

**REPUBLIC OF MALAWI**  
**SHIRE RIVER BASIN MANAGEMENT PROGRAM - PHASE 1 PROJECT**

**IMPLEMENTATION SUPPORT MISSION**  
**April 16-27, 2018**

**Aide Memoire**

**I. INTRODUCTION AND ACKNOWLEDGEMENTS**

1. A World Bank team<sup>1</sup> visited Malawi during the period April 16-27, 2018 to review implementation of the Shire River Basin Management Program (SRBMP)- Phase 1 Project. The objectives of the mission were to: (i) review implementation progress and results achieved so far; (ii) review procurement and financial management performance; (iii) review implementation of safeguards instruments; and (iv) conduct consultations on possible World Bank engagement and support for subsequent phases of the Program. This aide memoire summarizes the main mission findings and recommendations from the mission. The mission wishes to thank the Government of Republic of Malawi, officials from Ministry of Agriculture, Irrigation and Water Development (MAIWD); and Multi-Sector Technical Team (TT), as well as district officials from Zomba, Machinga, Blantyre, Nsanje, Neno and Ntcheu districts, for their excellent collaboration and the courtesies extended. The full list of persons met is attached in Annex 3. As agreed with the TT, this aide memoire will be classified as a public document under the World Bank's Access to Information Policy.

**II. KEY PROJECT DATA**

2. **Key Project Data (as at April 27, 2018)**

Project Data	Project Performance Ratings			
<i>Board Approval: June 14, 2012</i>	<i>Summary Ratings: Last Now Trend</i>			
<i>Effectiveness Date: September 07, 2012</i>	Achievement of PDO	S	S	◀▶
<i>Original Closing Date: January 31, 2018</i>	Implementation Progress	MS	MS	◀▶
<i>Revised Closing Date: January 31, 2019</i>	Original IDA Credit/Grants and GEF: US\$131.58 million			
	Disbursement Ratio (%): 92.5 percent			

Ratings: HS=Highly Satisfactory; S=Satisfactory; MS=Moderately Satisfactory; MU=Moderately Unsatisfactory; U=Unsatisfactory; HU=Highly Unsatisfactory; ▲ Improving; ▼ Deteriorating; ◀▶ Stable

**III. SUMMARY OF MISSION FINDINGS**

3. **The project has achieved most of its objectives and targets.** The Project Development Objective (PDO) is to develop a Shire River Basin planning framework and improve land and water management for ecosystem and livelihood benefits in target areas. Four out of the five PDO-level indicators have been achieved, and 11 out of the 15 intermediate results indicators have been achieved (see Annex 1 for details). The rest of the indicators (except one) are on track to be achieved by project closure. Project beneficiary

<sup>1</sup>The mission comprised: Josses Mugabi (Senior Water and Sanitation Specialist and Team Leader); Guoping Zhang (Senior Water Resources Specialist); Francis Nkoka (Senior Disaster Risk Management Specialist); Chikondi Clara Nsusa-Chilipa (Civil Engineer); Ross Hughes (Senior Natural Resources Management Specialist); Violette Mwikali Wambua (Senior Social Development Specialist); George Ledec (Lead Ecologist); George Stirrett (Environmental Specialist); Hasita Bhammar (Conservation Analyst); Trust Chimaliro (Financial Management Specialist); Anthony Msendema (Procurement Specialist); and Tamara Mwafongo (Team Assistant)

targets have been exceeded. A total of 431,520 people (compared to an end-of-project target of 400,000<sup>2</sup>) are directly benefiting from the project's interventions related to land and water management, as well as ecological enhancement activities such as forest co-management, forest-based enterprises and various livelihood and income-generating activities. The average Management Effectiveness score (METT score) for the nine targeted protected areas stands at 73 against a projected target score of 65 set at project design. With respect to flood risk management, a total of 7,028 households in targeted flood prone areas have been reclassified to a lower flood risk, compared to a revised project target of 2,780 households. The Shire River Basin Plan has been completed and adopted by MAIWD. An improved operational decision support tool for Kamuzu Barrage operation has been developed and is currently in use. However, barrage rehabilitation/upgrading works are not yet completed and the institutional arrangements for management of the upgraded barrage are yet to be finalized. Overall, more than 80 percent of the project results indicators have either been achieved or exceeded and the remainder are on track to be achieved by project closure. Project performance thus remains *satisfactory* with respect to achievement of the PDO.

4. **However, weaknesses in project management have led to missed completion dates for some activities, resulting in avoidable contract extensions and cost overruns.** While most of the planned project activities are completed or close to completion, others (e.g. Kamuzu barrage rehabilitation) continue to suffer delays. In addition, most works contracts have required time extensions to ensure successful completion, leading to increased supervision costs. With less than eight months before project close, the TT needs to closely monitor all remaining project activities to avoid any further delays. Below is a summary progress on all key project activities and the mission recommendations.

- The Shire River Basin Plan has been completed and adopted. The planning process followed a well-structured stakeholder participation process supported by state-of-the art decision-support tools. The next step is to disseminate the plan to all stakeholders and facilitate districts to integrate the basin plan recommendations in their respective district development plans.
- A comprehensive set of knowledge products have been developed to facilitate integrated natural resources management in the Shire River Basin. However, knowledge management and dissemination remains weak. While some of the knowledge products and reports are publicly available on the main Shire River Basin knowledge portal, others are not easily accessible. Moreover, there exists other knowledge portals maintained by consultants, and not linked to the main basin knowledge portal. Given the level of project resources invested in improving the knowledge base, the mission emphasized the need to ensure that the various study reports are available and in an accessible format to facilitate planning and management of the basin's natural resources. The mission further recommends preparation of short policy briefs highlighting policy issues emerging from each study for the attention of policy makers.
- Collaboration and coordination between different government agencies involved in Shire River Basin management has improved, and various training and capacity building activities have been undertaken to further enhance capacity for coordinated basin planning and management. In total, 51 capacity building activities (comprising long term training courses, short courses, workshops, conferences and study tours) have been undertaken, with a total of 162 participants. The mission however noted that capacity building activities benefited mostly men (75 percent of participants were male). This may be due to gaps in women's representation in decision-making roles in the water sector in general. The mission recommends that future capacity building initiatives should specifically target women to increase their representation in decision-making roles (both technical and non-technical supervisory or managerial roles).
- Significant work on public outreach has been done through various mass media channels within and beyond the project districts. As the project is coming to an end, the major communication focus is

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<sup>2</sup> Revised upwards at project mid-term review from 250,000 to 400,000

production of results stories and evaluating impact of media interventions based on the end of project success story plan which has been developed.

- A multi-sectoral Shire River Basin Agency (SRBA) has been established, with an Executive Director and four key professional staff in place. However, operationalization of the National Water Resources Authority (NWRA) under which SRBA is supposed to be legally anchored, is still pending. The future of SRBA is thus a major cause of concern as the agency remains a prototype organization with no legal backing and no budget.
- Construction of the SRBA office building remains behind schedule. Current progress is assessed at about 75 percent. The contractor has requested a contract extension of 15 weeks which is currently under review. In addition, the TT has proposed additional work, which include construction of a 200m access road and laying of a tertiary sewer line (about 600m in length) connecting the building to a nearby city trunk sewer. The mission noted with concern that the cost and time implications of these proposals have not been fully evaluated by the construction supervision consultant. Moreover, the proposed works will likely have social safeguards implications which have not yet been fully evaluated (for instance, there are several roadside vendor kiosks on the existing access road that is planned for improvement). The mission recommends a detailed assessment of the proposed additional works (including safeguards) to ascertain if they can be completed within the remaining project period. The TT agreed to share the assessment with the Bank for review no later than May 29, 2018.
- The network of 95 hydromet monitoring stations across the basin has been revamped to improve hydro-meteorological information for improved planning, operational decision support and flood forecasting. Modern hydromet equipment and associated software have been installed to enable access to hydromet data in near real time, although there are still a few teething problems (mainly battery issues)–to be resolved before project closure. Further, the Department of Water Resources (DWR) has developed a hydromet management plan which the mission reviewed and commented on.
- An Operational Decision Support System (ODSS) has been developed, and system operators from DWR, Department of Climate Change and Meteorological Services (DCCMS) and Department of Disaster Management (DoDMA) have been trained. The ODSS can perform the following forecasting functions for decision support: riverine flood and flow forecasting, catchment flash flood forecasting, seasonal forecasts of flows and water levels in the river basin including Lake Malawi to support water infrastructure operation (Kamuzu Barrage), drought monitoring, and crop calendar providing seasonal rainfall predictions and information relating to planting times and other agricultural activities. The performance of the system however has not been fully evaluated due to limited quality data. Both DCCMS and DWR committed to improve the quality and reliability of hydromet data to enable further evaluation of the ODSS. In addition, DWR agreed to strengthen quality checks on data and to start updating rating curves for all hydrological stations.
- Catchment management guidelines have been prepared and adopted at the national level. Further, various plans (at catchment, sub-catchment and micro-catchment/village level) have been developed to guide implementation of community-based land and water management interventions in the critical catchments of upper Lisungwi, upper Wamkulumadzi, Kapichira and Chingale. Studies on alternative livelihoods and enterprise value chains in these catchments have been completed, and these have informed the selection of viable rural enterprises which are currently benefiting from a micro-loan facility supported by the project.
- Targeted catchments are still undergoing rehabilitation, through implementation of a total of 305 Village-Level Action Plans (VLAPs). Available data suggests that project targets related to catchment management have been exceeded. To date, about 77 percent of households within targeted catchments are engaged in Sustainable Land and Water Management (SLWM) activities, compared to an end-of-project target of 75 percent. The total area under SLWM treatment has reached 25,212 ha<sup>3</sup>, compared

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<sup>3</sup> Validation of these results is ongoing and is expected to be completed by June 2018.

to an end of project target of 24,460 ha, and a total of 10,173 ha of previously degraded community forests have been regenerated. In addition, a total 80 Farmer Field Schools (FFS) have been established to promote conservation agriculture techniques and improved crop management practices;

- Various infrastructure work packages—rural feeder roads (80km), bridges (11) and markets (13) – designed to support alternative livelihoods have been completed and commissioned. The project has also supported the creation and training of a total of 338 Common Interest Groups (CIGs)<sup>4</sup> for different livelihood activities. The groups have already received a total of US\$850,000 in low-interest micro-loans as start-up capital for various rural enterprises. In addition, all the 305 VLAP communities have received the first and second tranche of the Community Environment Conservation Fund (CECF) grants that offer a financial incentive to individual community members to engage in SLWM activities.
- Environmental management activities designed to protect and conserve substantial areas of existing natural ecosystems in the Shire River Basin, have progressed well, with all but one activity completed, and with positive results emerging from these investments. The mission commends the work of the Department of Forests (DoF) and the Department of National Parks and Wildlife (DNPW) for their work in implementing these activities. The main challenge remaining for implementation is the completion of much-delayed infrastructure at Lengwe National Park where infrastructure is not expected to be completed until August 2018.
- Community flood protection infrastructure at five sites in Chikwawa and Nsanje districts has been completed. The structures have substantially reduced the risk of flooding in the targeted communities. The quality issues at Tengani dyke (which attracted much media attention following the Vice President’s visit to the site) have been addressed and the dyke has been completed to a satisfactory quality standard. The mission however noted that the flood forecasting and early warning system (FFEWS) is not yet operationalized due to delays in implementation of the ODSS, and it is likely that this may not be achieved before project close. That said, the mission noted that the project has helped to strengthen the community-based FFEWS developed by the Malawi Red Cross Society through the procurement and distribution of flood early warning equipment to 45 targeted communities.
- Rehabilitation and upgrade of Kamuzu Barrage—the project’s flagship infrastructure investment – is close to completion. However, the overall construction schedule has slipped by an estimated three months since the last mission. The delay is attributed to failure of certain mechanical parts (sprockets for the lifting hoists) to pass factory tests which impacted the schedule for manufacturing and shipping of the lifting hoists for the gates. The mission was informed that the mechanical deficiencies have been corrected and that all lifting hoists are expected to be delivered on site by end of June 2018. The rehabilitation and upgrading works are now expected to be completed and commissioned by end of October 2018 (compared to an earlier estimate of July 2018). An updated schedule for key construction milestones is provided in Annex 2. The mission strongly recommends close monitoring of the construction schedule to avoid any further slippages, given that the revised completion date is now very close to the project closing date of January 31, 2019.
- The mission also reviewed the cost monitoring reports for Kamuzu barrage and noted a projected cost overrun of about 20 percent. This is due to a combination of factors, including an increase in supervision costs due to delayed completion of the works<sup>5</sup>, variations due to design changes, and price escalation. The mission further noted that the available contingency amount for all the contracts (civil, mechanical and supervision) can only cover about half of the projected cost-overrun. To mitigate risks to successful completion of the works, the mission advised TT to take a careful look at the project budget to identify additional cost savings that can be used to supplement the available contingency.

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<sup>4</sup> *Common Interest Group* refers to a group of individuals cooperating around a common livelihood enhancement activity

<sup>5</sup> Due to delayed completion of the works. The original planned completion date was October 2017.

5. **MAIWD has not made much progress on previously agreed institutional actions that are critical to sustainability of project interventions, including Kamuzu Barrage.** For instance, with less than six months to the completion of Kamuzu Barrage, MAIWD has not yet put in place a sustainable institutional arrangement for management of the Barrage. The previous World Bank mission recommended that MAIWD (i) reviews the functions, structure and composition of the existing stakeholder committee to enhance its effectiveness as a governance mechanism; (ii) reviews the new Barrage operating rules in consultation with the stakeholder and formally adopt them; (iii) reviews institutional<sup>6</sup> and financing options for operation of the Barrage and take decisions on a preferred option; and (iv) prepares Dam Safety Plans (i.e. operation and maintenance plan, emergency preparedness plan and instrumentation plan) for the barrage. MAIWD had committed to complete actions i), ii) and iii) by January 31, 2018 and action iv) by July 30, 2018. However, to date, there has not been progress on any of the actions.

6. Further, the mission noted with concern that there is still no sustainable institutional mechanism to facilitate multi-sectoral long term-planning and management of the Shire River Basin. The SRBA remains a prototype organization with no legal backing and no budget. The agency is currently staffed by a few consultants recruited under the project and whose contracts are ending in June 2018. Progress on operationalization of the National Water Resources Authority (NWRA) –a key sector institution established under the Water Resources Act 2013– remains slow. The delays continue to create considerable institutional uncertainty and delayed decision-making in the overall management of water resources in the Shire River Basin and in the country. During previous Bank missions (July 2016, January 2017 and August 2017), MAIWD committed to an action plan to operationalize NWRA by finalizing all necessary regulations and appointing the Governing Board. To date, only the regulations have been completed and gazetted in March 31, 2018. Appointment of the Governing Board has been pending approval since June 2017. While shortlisting of candidates for the Executive Director of NWRA was completed, interviews cannot take place until the Governing Board is appointed. The mission therefore urges MAIWD and the Department of Statutory Corporations to fast-track the remaining steps and ensure the NWRA Board is appointed.

7. **The project’s fiduciary performance is assessed as moderately satisfactory.** Overall procurement performance is rated as moderately satisfactory. Procurement planning and processing for the project is rated satisfactory as the project has an up to date procurement plan and most contracts have been committed and are under implementation, and others successfully completed with a few short duration contracts pending implementation. Contract management on the other hand is rated moderately unsatisfactory as there have been many contracts with weak contract management leading to poor quality works, avoidable extensions of contracts and cost overruns. Financial management arrangements are rated as satisfactory and risk is moderate. The project continues to submit Interim Financial Reports (IFRs) on time and in acceptable format and content. The audited financial statements are also being submitted on time. The accounts have been qualified due to an ineligible expenditure (MK17 million) incurred by Zomba District Council. The management letter has very few issues of control and accountability, an indication that the project is following the required policies and procedures. Cumulative disbursements to date stand at US\$113 million, representing about 86 percent of the total original IDA and GEF funding and 93 percent of the available funding.

8. **Compliance with environmental and social safeguard requirements is also assessed as satisfactory.** The project has ensured that the required capacity for the management of safeguards was in place for the entire life of the project and safeguards instruments were prepared and implemented to completion for all subprojects. Below is a summary of findings and recommendations from the safeguards review:

- *Kamuzu Barrage.* The most significant outstanding safeguard issue is the delayed replacement of the boat landing facility at Liwonde National Park which was rendered inaccessible due to construction of

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<sup>6</sup> In 2015, MAIWD commissioned a study on the financial and institutional aspects for the operation of the Kamuzu Barrage. However, to date, no decisions have been taken on the recommendations. Previous Bank missions had recommended that MAIWD explore the possibility of signing an interim O&M agreement with the Electricity generating company (Egenco) to operate the barrage, but that MAIWD should retain control of the water release decisions.

the new weed boom at the Barrage site. The boat landing site was previously used by tourists to the Mvuu Lodge within Liwonde National Park. A Memorandum of Understanding signed in 2014 between the MAIWD and DNPW commits to the construction of this replacement boat landing facility as part of the Kamuzu Barrage upgrading. Failure to install this facility as part of the Kamuzu Barrage works would be problematic from an environmental safeguards standpoint, because it would undermine the financial sustainability of Liwonde National Park by reducing the tourism revenues and increasing the operating costs for African Parks (the concessionaire which now manages Liwonde National Park on behalf of DNPW). The design for this boat landing facility has been updated by Africa Parks to include (i) dredging an existing canal to the Shire River and an existing 40 m X 40 m boat basin to facilitate boat passage; (ii) using the dredged spoils to raise further an existing elevated platform adjacent to the planned boat dock—this elevated area would accommodate a small park ranger outpost and reception center for arriving tourists; (iii) elevating and widening an existing dike path (about 150 m long) to make it 4 meters wide and thus passable by motor vehicles; and (iv) ideally also installing a vehicle bridge over the Likwenu River, a relatively small tributary of the Shire (now crossed using canoes).

- The mission visited the proposed boat landing site on April 20, 2018, along with representatives from the Barrage Supervising Engineer, African Parks, and DNPW. Based on this visit, the mission recommends that the Contractor, with Government and Supervising Engineer support and oversight, work urgently to construct this facility and have it completed no later than **October 30, 2018**. The key next steps should include (i) preparation of technical drawings of the boat canal and docking area, reception platform, dike road, and perhaps also the bridge; (ii) a rapid assessment of whether raising and widening the existing dike path might have adverse hydrological impacts, upstream or downstream (in which case a pedestrian boardwalk could be built instead of the dike road); and (iii) follow-up dredging and associated construction by the barrage civil works contractor, using his own or sub-contracted personnel and equipment.
- With respect to the three main borrow pits used for Kamuzu Barrage construction, the mission was pleased to note that the threats previously posed by the Nyama and New (No. 5) borrow pits to nearby small streams had been effectively addressed by the Contractor, who moved certain earth piles further back from the stream margins. The mission was advised that Closure Plans for the New and Wyson borrow pits would be prepared by June 30, 2018. Such plans will need to provide for (i) suitable meandering paths for small streams to follow, in or adjacent to the pits and (ii) reshaping the land in ways that will facilitate natural re-vegetation. On a less positive note, the mission found solid waste management by the civil works contractor to be inadequate, with bottles and other plastic trash lying around the Kamuzu Barrage work site, where there was also a general lack of on-site waste bins. The mission also found that the Contractor had apparently dumped plastic bottles, old tarps, and empty cement bags illegally at the new borrow pit, instead of using the approved local waste disposal site. The Supervising Engineer advised the mission that the Contractor would promptly clean up its Kamuzu barrage work sites, while also removing unauthorized waste deposits from the borrow pits, all before April 30, 2018.
- On the social safeguards side, the TT is commended for endeavoring to amicably resolve the grievances that were raised at the Kamuzu barrage except that of the lodge owner that is currently awaiting court's decision. The lesson that can be taken from this case is that Grievance Redressal Mechanisms (GRMs) put in place should be inclusive to all categories of project affected persons and have multiple uptake locations and channels to address complaints and concerns. The mission noted that there were fisherman still fishing illegally at the Barrage site. These are different from the fishermen that were compensated by the project. The mission recommended that this issue be handed over to Machinga district, that is responsible for enforcing the law on encroachment within its jurisdiction.

- *Resettlement.* The mission commends the project for addressing the issue of voluntary land donations (VLD) and ensuring that documentation is appropriately filled and kept for all applicable subprojects. However, the mission noted the outstanding issues with respect to completed markets and the ongoing construction of the SRBA office building. With respect to markets, there is a lack of clarity on land ownership for some of the markets and it is recommended that this issue be addressed in collaboration with the district councils and documented appropriately prior to project closure. With respect to the SRBA office building, there is potential for loss of land and livelihoods due to the construction of a sewer line and a 200m access road to the SRBA premises. The planned route for the sewer line falls inside the fences of Malawi Polytechnic and Malawi College of Health Sciences campuses. Prior to commencement of works on the sewer line, the project in collaboration with Blantyre City Council will obtain the required permissions from both the Malawi Polytechnic and Malawi College of Health Sciences for a Right of Way in an appropriately documented process. Five road side vendors who will be affected by the construction of the access road will be relocated to another site such that they do not lose any income due to the construction. This process should be undertaken prior to commencement of construction works.

#### IV. KEY AGREED ACTIONS AND NEXT STEPS

9. The key actions agreed during the mission are summarized in the Table 2 below. These actions do not reflect the full set of recommendations from the mission as documented in this aide memoire. The Bank will continue its close monitoring and technical discussions with the TT to help ensure that the agreed actions are implemented.

**Table 2 – Key Agreed Actions**

#	Action	Target Date	Responsibility
1	Appoint NWRA Governing Board	June 30, 2018	PS/MAIWD
2	Complete construction and commissioning of SRBA office building	October 30, 2018	TT
3	Address battery issues affecting hydromet stations (replace lithium with rechargeable lead batteries)	June 30, 2018	DWR, DCCMS
4	Implement hydromet management plan	Continuous	DWR, DCCMS
5	Update ratings curves for all newly installed hydrological stations	August 30, 2018	DWR
6	Finalize and sign MoU between DWR, DCCMS and DoDMA on management of the ODSS	July 30, 2018	DWR
7	Review institutional options for management of Kamuzu Barrage and take decision on preferred option. Inform the Bank on preferred option and action plan for implementation	June 30, 2018	DWR
8	Review and formally adopt the new Barrage operating rules	June 30, 2018	DWR
9	Weekly review of Kamuzu Barrage rehabilitation/upgrade milestones, and sharing updates with the Bank	Continuous, starting May 14, 2018	TT
10	Complete rehabilitation and upgrade of Kamuzu Barrage	October 30, 2018	DWR
11	Finalize and adopt community flood risk management guidelines	October 31, 2018	DoDMA
12	Complete construction of replacement boat landing site at Liwonde	October 31, 2018	TT
13	Follow up and closure of the lodge owner grievance at the Barrage	December 31, 2018	TT
14	Finalize dam safety plans for Kamuzu barrage	June 30, 2018	DWR
15	Clarify land ownership for markets. Share documents with the Bank	June 30, 2018	TT
16	Conduct assessment of potential loss of land/livelihoods from construction of sewer line and access road to SRBA premises. Share mitigation plan with the Bank	June 30, 2018	PMU
17	Prepare borrower's project completion report (including safeguards completion report) and share with the Bank	October 30, 2018	TT

10. **Proposed Timing of Next Mission.** The next mission is tentatively scheduled for **November 2018**. This will be the final implementation mission to review achievements and lessons from the project and to prepare an Implementation Completion and Results Report (ICRR). The mission clarified the responsibilities of the borrower with respect to the ICRR mission. These include:

- Preparing and submitting to the Bank its own completion report, no later than one month before the scheduled mission date. The Borrower's completion report/summary should include: (i) assessment of the project's objective, design, implementation, and operational experience; (ii) assessment of the outcome of the project against the agreed objectives; (iii) evaluation of the borrower's own performance during the preparation and implementation of the project, with special emphasis on lessons learned that may be helpful in the future; (iv) evaluation of the performance of the Bank and other partners (if any) during the preparation and implementation of the project, including the effectiveness of their relationships, with special emphasis on lessons learned; and (v) description of the proposed arrangements for future operation of the project.
- Providing information to the Bank on the economic, financial, social, institutional, and environmental conditions in which the project was implemented, and on implementation and results. This typically entails: (i) providing feedback on the quality of the Bank's contribution, from identification to supervision; (ii) participating in ICRR discussions with the Bank team; and (iii) providing comments, in a timely manner, on the Bank team's draft ICRR.

## V. WORLD BANK SUPPORT TO SRBMP-PHASE 2

11. The mission carried out preliminary consultations on possible World Bank support to subsequent phases of the SRBMP. This was in response to the Government of Malawi's request (in a letter dated June 28, 2017, Ref: FIN/DAD/DACU/5/4/5) for World Bank support to the second phase of the Program. The full list of stakeholders consulted is provided in Annex 3. All stakeholders unanimously expressed support for continued World Bank involvement in SRBMP given the critical importance of the Shire River Basin to Malawi's energy security and overall economic development<sup>7</sup>.

12. Stakeholders observed that while World Bank's support to the first phase of the Program has generated significant social, economic and environmental benefits, and helped establish a framework for integrated watershed management, more remains to be done to increase adoption of 'resilience-enhancing' natural resource management practices to sustain and protect energy security and boost productivity and livelihoods. Stakeholders would like the World Bank to continue supporting investments in the Shire River Basin to protect vital ecosystem services for energy production and landscape productivity, while at the same time strengthening institutional and organizational capacities for integrated natural resources management at the national and local levels, to enable scale-up of interventions in other priority watersheds outside the Shire River Basin. Stakeholders also expressed demand for investments in improving the quality and coverage of hydromet and climate information to facilitate a variety of strategic and operational activities, including water resources planning, operation decision support for key hydraulic infrastructure, flood and drought disaster risk management, weather and flood forecasting, pollution monitoring and control.

13. Consultations will continue over the coming months between the World Bank and MoFEPD to reconfirm the scope and value-added of continued World Bank engagement in the Program and the indicative IDA allocation that may be made available.

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<sup>7</sup>About 98 percent of current electricity generation is from "run-of-river" hydropower plants on the Shire River. More hydro power plants are planned on the Shire River (Mpatamanga). In addition, a large-scale irrigation scheme (Shire Valley Transformation Project) financed by the World Bank and AfDB is in early stages of implementation.



### Annex 1 – Updated Results Framework





Project Development Objective: Develop a Shire River Basin Planning Framework to Improve Land and Water Management for Ecosystem and Livelihood Benefits						
	Unit of Measure	Baseline	End of Project Target	Status as at April 2018	Likelihood of achieving indicator target by project closing date	
<b>PDO Level Results Indicators</b>						
Shire River Basin Plan <sup>8</sup> adopted	Yes/No	No	Yes	Shire River Basin Plan has been completed and adopted by MAIWD)	Indicator has been achieved	+
Average Management Effectiveness Scores <sup>9</sup> for 8 targeted protected areas/forest reserves (5x FRs, 2x NPs, 1x EM)	METT Score	39	65	73	Indicator target has been exceeded	+
Households in target areas re-classified to lower flood risk	Number	0	2,780	7,028	Indicator target has been exceeded	+
Improved operation <sup>10</sup> of the upgraded Kamuzu barrage with adequate institutional arrangements <sup>11</sup>	Yes/No	No	Yes	Improved operational rules developed and in use. However, barrage upgrading works not yet completed and institutional arrangements for operation of the barrage are not yet finalized.	Indicator is on track to be achieved by project close.	+
Direct project beneficiaries, of which female (%)	Number (%)	0	400,000 (50%)	431,520 (50%)	Indicator target has been exceeded	+

<sup>8</sup> Multi-sector land and water management plan based on analysis and stakeholder consultation

<sup>9</sup> This indicator is measured using the Management Effectiveness Tracker Tool (METT) – a GEF tool that uses a basket of indicators to score changes in protected area management effectiveness. The most recent METT analysis was carried in July 2017

<sup>10</sup> Improved operation means barrage is fully functional in regulating discharge within agreed operational rules and using appropriate decision support tools.

<sup>11</sup> Adequate institutional arrangement means that a barrage operational unit is established with trained staff and budget






	Unit of Measure	Baseline	End of Project Target	Actual Achievement April 2018	Likelihood of achieving indicator target by project closing date	
<b>Component A - Shire Basin Planning</b>						
Shire River Basin planning tools <sup>12</sup> developed	Yes/No	No	Yes	Planning tools (Spatial knowledge base, State of Shire Basin report, Basin planning DSS) completed along with the Shire Basin Plan.	Indicator target has been achieved	
Shire River Basin Institution established <sup>13</sup>	Yes/No	No	Yes	The Shire River Basin Agency (SRBA) has been established, with an Executive Director and four key professional staff in place. However, operationalization of the National Water Resources Authority (NWRA) under which SRBA is supposed to be legally anchored, is still pending. The future of SRBA is thus a major cause of concern as the agency remains a prototype organization with no legal backing and no budget.	Indicator is unlikely to be achieved by project close	
Hydromet stations with accessible data in near real time	Number	0	30	44 out of the 95 installed stations are fully operational and transmitting data in near real time	Indicator target has been achieved	
Functional geo-database developed <sup>14</sup>	Yes/No	No	Yes	Work on a centralized Shire Basin spatial database is ongoing. Web portal with initial spatial data structure and initial meta data has been developed. The process of collection and centralizing all spatial databases from various sources including other consultants working on the Project is on-going.	Indicator is on track to be achieved by project close	

<sup>12</sup> Planning tools include: spatial knowledge base, decision-support systems, water quality database, state of the base report, thematic and sectoral reports

<sup>13</sup> *Shire basin institution* means an organization/agency set up within the laws of Malawi to support and coordinate long term planning and management of the Shire basin. The institution will be considered established if (i) it is set up within an existing or new law; (ii) has adequate and qualified staff; and (iii) has an annual operational budget that is fully funded

<sup>14</sup> A *functional geodatabase* means hard-copy and electronic spatial database and web-based tools such as the MASDAP portal

	Unit of Measure	Base line	End of Project Target	Actual Achievement April 2018	Likelihood of achieving indicator target by project closing date	
<b>Component B - Catchment Management</b>						
Proportion of households within targeted sub-catchments engaged in sustainable land and water management	%	15	75	77	Indicator target has been exceeded	+
Number of Village Level Action Plans (VLAPs) approved	Number	0	305	305	Indicator target has been achieved	+
Area under sustainable land and water management in targeted micro-catchments (VLAP areas)	Ha	0	24,460	25,212	Indicator target has been exceeded	+
Length of riverbank protection undertaken	Km	0	248	4,166	Indicator target has been exceeded	+
Number of Common-Interest Groups (CIGs) established and operational	Number	0	279	338	Indicator target has been exceeded	+
Total value of livelihood investment grants managed by targeted Group Villages (GVs)	Million MK	0	220	612	Indicator target has been exceeded	+

	Unit of Measure	Base-line	End of Project Target	Actual Achievement April 2018	Likelihood of achieving indicator target by project closing date	
<b>Component C - Water Related Infrastructure</b>						
Kamuzu barrage upgraded	Yes/No	No	Yes	First phase of the upgrading works has been completed and three gates are currently in use. Construction works still underway for second phase	Indicator is on track to be achieved by project close.	
Number of GVs with improved community flood management infrastructure	Number	0	29	29	Indicator target has been achieved	
Community-based flood early warning system established <sup>15</sup>	Yes/No	No	Yes	Community-based flood early warning system established along the lower reaches of four flood prone rivers. A total 45 target communities have been trained and provided with equipment	Indicator target has been achieved	
Preparation studies for water-related infrastructure	Number	0	3	Two studies completed (irrigation). One study on water supply is underway.	Indicator is on track to be achieved by project close	
Budgeted management plan established for Elephant Marshes	Yes/No	No	Yes	Management Plan for Elephant Marsh has been completed and adopted by DNPW	Indicator target has been achieved	

<sup>15</sup> *Community-based flood early warning system* is a system that relies on trained community members to disseminate flood warnings along the lower reaches of flood prone rivers. The target rivers are: Mwanza, Livunzu, Thangadzi West, Lalanje and Thangadzi East. The system is based on gauge plates on the rivers. The gauges are marked as green, yellow and red. Green is no problem, yellow is when floods are imminent, and red is when the floods are on the way. Gauge readers will be trained and equipped with mobile phones to send bulk SMS messages to the phones listed for each Civil Protection Committee (CPC) members further downstream. CPC members will then use two different types of siren to warn of the different flood levels.

## Annex 2 – Updated Schedule of Milestones for Kamuzu Barrage Rehabilitation

<b>B01: Civil Works Contract</b>				
#	Milestone	Original completion date	Revised completion date	Status as at May 22 ,2018
1	Offices and guard houses	April,2015		<i>Completed</i>
2	Service building	Aug 2016	<b>July 30, 2018</b>	<i>Under construction</i>
3	Police building		<b>Sep 15, 2018</b>	<i>Consultant preparing designs</i>
4	Foundations and pillars for bridge	Mar 2017	<b>Mar 30, 2018</b>	<i>Pillars up to No.13 are completed. Construction of final pillar No.14 is in progress.</i>
5	Precast bridge beams		<b>Date?</b>	<i>Completed and placed up to span no.13</i>
6	Bridge deck	June 2017	<b>July 30, 2018</b>	<i>Done up to span No. 13</i>
7	West abutment	Feb 2017	<b>June 30, 2018</b>	<i>Foundation work is completed. Reinforcement for the first lift is done while form work is under way and concreting to be done by May 24</i>
8	Energy dissipaters	June 2017	<b>June 30, 2018</b>	<i>Completed up to span No.13. The last energy dissipater No.14 is 60% complete.</i>
9	East Weed Boom Anchor and Crane foundation	Sep 2016		<i>Completed, except mechanical works (see mechanical works schedule)</i>
10	West Weed Boom Anchor	Aug 2016	<b>June 30, 2018</b>	<i>Concrete works are in progress.</i>
11	Finishing works (such as roads, road lights, park, completion works at the bridge, cable trenches, drainage, etc)	Sept 2017	<b>October 15, 2018</b>	<i>Cable trenches started in front of the office and at the east weed collection area. Completion works at the new bridge are ongoing.</i>
12	Commissioning	Oct 2017	<b>October 30, 2018</b>	

<b>M01: Mechanical Gates and Weed Boom</b>				
#	Milestone	Original completion date	Revised completion date	Status as at May 22, 2018
1	Gates no 1-6 (including hoists, seals, scales and pointers, stop logs and lifting beams).	July 2016	<b>August 30, 2018</b>	<i>Gates 1-6 have been fixed without hoists. Seals, scales and pointers are on site. Final adjustments not yet done. Four lifting hoists have arrived on site while four more are on the way from Maputo, Mozambique.</i>
2	Gates no 7-14 (including hoists, seals, scales and pointers, final adjustment, stop logs and lifting beams)	Aug 2017	<b>August 30, 2018</b>	<i>Gates 7-12 have been fitted without hoists. Stop logs and lifting beams are all on site. One pair of stop logs is being used on Gate No.5.</i>
3	Installation of lifting hoists for all gates		<b>August 30, 2018</b>	<i>Four hoists have arrived on site. Installation starts May 25, 2018.</i>

<b>4</b>	Power supplies and control equipment	Aug 2017	<b>August 30, 2018</b>	Electrical controls and monitors for the gates operations are already on site awaiting installation once everything is ready.
<b>5</b>	Installation of Weed Boom	Jan 2017	<b>July 30, 2018</b>	<i>The components of the weed boom are in transit. ETA is June 10, 2018. Installation to start immediately after arrival</i>
<b>6</b>	Minor completion works and commissioning	Aug 2017	<b>Sep 30, 2018</b>	

<b>M02: Mechanical Jib Crane</b>				
<b>#</b>	<b>Milestone</b>	<b>Original completion date</b>	<b>Revised completion date</b>	<b>Status as at May 22, 2018</b>
<b>1</b>	Manufacturing	Feb 2016		<i>Completed</i>
<b>2</b>	Factory Acceptance Test (FAT)	Feb 2016		<i>Completed</i>
<b>3</b>	Transport/shipping to site	Mar 2016	<b>June 01, 2018</b>	<i>Jib crane in Transit (in Maputo). Expected to be on site by June 1, 2018</i>
<b>4</b>	Installation and commissioning	Dec 2017	<b>July 15, 2018</b>	<i>On track to</i>

### Annex 3 – List of People Met<sup>16</sup>

#### SRBMP-1 - Implementation Support Mission

#	Name	Department / Designation
<b>Ministry of Finance, Economic Planning and Development</b>		
1	Peter Simbani	Chief Director, Economic Planning and Development
2	Anwar Mussa	Debt and Aid Officer
<b>Ministry of Agriculture, Irrigation and Water Development</b>		
3	Dr Mtupanyama	Chief Director
4	Prince Mleta	Acting Director, Water Resources Department
5	Peter Kadewere	Principal Water Resources Officer
6	Phideria Moyo	Regional Manager, DWR
7	Piasi Kaunda	Principal Water Resources Officer
<b>Technical Team</b>		
8	Alice Gwedeza	National Spatial Data Centre / Principal Mapping Officer
9	Joseph Kanyangalazi	Principal Land Resources Conservation Officer
10	Gift Nangwale	Environmental Affairs / Environmental and Social Safeguards Officer
11	Dyce Nkhoma	DoDMA / Chief Relief and Rehabilitation Officer
12	Jester Nyirenda	National Parks and Wildlife / Assistant Director
13	Lusungu Sinda	Irrigation / Irrigation Engineer
14	Rex Kanjedza	Water Resources / Principal Water Resources Development Officer
15	Stanley Chabvunguma	Climate Change and Meteorological Services
16	Sydney Kamtukule	Water Resources / Principal Hydrologist
17	Toney Nyasulu	Water Resources/ Senior Hydrogeologist
18	William Mgoola	National Parks and Wildlife / Assistant Director
19	Sylvester Jere	SRBMP / Procurement Specialist
20	Innocent Thindwa	SRBMP / M&E Specialist
21	Chisomo Nayeja	SRBMP / Financial Management Specialist
22	Horace Nyaka	SRBMP/ Communications Specialist
<b>Shire River Basin Agency</b>		
23	Geoff Chavula	Director, SRBA
24	Peter Ngoma	SRBA
25	Vincent Msadala	SRBA
26	Pachalo Kuntembwe	SRBA

#### SRBMP-2 - Consultations

#	Name	Department / Agency	Designation
1	Mr. J.J. Mussa	Department of Land Resources and Conservation (DoLRC), MAIWD	Director
2	Ms. Getrude Kambauwa	DoLRC, MAIWD	Deputy Director (Environmental Conservation and Education)
3	Mr. James L. Banda	DoLRC, MAIWD	Deputy Director (Training)
4	Mr. Gilbert Kupunda	DoLRC, MAIWD	Deputy Director (Land Resource Surveys and Evaluation)

<sup>16</sup> This list is not exhaustive

5	Mr. Joseph Kanyangalazi	DoLRC, MAIWD	Chief Land Resources Conservation Officer
6	Mr. Lukes Kalilombe	Economic Planning & Development (EP&D), MoFEPD	Deputy Director
7	Mr. Macmillan Bonomali	Economic Planning & Development (EP&D), MoFEPD	
8	Mr. A.R. Abubaker	FAO	
9	Mr. Moses Jemitale	WFP	
10	Naomi Botolo	GIZ / EP&D	
11	Dr. Daulos D.C. Mauambeta	MCA-Malawi	Environment & Social Performance Director
12	Ms. Dalitso Kafuwa	MCA-Malawi	Environment & Natural Resources Manager
13	Mr. Julius Brian Chisi	Dept. of Surveys	Acting Surveyor General
14	Mrs. Alice Gwedeza	Dept. of Surveys	Chief Cartographer
15	Mrs. Taonga Mbale-Luka	Environmental Affairs Department	Director
16	Mr. Benon Yasini	Environmental Affairs Department	Deputy Director
17	Ms. Mphatso Kalembe	Environmental Affairs Department	Principal Environmental Officer
18	Mr. Gift Nangwale	Environmental Affairs Department	Environmental Inspector
19	Dr. Chilima	Dept. of Forestry	Director
20	Mr. Thomas Mankhambela	Dept. of Forestry	Deputy Director (Forest Communication & Advisory Services)
21	Mr. Francis Chilimampungu	Dept. of Forestry	Deputy Director (Planning)
22	Mr. Titus Zulu	Dept. of Forestry	Assistant Director
23	Mrs. Nkhoswe	Dept. of Forestry	Forestry Officer
24	Mrs. Lone Chirambo	Dept. of Forestry	Forestry Officer
25	Mr. B.K. Kumchedwa	DoNPW	Director
26	Mr. William Mgoola	DoNPW	Assistant Director (Research and Development)
27	Mr. Jester Nyirenda	DoNPW	Assistant Director (Education & Extension)
28	Mr. Geoffrey Mamba	Dept. of Irrigation	Director
29	Mr. Chawanangwa Jana	Dept. of Irrigation	Deputy Director (Planning, Design & Construction)
30	Mr. Prince Mleta	Dept. of Water Resources	Acting Director
31	Mr. Peter Kadewere	Dept. of Water Resources	Chief Water Resources Devp. Officer
32	Mr. MacPherson Nkhata	Dept. of Groundwater	Chief Groundwater Research Officer
33	Mr. Owen Phiri	Dept. of Water Quality	Principal Water Chemist
34	Mr. Francis Sakala	Ministry of Local Government & Rural Development	Chief Rural Development Officer