Southern African Development Community (SADC)

Sustainable Groundwater Management in SADC Member States Project

Simplified Environmental Management Framework with Environmental Management Plan (EMF–EMP)

February 2014
SADC Secretariat
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1. **Project Description & Potential Impacts**

1.1 Project Description

Amongst different sources of water, groundwater is especially important for human wellbeing, livelihoods, food production, ecosystems, industries and growing cities in the Southern African Development Community (SADC). It is estimated that over 70% of the 250 million people living in the SADC region rely on groundwater as their primary source of water. Despite varying dependency on groundwater across SADC Member States, groundwater provides a critical buffer between dry and rainy seasons. The role of groundwater as key to economic growth is further exacerbated with the expansion of commercial farming and industries. In response to such dependency, some SADC Member States are actively integrating groundwater in their water resources management policies and laws (e.g., Botswana and South Africa). On the whole, however, institutional frameworks to manage water at both national and transboundary levels do not feature groundwater prominently. In spite of unequal attention between surface and groundwater, the economic role of the latter is significant.

Many future water-challenges facing SADC Member States know no administrative boundaries and cannot be fully resolved through sovereign action. In the next 25 years, the population of southern Africa is expected to double. With development comes rising demand for water and greater pressures and reliance on groundwater. Pollution of aquifers is of growing concern where; mining and factories continue to degrade groundwater; alongside widespread use of on-site sanitation in rural and urban areas. Reoccurring droughts of shallow groundwater cause social upheaval and distressed ecosystems. Groundwater is also essential for wildlife and other biota. The region is known for climatic variability that translates into reoccurring drought and flood conditions. The impact of climate change will further pose substantial challenges to water resources management. By 2050, temperatures are expected to rise with 1.5-2.0°C on average in the north of the SADC region, and by 2.5-3.0°C in the south (compared to 1961-1990 average).

The inter-governmental organisation of the SADC has the goal of fostering cooperation and mutual benefit from shared waters amongst its 15 Member States. Recognising the important role of water in fostering economic growth, the SADC Member States signed the “Protocol on Shared Watercourse Systems in the SADC Region” in 1995. The Protocol was later replaced by the legally binding “Revised Protocol on Shared Watercourses” in 2000 with the objective “to foster closer cooperation for judicious, sustainable and coordinated management, protection and utilisation of shared watercourses”. The operationalisation of the Revised Protocol and the SADC Regional Water Policy is agreed in the SADC Regional Strategic Action Plan for IWM (RSAP). The current SADC RSAP III (2011–2015) acknowledges the importance of groundwater to the region with a dedicated Groundwater Management Programme of Action (GMP, Programme No. 11). The GMP has four project interventions: policy and institutional frameworks; transboundary aquifer management; awareness raising; and regional cooperation and groundwater management.

To support SADC Member States develop more sustainable management of groundwater, at both national and transboundary levels the implementation and adherence to the Revised SADC Protocol on Shared Watercourses and the RSAP III programme on groundwater, the Global Environment Facility (GEF) and the Multidonor Trustfund Cooperation on International Waters in Africa (CIWA) are providing grants of US$11 million available for the proposed Project (US$9 million from GEF and US$2 million from CIWA).

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1 The revision of the Protocol was to align with UN Convention on the Law of the Non-Navigational Uses of International Watercourses (1997). The Convention is the first international law that is applicable to groundwater. The Revised Protocol was ratified and came into force in 2003.
The custodian, and grant recipient of the Project is the SADC Secretariat located in Gaborone, Botswana, through its Water Division (in the SADC Directorate for Infrastructure and Services). Implementation of the Project will be done through a hosting arrangement with the University of the Free State (UFS) located in Bloemfontein, South Africa. With the support of an earlier SADC Groundwater and Drought Management Project (GDMP), also supported by the World Bank and the GEF ($7.00 million, 2005-2011), the SADC Member States sought to establish a regional center of excellence in groundwater situated within the region. It was agreed that an existing institute would host the new SADC Groundwater Management Institute (SADC GMI) and that the SADC GMI would apply for SADC Subsidiarity Status. After a competitive process, the University of the Free State was selected as the hosting agency of the SADC GMI. In June 2011, the SADC GMI was established and legally registered as a not-for-profit company under South African law. The proposed Project will help operationalise the SADC GMI.

The Project components and activities build on the achievements of the SADC GDMP and on the potential of SADC GMI to serve as an interlocutor for groundwater initiatives at national, basin, regional and international levels. The Project has four components. Through the first Component A, the SADC GMI will be operationalised to serve as a center of excellence for groundwater in the region. Through Component A, the remaining three components will have greater impact in the areas of institutional, information and infrastructural aspects of groundwater management among SADC Member States. All components and activities will be financed by the GEF Grant, apart from Activities A2 and C1 which will be financed by the CIWA Grant.

Component A. Operationalisation of the SADC Groundwater Management Institute

Component A will finance: A1) Coordination and administration, including staff to enable starting and day-to-day running of the SADC GMI during project implementation. This includes, amongst others, enforcing governance structures, setting up and managing organisational functions (including the Project Implementation Manual, and Monitoring & Evaluation framework), management of staff, progress reporting and project implementation/work planning. The activity also includes fulfilling the ‘interlocutor’ role of SADC GMI towards the SADC Secretariat and the UFS, facilitating the meetings and input of the SADC Subcommittee on Hydrogeology (who also fulfill a project steering committee function), and building partnership and extended ownership through national focal groups through to international groundwater initiatives; A2) Raising awareness, knowledge management and communication involving the critical activities to inform, engage and maintain dialogue with key stakeholders of at all levels – i.e., implementing a graphic profile and communication activities, setting up and running SADC GMI and project websites, disseminating information and knowledge, and developing a research programme etc.; A3) Regional capacity building and training programme which will include the necessary scope of training offered by the GMI to technical groundwater practitioners, students and decision makers in SADC Member States (in and outside of governments); and, A4) Mobilising and soliciting financing for SADC GMI, including design of small grants scheme that will entail developing and implementing a plan to ensure the GMI grows and sustains itself as a regional center of excellence in the long-term future. The activity also includes setting up and running a small-grants scheme to support national level small-scale activities related to the Project (for example, convening national focal groups and implementing small scale infrastructure pilots), in line with the agreed Small Grants Manual to be prepared at the onset of the Project.

Component B. Strengthening institutional capacity for the sustainable management of groundwater in SADC

Component B will finance: B1) Legal, policy and regulatory frameworks which will address prevailing gaps in institutional groundwater management tools at national and transboundary levels. Activities could

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2 In accordance with GEF requirements, training activities in the project will include the 1% of the GEF Grant allocated for International Waters Learning (such as attending the bi-yearly IW conferences and participation in regional IW:learning events.

3 Through the design and selection of small-scale, national activities, efforts will be made to link to parallel GEF activities.
range from modernisation to harmonisation of laws, policies and regulatory tools through technical assistance for Member States; B2) Compliance and advocacy will focus on assisting Member States in following up on implementation of existing institutional management tools to enhance compliance of groundwater governance; B3) Guidelines, standards and management tools that will enable groundwater practitioners in Member States to access and compare up-to-date practical management tools with proven applicability in the region (including assessment and verification of suitable tools, taking into consideration new innovations in the sector); B4) Strengthening groundwater monitoring and data management systems will support Member States in how to strengthen and integrate monitoring of groundwater into national level efforts and access guidance on best-practice and affordable monitoring and data management schemes; and, B5) Transboundary cooperation that will facilitate the integration and harmonisation of groundwater provisions between the national and basin level commitments, addressing gaps in knowledge or mechanisms of cooperation as well as promoting standards for groundwater data collection and open-data solutions.

**Component C. Advancing knowledge on transboundary and national groundwater** Component C will finance: C1) Support to Transboundary Aquifer Management in Member States and in collaboration with relevant government authorities and associated River Basin Organisations in finding solutions to shared groundwater challenges through Transboundary Diagnostic Analysis (TDA) and Strategic Action Plans (SAP) alongside mechanisms for data collection and sharing. TDAs will be selected on the basis of the outcome from the 2012 SADC-ISARM analysis and the transboundary aquifer management needs assessment by British Geological Survey a.o. (2013). Potential transboundary aquifers (TBAs) are: the Ramotswa Dolomite Aquifer (Botswana & South Africa), the Shire Valley Alluvial Aquifer (Malawi & Mozambique), the Tuli Karoo Basin Aquifer (Botswana, South Africa, Zimbabwe), the Eastern Kalahari Karoo Basin Aquifer (Botswana, Zimbabwe), and other TBAs classified with priority B in recent research on critical TBAs; C2) Research on groundwater challenges will involve studies/pilots, information exchange on findings, training and implementation of solutions to emergent and priority groundwater management challenges. Priorities include: climate change, recharge, drought, pollution protection, expanding agriculture and food security, the role of remote sensing and geophysics technology, validation, groundwater buffering opportunities, mapping, monitoring and early warning systems, and others; and, C3) Information and Communication Technologies for knowledge sharing platform to build an integrated data management system interlinked with a GIS platform and the project websites; involving storing, connecting and collecting information from various regional and global groundwater initiatives and data sources.

**Component D. Promoting groundwater infrastructure management and development** Component D aims to promote the role of infrastructure as a means to develop opportunities for more sustainable management of groundwater and addressing growing challenges related to issues such as drought, recharge, conjunctive land-water management, water and food security, pollution, climate change etc. in Member States. Component D will support: D1) Infrastructure for improved groundwater utilisation, management and protection that involves developing, making available and training on design-tools related to: assessment, selection, mapping, siting, costing and designing of appropriate groundwater infrastructure solutions reflecting the geological and landscape aspects of groundwater in priority areas of Member States. Attention will be given to rehabilitation, operation & maintenance, environmental and social management, modernisation, and innovation. The types of small-scale groundwater infrastructure may include: small sand-dams and other small-scale infrastructures; D2) Operational support for groundwater infrastructure development which will involve developing and disseminating manuals for infrastructure solutions that can improve groundwater management (e.g., for small infrastructures such as sand dams, infiltration banks and shallow wells) and guidance tools for siting of wells and/or mapping and siting of water buffering systems, cost-effective well drilling, as well as technical assistance in applying these manual and guidance tools; D3) Impact evaluation to help monitor impacts, trouble-shoot and report on results taking into consideration community and gender; and D4) Support to partnership development and securing funding within governments, with private sector parties or with bi/multilateral partners and others to allow for supporting successful solutions. If appropriate, the SADC GMI may implement demonstration civil works. Small grants will facilitate Member States developing

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4 Internationally Shared Aquifer Resources Management (ISARM). [www.isarm.org](http://www.isarm.org)
infrastructure pilots, in accordance with the procedures and obligations outlined in the future Small Grants Manual and the Environmental Management Framework with the Resettlement Policy Framework.

1.2 Description of civil works investments and associated facilities
The Project involves promotion of infrastructure solutions for more sustainable groundwater management. These small-scale infrastructures include interventions such as small sand dams (see photo below), small subsurface dams, river bank infiltration systems, check-dams, infiltration ponds, well drilling (at suitable locations), hand dug wells and so forth. The maximum cost of these sub-projects will be about USD 70,000. Along with this, the project will also promote and advise on impact monitoring which may include the drilling of monitoring wells and installation of gauges. Examples are provided in the photos below from the demonstration pilot works under a previous SADC Groundwater and Drought Management Project (2005-2011, GEF).
The Project may also directly finance minor, small scale demonstration works that builds on pilots and infrastructures developed across the region. The number of demonstration works is likely to be small (approximately 15). The exact location of the demonstration works is not known at the stage of project preparation but is to be developed in consultation with the SADC Subcommittee on Hydrogeology (who also act as the steering committee of the Project) and will be decided by the purpose of the demonstration, accessibility for people to visit and learn from the demonstration works, and ease of monitoring impact.

The demonstration works would most likely be done within national boundaries, but if associated with transboundary aquifers, the works would take place within the boundaries of the SADC region.

In the previous GEF-funded project, a number of infrastructure pilots were completed in the upper Limpopo River Basin (Botswana, South Africa and Zimbabwe). The activities under Component D will draw on the lessons learnt, including the way they incorporated environmental and social impact considerations and mitigation actions (in particular, the process of consultation and development of site-specific Environmental and Social Management Plans).

1.3 Project Benefits

The environment benefits associated with the Project relate to the more sustainable groundwater management that can be achieved across the vast areas of the 15 SADC Member States. In addition to the environmental challenges related to competing use of groundwater or growing risk of pollution and over use, water availability in southern Africa is expected to suffer from the negative impacts of climate change. According to the UNFCC, major perennial rivers in the region will become seasonal as a result of climate change. This may intensify the drilling of boreholes and deep wells to satisfy unmet demand. The immediate impact will be felt by poor communities. There is therefore a need to ensure that existing water use (either from shallow aquifers, deep wells or fossil/confined aquifers) is brought under sustainable management.

The SADC region is well known for its richness in biodiversity and forest ecosystems. Globally acknowledged parks of international importance are found in most of the SADC Member States. The contribution of nature based tourism provides important revenues that provide a sustainable financing framework and opportunities for rural communities. Land degradation will ensue as vegetation cover dissipates, following drying streams, which depend on the groundwater discharge. The environmental impact and the disruption in livelihood of poor communities could be extensive. Given the potential future scenarios, and given the important role of groundwater in biodiversity protection, sustainable land management and the adaptive role it is expected to play in reducing the full impact of climate change, the global environmental benefits of the project are substantial.
The project is targeting to enhance the capacity of technical staff and decision-makers in SADC Member States by providing access to tools for groundwater infrastructure planning and design that can translate into more sustainable management, recharge of groundwater and management of challenges to groundwater. Example of generic designs could include better recharge basins, improved infiltration structures through river alluvium, more efficient well designs to improve yield while reducing contamination threats, etc. The project also aims to demonstrate validity of the above mentioned plans and designs for more sustainable groundwater management.

**Figure 1. Flow chart of design process of EMP & RAP**

1.4 Baseline Survey & Preliminary Asset Inventory
The project will be undertaken in the 15 SADC countries. During the preparation of the EA (if necessary), or soon thereafter, the Developer will indicate as accurately as possible the location of proposed infrastructure, rights-of-way and construction sites. Based on this information, the RAP preparation team will undertake a baseline survey. The purpose of this baseline survey is to determine whether 1) anyone determine who (individuals, households and entities) will be potentially displaced (physically, economically or socially) or lose access to land (either permanently or temporarily by sub-project activities and 2) the nature and extent of potential displacement or such loss.

As potential PAPs are identified during the baseline survey each PAP is to be provided with a letter or fact sheet, briefly explaining the sub-project and detailing the planning procedures being followed, the cut-off date for eligibility, the rights of PAPs and the grievance procedures to be followed.

1.5 Potential Environmental Impacts and Safeguards
The Sustainable Groundwater Management in SADC Member States Project (P127086) in southern Africa has been classified as Environmental Category B under the World Bank safeguards system, with comparatively low risk of potential adverse environmental and social impact.
The World Bank operational safeguard policies triggered by project design include OP/BP 4.01 on Environmental Assessment, given the modest infrastructure civil works of pilots/demonstrations; OP/BP 4.12, as any civil works may require measures to address loss of access to assets and/or land acquisition; OP/BP 4.11 Physical Cultural Heritage, as civil works may unearth resources of cultural or heritage value; and OP/BP 7.50 Projects on International Waters, as the Project will finance Transboundary Aquifer Diagnostics that cross SADC Member States (but within the SADC region). While the environmental and social impacts of the project activities are expected to be minimal, the following table lists their potential impacts and suggested mitigation measures. Costs and responsibilities for the implementation of the proposed mitigation measures must be included in to each subproject design.

**Table of Potential Environmental Impacts and Mitigation Measures**

<table>
<thead>
<tr>
<th>Types of Potential Activities Proposed</th>
<th>Potential Environmental/Social Impacts</th>
<th>Proposed Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand dams</td>
<td>Construction related impacts (air quality, noise, waste management, water pollution)</td>
<td>Refer to EMP Part 2 table on General Rehabilitation and/or Construction Activities; and EMP Part 4 – environmental and social rules for contractors.</td>
</tr>
<tr>
<td>Small sub-surface dams</td>
<td>Public safety</td>
<td>Timely implementation of training and awareness program on occupational and public safety covering construction and operational phases of the project.</td>
</tr>
<tr>
<td></td>
<td>Soil erosion</td>
<td>Regular monitoring to ensure there are no unnecessary human activities encouraged at the dams and ponds.</td>
</tr>
<tr>
<td></td>
<td>Vulnerability to vectors due to stagnation of water</td>
<td>Plant vegetation on the slopes (local species) to avoid soil erosion during increased rainfall season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Include a catchment basin upstream of the small dam; removal of grasses from the boundaries of the dam, avoid &quot;dead spots&quot; by making straight boundaries of the dam; avoid shallow depth of less than 1m; introduce biological measure of removing vectors (fish).</td>
</tr>
<tr>
<td>Check-dams</td>
<td>Construction related impacts (air quality, noise, waste management, water pollution)</td>
<td>Refer to EMP Part 2 table on General Rehabilitation and/or Construction Activities; and EMP Part 4 – environmental and social rules for contractors</td>
</tr>
<tr>
<td>River bank filtration systems</td>
<td>Soil erosion</td>
<td>Regular monitoring to ensure there are no unnecessary human activities encouraged at the dams and ponds.</td>
</tr>
<tr>
<td>Infiltration ponds</td>
<td></td>
<td>Plant vegetation on the slopes (local species) to avoid soil erosion during increased rainfall season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Regular monitoring of the ponds. Avoid placement of the ponds in areas where they are likely to remain wet for longer than several days.</td>
</tr>
<tr>
<td>Wells (drilled and hand dug)</td>
<td>Possible effect on aquifer water</td>
<td>Ensure appropriate use of packing material</td>
</tr>
<tr>
<td></td>
<td>Soil contamination due to spills; erosion,</td>
<td>Management of topsoil</td>
</tr>
</tbody>
</table>
Given the uncertainty in determining the location of pilot/demonstration works, SADC and the Bank have agreed to the application of a Simplified Environmental Management Framework (EMF-EMP) for the Project, including (i) applying a standard subproject screening checklist; (ii) preparing simple Environmental Management Plans (EMPs); and, (iii) applying standard Environmental and Social Rules for Contractors to civil works. Some works may require more detailed Environmental and Social Management Plans, which will be determined at the project site screening and design stage.

A Resettlement Policy Framework (RPF) has been prepared to address the potential of small-scale land acquisition or loss of assets or access to assets.

Any EMPs developed under this project will be prepared in accordance with World Bank guidelines and legal and regulatory frameworks of SADC Member States as appropriate. They will state the expected environmental and social impacts and provide good operational practice to control emissions (e.g. dust, noise), wastewater discharge, solid waste management on the construction site, and reduce impacts experienced by the surrounding population.

The EMPs will provide guidance on avoiding the use of hazardous substances, such as toxic paints, solvents or cleaning agents. They will also provide guidance on worker and public safety measures to be followed on-site and along routes used to access the site. They will also cover traffic safety (especially focusing on pedestrian safety) in the immediate vicinity of the construction sites, as necessary. They will address steps to be taken if any cultural heritage elements (e.g. archaeological relics, fossils, etc.) are encountered during the implementation of civil works.

If acquisition of land or impact on assets is required as groundwater infrastructures is promoted or required under any demonstration works, procedures established in the Resettlement Policy Framework (RPF) will guide due-diligence with OP/BP 4.12. The RPF will provide guidance in determining whether a RAP is needed and outlines the preparation of both.
2. ENVIRONMENTAL MANAGEMENT FRAMEWORK & ENVIRONMENTAL MANAGEMENT PLAN

2.1 Environmental & Social Screening and RAP Needs Assessment

If the national environmental legislation requires that certain proposed activities should be subjected to environmental and social screening, to determine whether an environmental and social assessment of some type needs to be undertaken, the screening process will identify this as well as potential environmental and social impacts of sub-project activities (including impacts on land, assets and socio-economic activities). This requirement will be applied to all sub-projects and will be mirrored in the small grants manual used for selection and guidance of any sub-projects done by Member States.

The SADC GMI will be responsible for initiating the environmental and social screening process for sub-projects which should be undertaken by a team of environmental and social practitioners from the public and/or private sectors.

Where the environmental screening process determines that an environmental assessment is necessary the initial screening process will have determined whether or not there are significant adverse social impacts that require attention. Where it is clear that there will be no significant adverse impacts, including deprivation of land and assets, and where any small losses can be dealt with effectively in accordance with a simple EMP a separate RAP may be considered to be unnecessary. The final decision will be made by the WB.

The result from the environmental and social screening should (i) be communicated to local communities and their leaders; (ii) be used to develop appropriate mitigation measures; and (iii) help identify the need, if any, for any additional environmental analysis (i.e. Environmental Impact Assessment). If the screening's output shows a “No” to all questions, the subproject receives the 'green light' for implementation. But if the screening reveals one or more ‘Yes’ answers, one or more of the following is required:

- Environmental Impact Assessment (EIA);
- Environmental Management Plan (EMP);
- A Resettlement Action Plan (RAP).

2.2 Adherence to national legislation

At present, it is not known in which countries the sub-projects will be implemented. The process of environmental screening (or if necessary, environmental assessment) and management and mitigation of potential negative environmental and social impact will need to be in accordance with national legislation that prevail in the area of the demonstration/pilot sites. Such legal frameworks could include: constitutions; national environmental action plans; national environmental policies; national environmental management acts; environmental impact assessment guidelines; national land policies; national water policies; water resources acts; land acquisition/involuntary resettlement policies; cultural heritage laws; [and laws concerning Indigenous Peoples.] For a full list of environmental and social assessment laws and responsible agencies in SADC countries, refer to Handbook on Environmental Assessment Legislation in the SADC Region (DBSA and SAEIA, 2007). The application, requirements and adherence to such regulation will have to be elaborated in the process of selecting, assessing and designing of the pilots sites. The relevant national legislation will have to be applied during the implementation phase of the project, taking into account the need to comply with the World Bank Operational Policies on environmental and social safeguards.
2.3 Capacity to manage Social and Environmental management and RAP

For the implementation of the civil works pilots under the previous SADC Groundwater and Drought Management Project, experts in social and environmental management were hired alongside contractors who were responsible for the infrastructure/civil works aspects of the pilots. The said experts took an active role in the assessment, consultation and supervision phases of the pilots. The management of environmental and social aspects was additionally recorded in site-specific plans. Throughout the project preparation, these experts worked closely with the contractors and helped establish local groundwater committees in the communities benefiting from the pilots. These were respectful to routines/structures of local customs and local authorities, and in several cases found creative solutions to include gender perspective and other vulnerable population groups into sub-project planning and decision making.

For the new Project, the intention is that the SADC GMI will allocate the resources to employ experts in social and environmental management of the pilots, alongside hiring contractors, with sufficient environmental and social risk management expertise to undertake the construction work. Because the demonstration/pilots are only one of many activities in the Project, these experts would be hired on a demand-basis to support the SADC GMI. Being able to hire experts with unique competencies would also be suitable with respect to groundwater infrastructures beyond community level interventions.

2.4 Environmental Management Approach

The checklist includes standard mitigation measures to common civil works contracts with time bound, small and site-specific adverse impacts. This format provides the key elements of an Environmental Management Plan to meet World Bank requirements under OP 4.01; adopted as needed to address national and local environmental compliance issues. This checklist is directly applicable to bidding documents and as an integral part of contract documents for civil works under Bank-supported projects.

The checklist has four sections:

- **Part 1** constitutes a descriptive part that describes the project specifics in terms of physical location, institutional and legislative aspects, need for capacity building and the public consultation process. Attachments with supplemental information should be annexed to the completed checklist as needed.

- **Part 2** includes the environmental and social screening form in a simple Yes/No format, followed by a comprehensive list of standard mitigation measures applied as relevant for specific types of impacts.

- **Part 3** presents the standard monitoring matrix to be applied to each subproject.

- **Part 4** presents the standard Environmental and Social Rules for Contractors.

2.5 Application of the EMP Checklist

As part of the promotion of civil works in the SADC Groundwater Project, and in any directly financed demonstration works, design follows three phases:

1) *General identification and scoping phase*, in which the objects for installation, rehabilitation, extension and/or demolition and complete reconstruction are selected and an approximate program for the potential work activities elaborated. The attached screening table will be used to select typical activities from a “menu” and relate them to the typical environmental issues, mitigation measures and procedures to be followed. The scoping phase will also identify social impacts and the estimated magnitude of these impacts.

2) *Detailed design and tendering phase*, including specifications and bills of quantities for individual investments, integrating environmental provisions in form of a tabular EMP (EMP-Part 2) and Environmental and Social Rules for Contractors. This phase also includes the tender and award of the works contracts and, in this phase, the Contractor’s obligations for environmental and social measures during the works are contractually fixed. Prior to
implementing civil works, the required EMP and RAP will need to be reviewed and approved by the University of the Free State/SADC Groundwater Management Institute and the World Bank.

3) During the works implementation phase environmental and social compliance would be checked on-site, alongside other quality criteria, by qualified inspector(s) for the project implementing agencies. The key monitoring activity will be to verify the compliance of contractors with the required environmental and social provisions, and to impose penalties in cases of non-compliance.

Practical application of the screening checklist would include completion of EMP-Part 1 to document all relevant project and site characteristics. In EMP-Part 2, the type of planned works would be checked and the resulting provisions identified. The completed EMP checklist and the Environmental and Social Rules for Contractors presented below would be an integral part of the works contract and, analogous to all technical and commercial terms, will be signed by the contract parties. In some cases, more detailed Environmental and Social Management Plans would need to be prepared prior to commencement of civil works on project site.

2.6 Monitoring and Reporting

For monitoring the Contractor’s safeguards due diligence, the designated inspector will work with the relevant portions of the EMP Checklist (EMP-Parts 3 and 4). This work will be developed at each site, defining clear criteria which should be included in the works contracts. These shall reflect the status of environmental and social practice at each construction site in adjacent areas and communities, and which can be observed, measured, quantified and verified by the inspector during the actual works.

EMP-Part 3 (Monitoring Plan) would be used during and after the works to ensure compliance with Bank safeguard policies. EMP-Part 4 (Environmental and Social Rules for Contractors) would also be checked during and after works for compliance assurance and Contractor’s remuneration.

The monitoring criteria would include use of Personal Protection Equipment (PPE) by workers on site, dust generation prevention, amount of water used and discharged at the site, presence of proper sanitary facilities for workers, waste collection of separate types of waste (wood, metals, plastic, hazardous waste such as asbestos, paint residues, spent engine oil), waste quantities, proper organization of disposal pathways and facilities as well as reuse and recycling practices.

The inspector’s monitoring report would be a condition of full payment of contractually agreed remuneration, the same as technical quality criteria or quantity surveys. To assure a degree of leverage on the contractor’s environmental and social performance, an appropriate clause will be introduced in the works contracts specifying penalties in case of noncompliance with the contractual environmental and social provisions, e.g., in the form of withholding a certain proportion of the payments, the amount depending on the severity of the breach of contract. In extreme cases, a termination of the contract shall be contractually tied in.
### 3. EMP Part 1: Description, Institutional & Administrative

<table>
<thead>
<tr>
<th>Country</th>
<th>Southern African Development Community/Relevant SADC Member State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project title</td>
<td>Sustainable Groundwater Management in SADC Member States Project</td>
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#### Scope of project and activity

<table>
<thead>
<tr>
<th>Institutional arrangements (Name and contacts)</th>
<th>WB</th>
<th>Project Management</th>
<th>Local Counterpart and/or Recipient</th>
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<tbody>
<tr>
<td></td>
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<td>SADC Sec, Botswana</td>
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<td>University of the Free State/SADC</td>
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<td>GMI South Africa</td>
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#### Implementation arrangements (Name and contacts)

<table>
<thead>
<tr>
<th>Safeguard Supervision</th>
<th>Local Counterpart Supervision</th>
<th>Local Inspectorate Supervision</th>
<th>Contactor</th>
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### Site Description

<table>
<thead>
<tr>
<th>Name of site</th>
<th>Describe site location</th>
<th>Who owns the land?</th>
<th>Who is using the land?</th>
<th>What is land being used for?</th>
<th>Geographic description</th>
<th>Attachment 1: Site Map</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
</table>

### Legislation

<table>
<thead>
<tr>
<th>Identify national &amp; local legislation &amp; permits that apply to project activity</th>
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### Public Consultation

<table>
<thead>
<tr>
<th>Identify when / where the public consultation process took place *</th>
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### Institutional Capacity Building

<table>
<thead>
<tr>
<th>Will there be any capacity building?</th>
<th>[ ] N or [ ] Y if Yes, attach the capacity building program</th>
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</table>

*minutes should be kept of all public consultations and made available as annex of prepared documents
### 4. EMP PART 2: ENVIRONMENTAL AND SOCIAL SCREENING:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Status</th>
<th>Additional references</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Rehabilitation of access roads</td>
<td>[ ] Yes [ ] No</td>
<td>See Section B below</td>
</tr>
<tr>
<td>B. New construction of access roads</td>
<td>[ ] Yes [ ] No</td>
<td>See Section B below</td>
</tr>
<tr>
<td>C. Individual wastewater treatment system</td>
<td>[ ] Yes [ ] No</td>
<td>See Section C below</td>
</tr>
<tr>
<td>D. Archaeological, historical, sacred, or other culturally significant sites or objects</td>
<td>[ ] Yes [ ] No</td>
<td>See Section D below</td>
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<tr>
<td>E. Acquisition of land(^6) or impact on assets</td>
<td>[ ] Yes [ ] No</td>
<td>See Section E below</td>
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<tr>
<td>F. Hazardous or toxic materials(^7)</td>
<td>[ ] Yes [ ] No</td>
<td>See Section F below</td>
</tr>
<tr>
<td>G. Impacts on forests and/or protected areas</td>
<td>[ ] Yes [ ] No</td>
<td>See Section G below</td>
</tr>
<tr>
<td>H. Traffic and Pedestrian Safety</td>
<td>[ ] Yes [ ] No</td>
<td>See Section I below</td>
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### ACTIVITY PARAMETER MITIGATION MEASURES CHECKLIST

<table>
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<tr>
<th>ACTIVITY</th>
<th>PARAMETER</th>
<th>MITIGATION MEASURES CHECKLIST</th>
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</table>
| A. General Conditions | Notification and Worker Safety | (a) The local construction and environment inspectorates and communities have been notified of upcoming activities  
(b) The public notified through appropriate notification in the media and/or at publicly accessible sites (including the site of the works)  
(c) All legally required permits have been acquired for construction and/or rehabilitation  
(d) All work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment.  
(e) Workers’ personal protection equipment will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots)  
(f) Appropriate signposting of the sites will inform workers of key rules and regulations to follow. |
| B. General Rehabilitation and/or Construction Activities | Air Quality | (a) Keep surrounding environment (sidewalks, roads) free of debris to minimize dust  
(b) There will be no open burning of construction / waste material at the site  
(c) There will be no idling of construction vehicles at sites  
(d) During dry season, regular watering of access roads and/or project site for dust suppression is advised.  
(e) Construction noise will be limited to restricted times agreed to in the permit  
(f) During operations the engine covers of generators, air compressors and other powered mechanical equipment should be closed, and equipment placed as far away from residential areas as possible. |

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5 [adjusted as relevant to selected demonstration/pilot site]

6 Land acquisitions includes displacement of people, change of livelihood, encroachment on private property, impact on persons using land, affects people who are living in the area and/or squatters and/or operate a business (kiosks) on or otherwise use land that is being acquired. The Resettlement Policy Framework (RPF) for this project specifies the criteria and procedures for assisting people who might require compensation for lost land or other assets.

7 Toxic / hazardous material includes and is not limited to asbestos, toxic paints, pesticides, etc.
### Water Quality

(a) Circulation water (and its discharge) and possibly the need for additives/chemicals in the case of well drilling.

(b) The site will establish appropriate erosion and sediment control measures such as e.g. hay bales and / or silt fences to prevent sediment from moving off site and causing excessive turbidity in nearby streams and rivers.

(c) Installation of drainage works on access roads to prevent erosion, sedimentation, blockage of water flows, or pooling of water.

(d) Where appropriate, rainwater collection is encouraged on worker sites.

### Waste Management

(a) Waste collection/disposal pathways & sites will be identified for major waste types expected from demolition/construction activities.

(b) Mineral construction and demolition wastes will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers.

(c) Construction waste will be collected and disposed properly by licensed collectors.

(d) The records of waste disposal will be maintained as proof for proper management as designed.

(e) Whenever feasible the contractor will reuse and recycle appropriate and viable materials (except asbestos).

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#### ACTIVITY PARAMETER MITIGATION MEASURES CHECKLIST

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| C. Individual wastewater treatment system | Water Quality | (a) The approach to handling sanitary wastes and wastewater from building sites (installation or reconstruction) must be approved by the local authorities.
(b) Before being discharged into receiving waters, effluents from individual wastewater systems must be treated in order to meet the minimal quality criteria set out by national guidelines on effluent quality and wastewater treatment.
(c) Monitoring of new wastewater systems (before/after) will be carried out. |
| D. Culturally significant sites or objects (archaeological, historical, sacred sites, fossils, etc.) | Cultural Heritage (* see WB Policy on Physical Cultural Res.s OP/BP 4.11) | (a) If the building is a designated historic structure, very close to such a structure, or located in a designated historic district, notify and obtain approval/permits from local authorities and address all construction activities in line with local and national legislation.
(b) Ensure that provisions are put in place so that artifacts or other possible “chance finds” encountered in excavation or construction are noted, officials contacted, and works activities stopped or modified until such finds are accounted for by the local authorities.
(c) Any other measures to deal with sacred sites that are not associated with a physical structure. |
| E. Acquisition of land or impact on assets | Compensation for land or other assets taken | (a) If acquisition of land is required, or if some people would lose assets or sources of income, then a Resettlement Action Plan—including compensation for lost assets as well as any potential physical relocation—will be prepared and implemented before the relevant civil works are installed. |
| F. Toxic Materials | Asbestos management | (a) If asbestos is located on the project site, mark clearly as hazardous material.
(b) When possible the asbestos will be appropriately contained and sealed to minimize exposure.
(c) The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust.
(d) Asbestos will be handled and disposed by skilled & experienced professionals.
(e) If asbestos material is be stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately.
(f) The removed asbestos will not be reused. |
| and testing be included? | Toxic / hazardous waste management | (a) Temporarily storage on site of all hazardous or toxic substances will be in safe containers labeled with details of composition, properties and handling information
(b) The containers of hazardous substances should be placed in an leak-proof container to prevent spillage and leaching
(c) The wastes are transported by specially licensed carriers and disposed in a licensed facility.
(d) Paints with toxic ingredients or solvents or lead-based paints will not be used |

| G. Affects forests and/or protected areas | Protection | (a) Any civil works within National Parks or other protected areas need to be (1) approved by the protected area management authority and (2) consistent with the written protected area management plan (if one exists). In absence of such approval, the subproject with effects on forest and/or protected areas will not be financed.
(b) All recognized natural habitats and protected areas in the immediate vicinity of the activity will not be damaged or exploited, all staff will be strictly prohibited from hunting, foraging, logging or other damaging activities.
(c) For large trees in the vicinity of the activity, mark and cordon off with a fence large tress and protect root system and avoid any damage to the trees
(d) Adjacent wetlands and streams will be protected, from construction site run-off, with appropriate erosion and sediment control feature to include by not limited to hay bales, silt fences
(e) There will be no unlicensed borrow pits, quarries or waste dumps in adjacent areas, especially not in protected areas. |

| H. Traffic and Pedestrian Safety | Direct or indirect hazards to public traffic and pedestrians by construction activities | (a) In compliance with national regulations the contractor will insure that the construction site is properly secured and construction related traffic regulated. This includes but is not limited to
• Signposting, warning signs, barriers and traffic diversions: site will be clearly visible and the public warned of all potential hazards
• Traffic management system and staff training, especially for site access and near-site heavy traffic. Provision of safe passages and crossings for pedestrians where construction traffic interferes.
• Adjustment of working hours to local traffic patterns, e.g. avoiding major transport activities during rush hours or times of livestock movement
• Active traffic management by trained and visible staff at the site, if required for safe and convenient passage for the public.
• Ensuring safe and continuous access to office facilities, shops and residences during renovation activities, if the buildings stay open for the public. |
5. **EMP PART 3: MONITORING PLAN**

This form should be completed during preparation of the subproject by Beneficiary agency of the Sub-Grant. Responsibility for the due diligence to environmental and social management will be captured in the Sub-Grant Agreement and outline who is responsible for supervising and implementing the Monitoring Plan. In certain cases, the beneficiary of the sub-grant may be a community organization or an NGO, in others may be a University of a Government Department. In the Sub-Grant Manual, the model Sub-Grant Agreement will be included as well as requirements to monitoring procedures and obligations.

<table>
<thead>
<tr>
<th>What (Is the parameter to be monitored?)</th>
<th>Where (Is the parameter to be monitored?)</th>
<th>How (Is the parameter to be monitored?)</th>
<th>When (Define the frequency / or continuous?)</th>
<th>Why (Is the parameter being monitored?)</th>
<th>Cost (if not included in project budget)</th>
<th>Who (Is responsible for monitoring?)</th>
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<td>During activity preparation</td>
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<td>During activity supervision</td>
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6. EMP Part 4: Environmental and Social Rules for Contractors

The Project will include a small number of civil works; largely to support pilot projects and demonstration activities. This could include measures to increase recharge/infiltration of surface and storm waters, small test wells, construction or improvement of access roads and other localized civil works. Many of these actions will not require a formal Environmental Assessment or site review, however the use of Environmental and Social Rules for Contractors (ESRC) is required to avoid and minimize any adverse environmental or social impacts. The Environmental and Social Rules for Contractors will be included in any bidding documents and contracts for civil works under the Project.

To help ensure that the environmental and social measures agreed are implemented, strict field supervision of construction works will have to be carried out by staff in the implementing agencies or contracted specialists. In this regard, any case of non-compliance will result in withholding of payment until the issue on the contractor's part is remedied.

The Contractor and their employees shall adhere to the mitigation measures set forth and take all other measures required by the Supervising Engineer (or comparable person responsible for civil works supervision, aka the Engineer) to prevent harm and to minimize the adverse impact of their operations on the environment and social conditions.

The Contractor shall minimize any clearing of natural vegetation during construction, and avoid any impacts on land beyond what has been set aside for project works. The Contractor shall ensure that, to the maximum extent feasible, worker camps, storage sheds, parking lots, and other construction-related facilities will be located so as to avoid or minimize the removal of natural vegetation, opting instead to use previously cleared or degraded lands. The Contractor shall also ensure that site offices, depots, and fuel storage areas are not located within 500 meters of watercourses (or a shorter distance if required by national law or more local ordinance), and are operated so that no pollutants enter watercourses, either overland or through groundwater seepage (including inadvertent connection of subsurface zones and aquifers), whether routinely or as a result of storms and floods.

The Contractor shall ensure that all civil works take place within established project boundaries. In particular, impacts beyond already acquired and compensated land (or prevent access to income-producing activities by users without tenure to land) may require additional Resettlement Action Plan (RAP) mitigation actions. The Contractor shall also use existing roads whenever possible; if works contractors must impact beyond the current road-way, then additional Resettlement Action Plans may be required and compensation provided.

The Contractor shall enforce good behavior by construction workers, including the prohibition of hunting, fishing, wildlife capture, bush-meat purchase, plant collection, unauthorized vegetation burning, speeding, off-road driving, firearms possession (except by security personnel), or inappropriate interactions with local people. The Contractor shall not allow the use of fuel-wood from natural vegetation for cooking in any labor camp or base camp and shall provide alternate facilities using other fuels.
The Contractor shall ensure that sufficient drainage works are installed under any new or improved access roads, to avoid flooding land, damaging streams, and polluting aquifers. The Contractor shall also ensure that adequate measures are implemented to control any soil erosion and runoff.

Remedial actions shall be carried out before the specified works can be handed over as completed. Any necessary remedial works shall be undertaken without delay, including restoration of vegetation and stabilization of land surfaces. Culverts or other drainage works shall be cleared of debris and checked for clear flow paths. Any borrow pits shall be re-graded and made safe.

The Contractor shall ensure that locally obtained construction materials—including stones, gravel, sand, and wood—come from legal and environmentally sustainable sources. Any rocks or gravel taken from a river shall not exceed one-tenth of the width of the river at any one location, and shall not disrupt the river flow, or damage or undermine the river banks. Any earthworks shall be properly controlled, especially during the rainy season. Any excavated cut or unsuitable material shall be disposed of in designated tipping areas as agreed to by the Engineer.

All construction debris and other solid and liquid wastes shall be properly disposed of, at sites identified and approved by the Engineer. The Contractor shall ensure that these sites: (a) are not located within designated protected areas; (b) do not impact natural drainage courses; and (c) do not impact forests, wetlands, or critical natural habitats. Under no circumstances shall the Contractor dispose of any material in environmentally sensitive areas.

Vehicle/machinery and equipment operations, maintenance, and refueling shall be carried out to avoid spillage of fuels and lubricants and ground contamination. The Contractor shall ensure that all employees refrain from washing of vehicles or changing of lubricants in waterways or wetlands. All spills and collected petroleum products shall be disposed of in accordance with standard environmental procedures/guidelines. Fuel storage and refilling areas shall be located at least 300m from all cross drainage structures and important water bodies or as directed by the Engineer.

**Physical cultural resource** includes objects or sites of archaeological, historical, paleontological, or religious significance, including sacred natural sites. This includes graveyards and graves. The Contractor shall not undertake any activity that adversely impacts cultural property without prior approval of the Engineer and relevant government authority as appropriate. If the Contractor discovers sites or objects of cultural interest (including graveyards or individual graves) during any phase of construction, the Contractor shall:

(a) Stop the construction activities in the area of the chance find;
(b) Delineate the discovered site or area;
(c) Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be present until the responsible local authorities and the relevant authority take over;
(d) Notify the Engineer who in turn shall notify immediately the responsible local authorities and the relevant authority (within 24 hours);
(e) Contact the responsible local authorities and the relevant authority which shall be in charge of protecting and preserving the site before deciding on the proper procedures to be enforced. This will require a preliminary evaluation of the findings performed by the specialists of the relevant authority (within 72 hours). The significance and importance of the findings shall be assessed according to the applicable cultural heritage criteria;
(f) Ensure that decisions on how to handle the finding be made by the responsible authorities and the relevant authority. This could include changes in the specific location of the planned facility (when needed to protect a site or object that cannot easily be moved), or removal, preservation, and documentation of the object(s) of interest;
(g) Implementation of the decision concerning management of the finding shall be communicated in writing by the relevant authority; and
(h) Construction work shall resume only after authorization is given by the responsible local authorities and the relevant authority concerning the cultural heritage item(s) found.
**Occupational Health and Safety.** The Contractor (or other employer) is responsible for implementing appropriate occupational health and safety (OHS) standards, codes and guidelines. The Contractor shall identify and provide appropriate personal protective equipment (PPE) that will offer adequate protection to the worker, co-workers and occasional visitors without incurring unnecessary inconvenience. Proper use of PPE shall be part of the recurrent training programs for employees. Relevant types of PPE for this project include hardhats, sturdy boots, and gloves. The Contractor shall also ensure that qualified first aid can be provided at all times. Prior to undertaking new assignments, the Contractor shall ensure that workers have received adequate training and information for them to understand the hazards of work and to protect their health from hazardous factors that may be present.
7. **Consultation Report**


**Consultation.** On February 11, 2014, a workshop was organised by SADC in Gaborone Botswana for the SADC Subcommittee on Hydrogeology. The SADC Subcommittee on Hydrogeology consists of government representatives, mandated to serve as Project Steering Committee and also national focal points for implementation. Eleven of the fifteen countries participated and the ESMF-EMP was shared again and discussed.

The following topics were raised and discussed during the workshop:

- The importance of alignment between national environmental and social regulations and guidelines and World Bank’s to be outlined in the detailed design of individual pilot plans.
- The importance of the safeguard documents as precautionary measures to ensure environmental and social considerations are integrated into the Project.
- The lesson learnt from similar infrastructures to include consultation and communities in the implementation of infrastructure pilots as a means to ensure security and management of environmental and social aspects.

Through the consultation of the draft EMF-EMP (And the RFP), the participants provided their support to the documents and their role in implementation down the line.