

A High Confidence Reserve Determination Study for Surface Water, Groundwater and Wetlands in the Upper Orange River Catchment

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 inform stakeholders about the study to determine a high confidence Reserve in the Upper Orange River Catchment.

This BID serves as a starting point for the stakeholder engagement process, and stakeholders are invited to participate by contributing information at meetings and workshops, commenting on study reports, or by corresponding with the stakeholder engagement or technical teams:

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STUDY TIME FRAME

The project has a 24-month duration and is expected to be concluded in July 2023.

BACKGROUND TO THE PROJECT

The National Water 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 without seriously affecting the functioning of water resource systems. To achieve this objective, Chapter 3 of the NWA provides for the protection of water resources through the implementation of Resource Directed Measures (RDM). As part of the RDM, a Reserve must be determined for a significant water resource, as a means to ensure a desired level of protection of the water resources.

The Reserve (quantity and quality) is defined in terms of the Ecological Water Requirements (EWR), ensuring the water required to protect aquatic systems (water quality, habitat and biota) of the water resource are provided for; and Basic Human Needs (BHN), ensuring that the essential needs of individuals served by the water resource in question are provided for. These measures collectively aim to ensure that a balance is reached between the need to protect and sustain water resources, while allowing economic development.

The Chief Directorate: Water Ecosystems Management (CD:WEM) of the Department of Water and Sanitation (DWS) is tasked with the responsibility of coordinating all Reserve Determination studies in terms of the Water Resource Classification System (WRCS). The Reserve has priority over other water use in terms of the NWA, and should be determined before license applications are processed, particularly in stressed and over utilised catchments. Consequently, the CD:WEM have identified the need to determine the Reserve for the Upper Orange catchment (rivers, wetlands and groundwater) forming part of the Orange Water Management Area (WMA6) in accordance with the WRCS.

The purpose of this high confidence Reserve Determination study is to determine the Reserve (quantity and quality of the EWR and BHN) for priority rivers, wetlands and groundwater resources within the Upper Orange catchment. The results from the study will thereby guide the Department to meet the objectives of maintaining, and if possible, improving the state of the water resources within this catchment. The primary deliverable will be the preparation of the Reserve templates for the Upper Orange Catchment, specifying the EWRs.

THE STUDY APPROACH

This study incorporates a technical process which is supported by a stakeholder engagement and consultation process. The project approach and methodology will be applied in accordance with the process as outlined in Regulation 810 (Government Gazette 33541), as well as in the 'Development of Procedures to operationalise Resource Directed Measures (DWS, 2017) (see 7 steps below). This study however excludes the gazetting of the Reserve as the classification study has not yet been undertaken and therefore the water resource classes have not been determined.

The main aspects that this study will address include:

- ✓ Review and analysis of existing information
- ✓ Identify and address ecological gaps
- ✓ Identify the priority resource units (RUs) (surface water, groundwater and wetlands)
- ✓ Quantify the EWRs and BHN for the priority RUs
- ✓ Assess and evaluate the operational scenarios, considering the various water transfers and proposed developments in Lesotho and in the Upper Orange Basin
- ✓ Determine ecological specifications/protection measures to support the Reserve requirements
- ✓ Prepare the EWR and BHN templates for the Upper Orange Reserve
- ✓ Continual communication and liaison
- ✓ Skills development and transfer within the Department

The study will also develop a resource protection framework that will:

- ✓ Improve the detail and level of ecological specifications and management conditions
- ✓ Formulate practicable indicators for compliance monitoring and monitoring of the ecological health and integrity of the water resources in the said study area

STEPS FOR DETERMINING THE RESERVE

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|---------------|--|
| Step 1 | Identify priority quaternary and sub-quaternary catchments that are potentially important due to their presence, extent or condition of water resources with a focus on wetlands and groundwater driven systems. Initiate the Basic Human Needs (BHN) and Ecological Water Requirements (EWR) assessments. |
| Step 2 | Determine Eco-regions, delineate resource units, select priority study sites, and where appropriate align with Step 1 of the water resource classification procedure |
| Step 3 | Determine the reference condition, present ecological state (PES), ecological importance and sensitivity (EI-ES), recommended ecological category (REC) and EWR for the priority selected study sites |
| Step 4 | Determine the basic human needs (BHN) and EWR for each of the selected priority study sites |
| Step 5 | Modelling of the operational scenarios/rules and ecological consequences for meeting the Reserve |
| Step 6 | Feedback on evaluate of scenarios to stakeholders |
| Step 7 | Design appropriate Reserve templates, eco-specifications and monitoring programme including monitoring requirements |

Note: The integrated steps for the determination of the Reserve include a Step 8 to Gazette and implement the Reserve, which is excluded from this study.

WHAT ARE ECOLOGICAL SPECIFICATIONS?

Ecological specifications (eco-specs) form part of the Resource Quality Objectives (RQOs) for a resource (rivers, wetlands and groundwater).

RQOs are requirements for water quantity, quality and habitat and biotic integrity to be maintained in the resource. RQOs may encompass ecological, economic, social and political objectives.

The eco-specs are intended to provide the quantifiable and enforceable descriptors of the RQOs as they pertain to the ecological objectives for a particular resource.

For this study, eco-specs will be identified and defined for surface water, groundwater and wetlands, of which will be monitored that represent the condition of the recommended ecological categories of the preliminary Reserve (at key sites).

OVERVIEW OF THE STUDY AREA

The Upper Orange catchment, forming part of the Orange Water Management Area (WMA6), forms part of the Orange-Senqu River Basin and is an internationally shared watercourse, not only with Lesotho in the upper reaches, but also with Botswana and Namibia in the Lower Orange catchment area. Consideration of the international responsibilities/commitments and bilateral agreements is therefore imperative.

The Orange River originates in the eastern highlands of Lesotho and flows west for approximately 2 200 km, where it flows into the Orange River Mouth and into the Atlantic Ocean at Alexander Bay. The Orange-Senqu River Basin is made up of the Vaal, Upper Orange and Lower Orange catchments. This study area only covers the South African Upper Orange catchment. This catchment is divided into four distinct sub-areas:

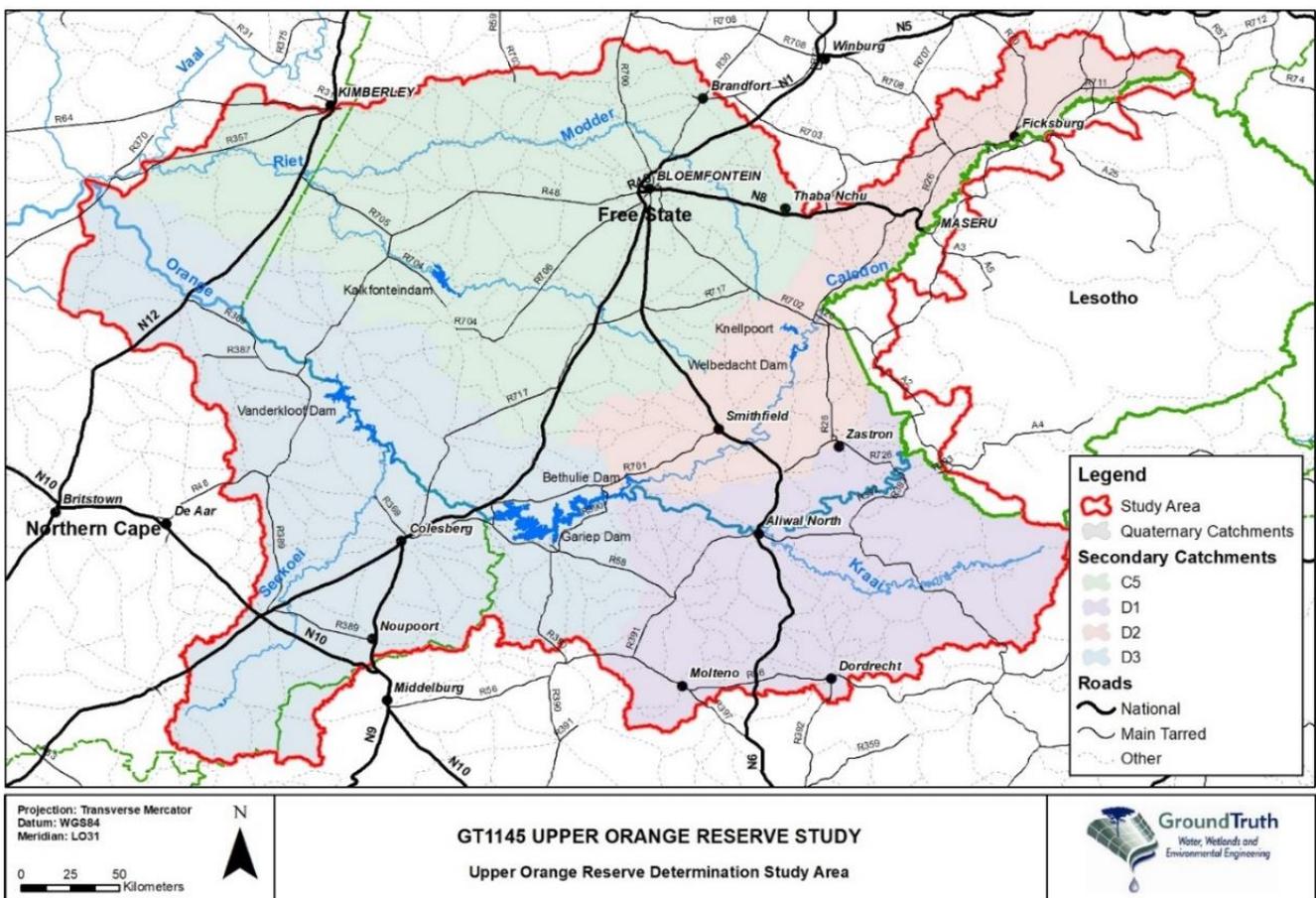
- The Caledon River from its headwaters and its tributaries to the Gariep Dam;
- The Orange River from the Lesotho Border to the Gariep Dam (including the main tributaries namely Kornetspruit, Sterkspruit, Stormbergespruit and Brandwaterspruit);
- The Kraai River catchment; and
- The Orange River from the Gariep Dam, through Vanderkloof Dam to Marksdrift weir, just before the confluence with the Vaal River, including the Modder/Riet Rivers that flow into the Lower Vaal at Douglas.

The study area covers an approximate area of 106 000 km², and includes two of the country's largest reservoirs, the Gariep and Vanderkloof Dams. These dams are used for water transfers, releases for irrigation downstream, ecological requirements of the lower Orange River and Estuary as well as to generate hydropower.

The resources of the Upper Orange catchment are used to support requirements for water in other parts of the country with large transfer schemes both from and within this WMA, including the Orange Fish Transfer from Gariep Dam to the Fish / Tsitsikamma WMA) and the Orange-Vaal Transfer to the Lower Orange WMA, and transfers from the Orange and Caledon Rivers to the adjacent Modder / Riet catchment.

Several conservation and culturally important areas occur in the catchment area. These include the Golden Gate National Park, near Clarens and the Tussen-die-Riviere Nature Reserve located between the Caledon and Orange River near Bethuli in the Free State Province, being the most renowned. The Mokala National Park is situated in the lower reaches of the Riet River and smaller conservation areas associated with the major dams. The famous Tiffendell Ski Resort also falls within the upper reaches of the Kraai River, located on the border with Lesotho.

The key water use sectors in the catchment are agriculture / irrigation, municipal and domestic. Other water use sectors include industrial, hydro-electricity generation, mining and associated activities, livestock and nature conservation.



STAKEHOLDER ENGAGEMENT AND PARTICIPATION

Process and approach

Stakeholder involvement and communication is critical to the Reserve determination process. The approach to stakeholder engagement in a Reserve determination study therefore incorporates a variety of processes. It provides for a process in which stakeholder contributions are applied and influence the decision-making that aims to achieve a balance between the three dimensions of sustainability: ecological integrity, social equity, and economic growth.

The stakeholder engagement and participation approach is designed to be flexible and responsive and will be adapted as required during the course of the project to ensure it is effective.

The approach supports an open, transparent, and inclusive process. It aims to supply stakeholders with sufficient and accessible information to build their capacity to participate meaningfully.

Stakeholder identification

Stakeholders will be identified and engaged throughout the duration of the project. Examples of sectors include:

- ✓ Government (national, provincial local and regional)
- ✓ Conservation and environmental management
- ✓ NGOs (especially those with environmental management and development focus)
- ✓ Industry and business
- ✓ Civil society (including voluntary organisations, community groups, community leaders)
- ✓ Academic and research

Basic principles and practices

- ✓ Communication will be undertaken in English
- ✓ Records of all communication will be captured and maintained in a Comments and Responses Report
- ✓ Technical information will be made as accessible as possible for the audience
- ✓ Information will be provided timeously and allow sufficient time for commenting

Communication systems

- ✓ Communication will include emails and telephonic calls
- ✓ Technical information and reports will be uploaded and shared via email broadcasts and the DWS website at <http://www.dwa.gov.za/rdm/currentstudies/default.aspx>
- ✓ Two stakeholder meetings/workshops are planned and further information will be provided in due course

Protection of Personal Information

Act No 4 of 2013

The project will be undertaken in compliance with the Protection of Personal Information Act No 4 of 2013, (POPIA), which came into effect on 1 July 2021:

- POPIA establishes minimum requirements for processing personal information and safeguards for lawful processing of personal information. It sets rights and remedies for persons to protect their personal information;
- In terms of POPIA, stakeholders will be made aware of their right to not register on the stakeholder database and to deregister from the Reserve determination engagement process;
- Personal information is defined as:
 - Demographic information such as gender, race, marital status;
 - Contact information such as telephone numbers, email addresses and location information;
 - People's personal opinions and preferences.

In compliance with POPIA, the collection of personal information will be based on the following principles:

- Stakeholders will be informed that participation in the stakeholder engagement process is voluntary and based on receipt of their consent;
- Attendance registers and meeting records will not be shared beyond the project management team;
- All stakeholder information and data featured in reports and related outputs will be de-identified (so that it cannot be associated with particular groups or individuals);
- Personal data that is collected (e.g. attendance registers) will be protected.

DEFINITIONS

- **Reserve:** The quantity and quality of water needed to sustain basic human needs and ecosystems (e.g. estuaries, rivers, lakes, groundwater and wetlands) to ensure ecologically sustainable development and utilisation of a water resource.
- **Ecological Water Requirements (EWR):** 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. The EWRs as determined during preliminary Reserve studies will be applied in this study.
- **Resource Units (RU):** Sections of a river that have the same natural flow patterns and reactions to stress, similar biophysical and geographic features, and each of these sections has its own specification of EWRs.
- **Significant Water Resources:** Water resources that are deemed to be significant from a water resource use perspective, and/or for which sufficient data exist to enable an evaluation of changes in their ecological condition in response to changes in their quality and quantity of water. Water resources are deemed to be significant based on factors such as, but not limited to, aquatic importance, aquatic ecosystems to protect and socio-economic value.