



Terms of Reference (ToRs)

For

The Development of the Tuli-Karoo Sub-Basin Transboundary Aquifers (TBAs) Strategic Action Plan and Monitoring Plan

1. Background

Located in the Limpopo Basin, the Tuli-Karoo Transboundary Aquifer (TBA) straddles the territories of Botswana, South Africa and Zimbabwe. The TBA covers about 12,166 km² with 34.1% (4,147 km²) of its area in Botswana, 9.6% (1,165 km²) in South Africa and 56.3% (6,854 km²) in Zimbabwe.

More than 120,000 people call the Tuli-Karoo TBA area home, and almost half reside in Zimbabwe. The area's economy is currently dominated by agriculture and mining, which require large amounts of water. The development of the Beitbridge-Musina-Makhado special economic zone will significantly increase water demand, putting immense pressure on the limited available water resources. Studies have identified inter-basin transfers and conjunctive use of surface and groundwater as sustainable solutions to the water crisis in the TBA.

The Southern Africa Development Community Groundwater Management Institute (SADC-GMI) in collaboration with the International Water Management Institute (IWMI), the Limpopo Watercourse Commission (LIMCOM) and the U.S. Agency for International Development (USAID) implemented the Conjunctive Water Management for Food Security and Resilience project from 2019 to 2021. The objective of the USAID funded project was to "strengthening cooperation on the conjunctive management of surface and groundwater in the Tuli Karoo System to improve food security and resilience". Through this project, a Transboundary Diagnostic Analysis (TDA) was carried out to establish the groundwater issues and management gaps in the Tuli-Karoo TBA. One of the gaps identified is the lack of adequate data needed to optimally develop and manage the groundwater resources of the TBA. To help address this gap a groundwater monitoring system was designed and four pilot monitoring sites (three in South Africa and one in Botswana) equipped with telemetric equipment. Furthermore, the USAID funded project recommended the development of a Joint Strategic Plan (JSAP) to establish strategies and plans required to address the issues and gaps identified through the TDA.

After successfully completing phase 1 of the Sustainable Groundwater Management in the SADC Member States, the SADC-GMI is now implementing phase 2 of the same project under the strategic guidance of the SADC Secretariat. The 4-year project is being financed by the Multi-Donor Trust Fund Cooperation in International Waters in Africa (CIWA) and the Global Environment Facility (GEF), through the World Bank. The project comprises the following components:



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- Component 1: Capacity building for sustainable groundwater management
- Component 2: Knowledge development, dissemination, and advocacy
- Component 3: Building resilient livelihoods, and inclusive groundwater management

Component 2 of the project involves knowledge development, dissemination, and advocacy through supporting research on regional groundwater issues and on developing groundwater monitoring capacity. The development of the JSAP and monitoring plan for the Tuli-Karoo TBA will contribute towards this component.

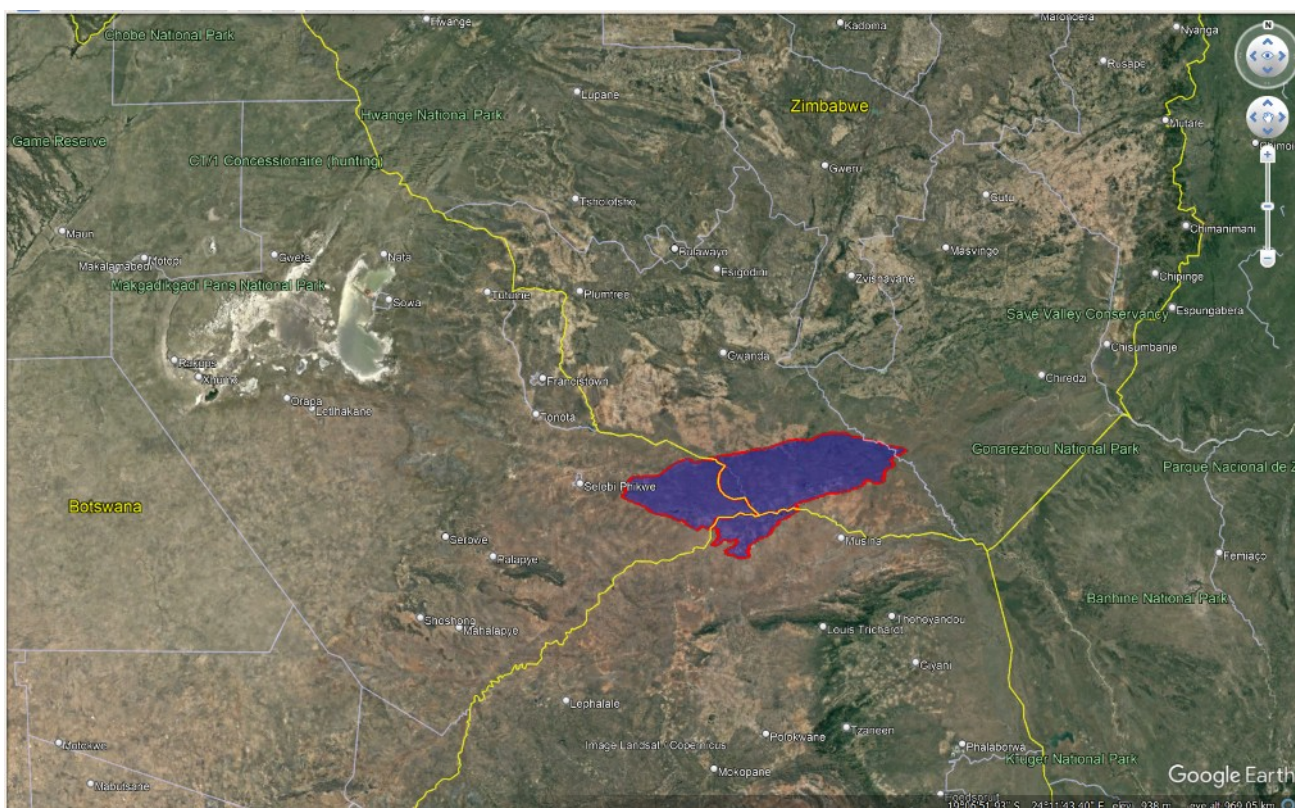


Figure 1. Tuli-Karoo Aquifer

2. The objective of the assignment

The objectives of the assignment are to:

1. Develop a Joint Strategic Action Plan for the Tuli-Karoo TBA
2. Review, update and implement the groundwater monitoring plan for the Tuli-Karoo TBA, building on other work and initiatives.
3. Prepare procurement documents and bill of quantities for works, goods, and services to install the monitoring systems.
4. Supervise the installation of the monitoring system.
5. Conduct monthly monitoring of agreed parameters for 6 months.

3. Scope of work and specific tasks of the Consultant

The tasks to be carried out under this assignment include, but will not necessarily be limited to the following:

- a) Conduct a kick-off meeting with the SADC-GMI staff to clarify and understand the assignment, covering the detailed scope of work and specific tasks.
- b) Produce an inception report detailing the various tasks and important milestones, a table of contents of the proposed guidelines, and a stakeholder analysis to implement the TBA monitoring plan.
- c) Review and update the groundwater monitoring plan for the Tuli-Karoo TBA and prioritise monitoring points for the hydrocensus with inputs from the Limpopo Watercourse Commission (LIMSEC), riparian states and other relevant stakeholders
- d) Carry out a desk review of documents relevant to understanding riparian countries' legal framework and institutional obligations.
- e) Engage stakeholders through stakeholder mapping and analysis in the riparian Member States sharing the Tuli-Karoo TBA to develop a Joint Strategic Action Plan for the TBA.
- f) Conceptualising the JSAP vision and framework;
- g) Through a consultative process and application of an appropriate analysis tool, focus areas are identified, and strategic objectives and inclusive actions are developed.
- h) Reviewing the compatibility of actions within existing legal, policy and institutional frameworks.
- i) Classifying and prioritising actions; estimating cost and feasibility;
- j) Collect, compile, and analyse time-series data of the selected monitoring points
- k) Conduct a hydrocensus of the selected monitoring points
- l) Produce a Bill of Quantities and associated procurement documents for the implementation of the monitoring plan and liaise with SADC-GMI to facilitate the procurement of the required items
- m) Supervise the installation of the groundwater monitoring infrastructure on behalf of SADC-GMI
- n) Conduct monthly monitoring of selected parameters for 6 months

4. Key Deliverables and Outputs

The deliverables and their deadlines are as follows:

- i. Minutes of kick-off meeting with SADC-GMI staff - 1 week after project start
- ii. Inception report detailing the various tasks to be undertaken with important milestones, a table of contents of the proposed guidelines, and a list of the stakeholders to be consulted in selecting the strategic aquifers and developing the monitoring plan – 4 weeks after the project starts



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- iii. A report on the validation of the Tuli-Karoo Groundwater Monitoring Plan with input from LIMSEC, the TBA riparian states and other relevant stakeholders – 12 weeks after the project start. The basis of the work is [Groundwater Monitoring Network Design for the Tuli-Karoo Transboundary Aquifer_v15_draft.docx](#)
- iv. Tuli-Karoo JSAP Stakeholder engagement report – 16 weeks after the project starts.
- v. A hydrocensus report of the groundwater monitoring points – 24 weeks after project start
- vi. Draft Tuli-Karoo TBA JSAP– 32 weeks after project start
- vii. A Bill of Quantities for the implementation of the groundwater monitoring plan – 36 weeks after the project start
- viii. Final Tuli-Karoo TBA JSAP – 40 weeks after the project start
- ix. Report on the procurement and installation of groundwater monitoring system – 52 weeks after project start
- x. A report on the handover of the monitoring system and hands on capacity building – 68 weeks after the project starts.
- xi. Project closing report - 72 weeks after the project start

NB: The completion deadlines stated above are the end dates, and the Consultant can deliver outputs incrementally before the deadline. The Consultant shall, therefore, define and provide a schedule of interim incremental deliverables and a breakdown of the associated Professional fees per completed and approved deliverable to enable the Client to make payments as and when interim deliverables are submitted and approved.

5. Eligibility

This assignment targets a firm demonstrating a track record of more than 10 years of proven experience in the designing and installation of groundwater resources monitoring infrastructure. The firm must also demonstrate capacity in transboundary groundwater management, particularly the development of Joint Strategic Action Plans involving at least two Riparian Member States. The proposal submitted for the assignment must demonstrate experience in at least three projects undertaking detailed work in a TBA context in the SADC region.

6. Team composition with an estimate of key experts' input

The minimum qualifications, skills and experience for key experts whose CVs are to be evaluated as part of the assessment of proposals, are as defined below. The assignment will also involve fieldwork.

Key Expert 1: Principal Researcher and Hydrogeologist - Team Leader (estimated 100 workdays)

The key expert must have at least a master's degree in Hydrogeology and 15 years of experience working in groundwater management. At least 5 years should have been in groundwater research, development and management. Demonstrated team leadership on at least 3 similar research projects, 1 of which should have been in the SADC region at the Member State or regional level. The expert must have proven proficiency with the conjunctive water resources

management concept and engagement of multi-country transboundary watercourse stakeholder institutions and issues. The Team Leader should be fluent in English.

Key Expert 2: Groundwater Monitoring Expert (estimated 60 workdays)

The groundwater monitoring expert must have at least a master's degree in Hydrogeology (or any relevant field) and 10 years of experience working in groundwater. At least 5 years should be in groundwater monitoring and installation of monitoring infrastructure. They must have demonstrated experience in implementing at least 3 similar projects, 1 of which should have been carried out in the SADC region at the Member State or regional level. The expert must have a proven understanding of the conjunctive water resources management concept and engagement of multi-country transboundary watercourse stakeholder institutions and issues. They must be fluent in English.

Key Expert 3 – Groundwater Monitoring Infrastructure/Construction Specialist (30-days)

The Groundwater Monitoring Infrastructure Specialist must have at least a master's degree in Hydrogeology (or any relevant field) and 10 years of experience working in groundwater. At least 5 years should be spent on installing groundwater monitoring systems. They should have demonstrated experience in at least 3 similar research projects, 1 of which should have been in the SADC region at the Member State or regional level. The expert must have proven proficiency with the conjunctive water resources management concept and engagement of multi-country transboundary watercourse stakeholder institutions and issues. The expert should be fluent in English.

Key Expert 4 - Governance/Institutional Expert (30-days)

The Governance expert must have at least a master's degree in Hydrogeology or Integrated Water Resources Management (IWRM) and 8 years of experience working on transboundary water resources management. At least 4 years should have been spent working on transboundary groundwater issues. The expert shall also demonstrate skills in the preparation of strategic action plans for transboundary ground/water systems.

NB: The Consultant shall include in their submission a refined proposal for the deployment of the key experts and any non-key experts deemed necessary to deliver the objectives of the assignment on time.

7. Schedule and Duration of Assignment

This is a once-off assignment without any obligation for follow-up work and is expected to run for eighteen (18) months with an estimated aggregate level of effort of 190 person-days for key experts only, all-inclusive of field, travel and office work. The Consultant shall include in their submission a proposal for the deployment of the key experts and any non-key experts and support staff deemed necessary to deliver the objectives of the assignment in a timely manner.

8. Liaison and Logistics

On a day-to-day basis, the Consultant will liaise with the SADC-GMI through the Senior Groundwater Specialist and ultimately be accountable to the Executive Director of SADC-GMI.



Logistics pertaining to international air and road travel and cross-border travel are the responsibility of the Consultant. If required, SADC-GMI can also issue letters of support to facilitate the authorities' issuing necessary access to the Member States. The Consultants will meet visa requirements and necessary cross-border charges. These should, therefore, be included in the Consultant's technical and financial proposal.

9. Data, services & Facilities to be provided by the Client

The Client will facilitate for letters of introduction to SADC Member States and avail documents as well as data during the desk review phase. The Consultants will be expected to work from their respective offices. All costs resulting from the execution of this assignment will be incorporated in the Consultant financial proposal.

10. Contract Management and Other Information

This is a lump sum contract since the scope of is well defined and the contract amount is fixed, and all payments will be linked to the contractual milestones. The Client will provide the Consultant with data and information to facilitate execution of the assignment including introduction letters to relevant stakeholders.



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