by a team of specialists specialising in water resource management. In addition, the Department of Water and Sanitation (DWS) has identified several individuals who should be part of the study from start to finish and be capacitated on all aspects of this study.

Between October 2023 and September 2024, the teams have been working on updating the 2014 spreadsheets for the different catchments and ensuring that the capacity-building component is also implemented. To update the spreadsheet, the teams relied on their expert and local knowledge of the different catchments, and field surveys were conducted where there was insufficient data. To date the spreadsheets for the following secondary catchments have been produced and the population of the spreadsheets were rolled out to be updated: A, B, C, D, E, F, G, H, J, L, M, N, P, R, S, U, V, W and X. The specialists' teams, together with the DWS officials are working on updating these spreadsheets (some have been completed, and some are still in progress), while Group 0 is providing technical support to the teams. Additional information has been provided that will aid the DWS scientists and managers with making decisions related to protecting and managing water ecosystems where potential new and existing impacts could cause a threat.

• <u>Status of the Reserve Determination</u>

53 Surface Water Reserves were determined and completed between October 2023 and September 2024. Table 9-3 indicates the number and level of Surface Reserves determined/approved per Water Management Area (WMA).

Water Management Area	Desktop	Rapid	Intermediate	Comprehensive	Total
Limpopo	0	0	0	0	0
Olifants	0	0	0	0	0
Inkomati-Usuthu	0	0	0	0	0
Pongola-Mzimkhulu	0	0	0	0	0
Vaal	0	0	0	0	0
Orange	5	30	10	0	45
Mzimvubu-Tsitsikama	8	0	0	0	8
Breede-Gouritz	0	0	0	0	0
Berg-Olifants	0	0	0	0	0
TOTAL	13	30	10	0	53

Table 9-3: Summary of Surface Water Reserves completed between October 2022and September 2023 per WMA

Four desktops, two intermediate and one comprehensive groundwater Reserves were completed between October 2023 and September 2024. Table 9-4 indicates the number and level of Groundwater Reserves determined per Water Management Area (WMA).

Water Management Area	Desktop	Rapid	Intermediate	Comprehensive	Total
Limpopo	0	0	0	0	0
Olifants	0	0	0	0	0
Inkomati – Usutu	0	0	0	0	0
Pongola – Mtamvuna	0	0	0	0	0
Vaal	0	0	0	0	0
Orange	0	0	1	0	1
Mzimvubu –	4	0	0	0	4
Tsitsikamma					
Breede – Gouritz	0	0	0	0	0
Berg – Olifants	0	0	1	1	2
TOTAL	4	0	2	1	7

Table 9-4: Summary of Groundwater Reserves completed between October 2023and September 2024 per WMA

• Gazetting of the Reserve

Section 16(1) of the National Water Act, 1998 (Act No. 36 of 1998) states that "As soon as reasonably practicable after the class of all or part of a water resource has been determined, the Minister must, by notice in the Gazette, determine the Reserve for all or part of that water resource. The Chief Directorate: Water Ecosystems Management has completed the gazetting of the Reserve in the following Catchments/WMAs (Table 9-5 and Table 9-6).

Table 9-5: List of WMAs/Catchments where the Reserve has been gazetted.

Water Management Area/Catchments	Government Gazette
	Number
Olifants/Doring (excluding F60 and G30 tertiary catchments)	41473
Vaal	43734
Mvoti-Mzimkulu	41970
Inkomati	42584
Olifants/Letaba (excluding B9 Shingwedzi secondary	41887
drainage region)	
Breede-Gouritz	46798
Croc-West and Marico	45568
Mzimvubu catchment (tertiary drainage T1 – T36)	47526

Table 9-6: List of WMAs/Catchments where the Reserve has been gazetted forpublic comments.

Water Management Area/Catchments	Government Gazette Number
uThukela Catchment	50071