REPUBLIC OF MALAWI
SHIRE RIVER BASIN MANAGEMENT PROGRAM (PHASE 1) PROJECT

IMPLEMENTATION SUPPORT MISSION
January 25-February 6, 2017

Aide Memoire

I. INTRODUCTION AND ACKNOWLEDGEMENTS

1. A World Bank team[1] visited Malawi during the period January 25–February 6, 2017 to review implementation of the Shire River Basin Management Program (Phase 1) Project (SRBMP). The overall objective of the mission was to review implementation progress since the previous mission (July 2016) and to support the Shire Basin Program Multi-Sector Technical Team (TT) in accelerating key project activities. This aide memoire summarizes the main mission findings and recommendations, and reflects the comments made at a wrap-up meeting held on February 6, 2017 at the Ministry of Agriculture, Irrigation and Water Development (MAIWD) and chaired by the Acting Chief Director, Mr. Dokani Ngwira. The mission wishes to thank the Government of Republic of Malawi, and officials from MAIWD; members of the Shire Basin Program Technical Committee (PTC) and Multi-Sector Technical Team (TT) for their excellent collaboration and the courtesies extended. The full list of key persons met is attached in Annex 6. 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 of February 3, 2017)**

Project Data	**Project Performance Ratings**			
Board Approval: June 14, 2012	*Summary Ratings*:	*Last*	*Now*	*Trend*
Effectiveness Date: September 07, 2012	Achievement of PDO	MS	MS	◄►
Current Closing Date: January 31, 2018	Implementation Progress	MS	MU	▼
	Total IDA Credit/Grants and GEF: US$131.58 million			
	Amount Disbursed: US$72 million			
	% Disbursed: 55 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 is on track to achieve most of its objectives[2] by the current closing date.** About three quarters of the project results indicators are either achieved or are assessed as likely to be achieved within

[1]The mission comprised: Josses Mugabi (Task Team Leader); Odete Muximpua (Water Resources Engineer); Grant Milne (Senior Natural Resources Management Specialist); Francis Nkoka (Senior Disaster Risk Management Specialist); Lucy Hancock (Consultant – Meteorological Services); Chikondi Clara Nsusa-Chilipa (Civil Engineer); Ross Hughes (Senior Natural Resources Management Specialist); Time Fatch (Senior Agricultural Economist); Boyenge Dieng (Senior Social Development Specialist); Trust Chimaliro (Financial Management Specialist); Steven Mhone (Senior Procurement Specialist); and Tamara Mwafongo (Team Assistant)

[2] Assessment of results is based on the revised result framework agreed during the October 2015 mid-term review. The changes will be formalized through a Level 2 restructuring planned for Q3 of FY17

the remaining project period (see Annex 1 for details). At the outcome level, a total of 372,700 people (compared to an end-of-project target of 250,000) are directly benefiting from the project's interventions related to land and water management, flood risk mitigation, as well as ecological enhancement activities such as forest co-management, forest-based enterprises and various income-generating activities designed to mitigate human impacts on protected areas in the Shire basin. The average Management Effectiveness score (METT score) for the six targeted protected areas and forest reserves stands at 53 against a target score of 65. The score is expected to increase with the completion of various management plans that are currently at an advanced stage of preparation. A draft Shire Basin Plan has been developed through a well-structured stakeholder participation process supported by state-of-the art planning decision-support tools. The draft plan is currently undergoing final review and consultations, and is expected to be finalized by June 30, 2017 – well ahead of schedule. Finally, an improved operational decision support tool for Kamuzu barrage has been developed and is currently being used to control water releases.

4. **However, rehabilitation of Kamuzu barrage – the most important infrastructure investment under the project –will not be completed within the current project period, and will thus require an extension to the closing date.** Both civil and mechanical works for Phase 1 have been completed. All six gates under Phase 1 have been installed, and are expected to be commissioned during the period June-August 2017. Phase 2 works (involving upgrade of the remaining eight gates and completion of the bridge) have been initiated. The civil works contractor has started preparing coffer dams, and fabrication of the eight gates is underway in India. It is expected that the mechanical contractor will be given access to install the gates by September 2017. All Phase 2 works are now expected to be completed by July 2018 – which is about nine months behind the original contract schedule, and six months beyond the current project closing date. Allowing for the possibility of further delays as well as time to perform various commissioning tests, the mission assesses that an extension of 12 months to the current project closing date (i.e. up to January 31, 2019) would be sufficient to allow for full completion and commissioning of the upgraded Kamuzu barrage.

5. **Planning and knowledge activities have been completed – laying the foundation for future investments in the Shire basin.** A draft Shire Basin Plan has been completed. A comprehensive set of knowledge products (including a spatial knowledge base, state of the basin report and various sectoral and thematic reports, water quality database etc.) have been developed. State-of-the art planning and decision-support tools have been developed and used in preparing the Basin plan. Collaboration and coordination between different government agencies involved in Shire basin management continues to improve, and various training activities have been undertaken to further enhance capacity for coordinated basin planning and management. Extensive studies and consultations on future institutional arrangements for basin management have been completed, as well as studies on existing water resources information systems and gaps.

6. A comprehensive set of catchment management guidelines have been prepared and launched at the national level in October 2016, marking a significant project achievement, but additional work is needed on dissemination and raising awareness. Similarly, a set of national guidelines for community-based flood risk management have been developed and endorsed at the national level and are currently in use. Further, various plans (at 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. Further, area interventions plans and village flood action plans for selected flood prone areas in the lower Shire have been completed, covering 6 Traditional Areas and 52 Group Villages (32 of which have riverine flood problems). Studies on the hydrology, ecology and resource-use characteristics of the Elephant Marshes have been completed. The findings of these studies are currently informing the preparation of a management plan for Elephant marshes, as well as identification of community-based natural resource management interventions to enhance the value of the marshes for environmental services, particularly flood attenuation, livelihoods and biodiversity. Further, the results of

hydro-morphological study and modelling will be of particular relevance to the ongoing Environmental Impact Assessment (EIA) studies for the proposed Shire Valley Irrigation Project (SVIP). Finally, GEF-supported activities on integration of biodiversity and ecosystems information into the Basin plan have proceeded well and are on track for completion. Specific analytical work on nature-based tourism development and protected areas financing are also on track and initial findings of these studies were reviewed and discussed by the mission. Maps of forests and other semi-natural ecosystems have been prepared and are now available to GoM to assist in overall integrated watershed resource management at the basin level.

7. **However, there is still no viable institutional mechanism to absorb all these plans, knowledge and tools, and to facilitate multi-sectoral development and coordination in the Shire Basin.** Progress on operationalization of the National Water Resources Authority (NWRA)–a key sector institution established under the Water Resources Act 2013– remains slow. During the July 2016 mission, MAIWD committed to an action plan to operationalize NWRA before the end of 2016 by finalizing all necessary regulations and appointing the Governing Board. However, to date none of the milestones agreed then have been achieved. The necessary regulations remain in draft form, and are yet to be approved by the Justice ministry. Appointment of the Governing Board is still pending approval from the Department of Statutory Bodies. Without the Governing Board, recruitment of the Executive Director could not be completed and the Authority's operating accounts could not be opened. These delays continue to create considerable policy uncertainty and delayed decision-making in the overall management of water resources in the Shire basin, and in the country as a whole. The mission strongly urges MAIWD and the Department Statutory Bodies to fast-track the remaining steps and ensure both the Governing Board and Executive Director are appointed no later than **June 30, 2017.**

8. **Targeted catchments are undergoing rehabilitation and the results so far are promising**. All the targeted 305 Village Level Action Plans (VLAPs) have been completed and are under implementation by the communities. About half (49 percent) of households within targeted sub-catchments are engaged in sustainable land and water management (SLW) activities, compared to an end-of-project target of 75 percent. The total area under SLW treatments has increased from 4,710 ha in July 2016 to 13,100 ha, reaching 54 percent of the end of project target of 24,460 ha. Notable successes include 1,831 community nurseries established, above the project target of 1,734 nurseries; with a good supply of seedlings now available, riverbank protection has now completed 992 km of targeted rivers/streams, well above the 248 km project target. On the other hand, forest rehabilitation is now at 4,306 ha, or only 43 percent of the end of project target. Given the rapid progress in VLAP plan completion and approval, targets for all soil and water conservation works will likely be achieved by project closure. The District Councils (DCs) are now providing technical staff and extension officers in support of VLAP implementation, but further effort is required with some Councils to ensure this collaboration continues to grow. Detail review of catchment management activities is provided in Annex 2.

9. **The project's support to alternative rural livelihoods is also gaining momentum.** A total of 185 Common Interest Groups (CIGs)[3] have been formed and trained against an end of project target of 306 CIGs. The remaining CIGs will be selected by March 31, 2017 and training initiated. Disbursement of start-up grants to trained CIGs is expected to commence soon. In addition, 183 communities with approved VLAPs have received the first tranche of the Community Environment Conservation Fund (CECF) grants that give a financial incentive to engage in SLW activities. With respect to rural infrastructure, contracts for markets were awarded to the successful bidders and works for the markets have started. Contracts have been awarded for bridges, culverts, and road upgrading; and construction work is expected to begin after the rainy season. Bids have been evaluated for small-scale irrigation schemes, and contracts are expected to be awarded by

[3] *Common Interest Group* refers to a group of individuals cooperating together around a common livelihood enhancement activity

end of March 2017, subject to availability of funds in the project. Bid evaluation results show that the total cost of irrigation schemes is likely to be higher than the project budget allocation by about US$1.2 million. Details of all rural livelihood infrastructure is provided in Annex 3.

10. Further, a Farmer Field School (FFS) program has been initiated to promote conservation agriculture techniques and improved crop management practices. The project recruited a consultant (Expert in FFS) to train MAIWD officials and FFS facilitators, mainly lead farmers, selected from different extension planning areas. The training was intended to empower farmers with basic FFS knowledge and skills before the beginning of the rainy season. The training brought together 25 lead farmers (6 females and 19 males) and 7 (2 females and 5 males) Agriculture Extension Development Officers from 5 districts involved in the project area. In addition, 4 members of staff (one from each Catchment) underwent a three months training for Master Trainers in FFS at Lisasadzi RTC in Kasungu district. Following the trainings, 31 FFS have been established across all catchments with a participation of 869 farmers of which 638 are female and 231 are males. Taken together, these livelihood enhancing activities (i.e. grants to CIGs, CECF, rural infrastructure, and FFS) are expected to help mitigate catchment degradation by decreasing dependence on low performance agriculture and unsustainable use of forest products as sources of income.

11. **Ecological management activities funded under the Global Environmental Facility (GEF) have progressed well since the last mission**. All major investments are on track to be completed by the end of the project period. The mission noted visible impacts and strong ownership of the forest co-management support in the five forest reserves supported by the project. Protected areas interventions have also proceeded well with some particular successes noted since the last mission, most notably (i) the interdiction by Park authorities at Lengwe National Park of a major illegal logging operation in the forests of 'New Lengwe' that provide key watershed protection to the flood-prone lower Shire floodplains; (ii) successful installation of solar water pumping technology at nine water holes in Old Lengwe which has generated immediate benefits for wildlife at this site; (iii) successful implementation of community support packages to Civil Society Organizations around Lengwe and Liwonde National Parks, implementation of the latter now supported by Africa Parks Network who now hold concession management responsibility for Liwonde National Park and (iv) good progress and strong local ownership of forest co-management activities at the six sites supported by the project. A detailed summary of progress on ecological management activities is provided in Annex 2.

12. **Community-based flood management interventions are now progressing reasonably well leading to reduced risk of flooding in some of the targeted communities.** A total of 6 Area Intervention Plans (AIPs) covering 6 TAs and 52 Group Villages (GVs) have been completed and endorsed by the targeted districts in the lower Shire. The AIPs have identified a total of 34 different flood management interventions (dykes, flood proof roads, river bank strengthening, evacuation centres etc) estimated at a cost of US$12.5 million. Together, the AIPs cover a population of approximately 187,136 people[4], and provide a solid basis for future investments in flood risk mitigation in the lower Shire. Detailed designs are underway for 16 priority interventions, with 7 designs already completed and tendered. In addition, feasibility studies are underway for another set of five interventions identified in the AIPs. At the community level, a total of 22 Village Flood Action Plans (VFAPs) have been prepared – 12 in Chikwawa and 10 in Nsanje District, covering 29 GVs. The VFAPs have identified about 32 labor-intensive works (i.e. sandbagging, tree planting, cleaning culverts, and opening up storm water channels) as well as various flood warning equipment in 18 GVs across all the 6 TAs covered by the AIPs. Various equipment for the labor-intensive works (i.e. sandbags, wheel barrows, picks, hoes and spades etc) is at an advanced stage of procurement with expected delivery in April 2017. The next step for the TT is to figure out how best to organize the labor-intensive works, taking into account experiences from the ongoing Malawi Flood Emergency Recovery Project (MFERP) and other Input for Assets Programs operating in the lower Shire. Similarly, procurement of flood warning equipment (i.e. mega phones, solar inverters, smart phones, solar lights and bicycles) is expected to

[4] For comparison, the total population displaced during the January 2015 floods is 147,787 people.

be completed in April 2017. Training of Civil Protection Committees (CPCs) and NGOs in flood risk management has been completed, through seven two-day courses, with a total of 205 participants (29% of them female). The mission recommended that additional trainings be organized targeting other district officials, MAIWD and DoDMA staff, and that a Training of Trainers (ToT) approach be explored to ensure that refresher trainings can be delivered in future without the need for a consultant.

13. Progress on infrastructure has been slow in the past, but is expected to pick up speed with the completion of detailed designs for some of the priority works. So far, only 7 GVs have been covered with flood management infrastructure (compared to an end-of project target of 40 GVs,) and only 865 households have been reclassified to lower flood risk (compared to a target of 10,000 households). The next batch of flood infrastructure works, consisting of 7 interventions, is at an advanced stages of procurement – with construction expected to be completed by July 2017. This batch will cover an additional 8 GVs, and is expected to result in an additional 5,000 households being reclassified to lower flood risk (see Annex 4 for details). The mission noted that due to the delays encountered during the planning stage, the current end-of-project targets – in terms of number of Group Villages (GVs) covered with improved flood management infrastructure and number of households reclassified to lower flood risk– are unlikely to be achieved within the remaining project period. Moreover, the cost of priority of works packages has turned out to be much higher than the project budget allocation. The project targets will therefore need to be scaled down to about 15 GVs and 5,865 households. The mission further recommended that the TT explores the possibility of transferring some of the already designed infrastructure packages to the ongoing Malawi Flood Emergency Recovery Project (MFERP), whose scope includes among others, flood management infrastructure in the lower Shire basin.

14. **Installation of hydromet monitoring stations continues to experience delays.** Out of the 25 hydrological stations planned under Batch 1, only 16 stations have been installed so far (see details in Annex 5). These stations are already operating and sending data in near real-time to base stations installed at Kamuzu barrage office in Liwonde; the Department of Climate Change and Meteorological Services (DCCMS) office in Blantyre; and the Department of Water Resources (DWR) office in Lilongwe. Installation and upgrade of meteorological stations on the other hand is running significantly behind schedule. Of the 75 meteorological stations planned under Batch 1, only 1 station has been completed. The delays are mainly due to lack of coordination between the contractor and the client. The mission recommended that both the TT and DCCMS work closely with the contractor to improve coordination and ensure full integration of DCCMS staff in the supervision of equipment delivery and installation.

15. Technical feasibility studies, draft bidding documents and specifications for the weather radar have been prepared. DCCMS has selected solid-state C band dual-polarization Doppler radar, which is a relatively new technology with low maintenance costs and good operational characteristics. Because this technology is relatively new, the pool of capable vendors is rather small. The mission advised DCCMS to further simplify bidding documents so as to encourage as many qualified vendors as possible. For instance, land availability issues should be finalized before going to tender. Similarly, arrangements with the Malawi Communications Regulatory Authority (MACRA) to avoid interference between C band radar and the nearby mobile telecom tower should be resolved before going to tender; as well as issues of availability of electric power on proposed site.

16. Overall, progress on the hydromet component remains slow, and will thus require increased management attention going forward. Moreover, delays in installation of the hydromet stations and collection of requisite hydrological data has affected the further development of flood forecasting models and Kamuzu barrage operational decision support model (KABOM), to the extent that the planned performance testing of these models with real time data is no longer possible in the current (2016/17) rainy season.

17. **Of particular concern is the fact that DWR does not have a sound management plan for the network of hydrological monitoring stations currently under installation.** There are already reports of vandalism of the installed equipment (particularly solar panels) and the department lacks resources for network operation and maintenance. Modern hydrometric equipment requires routine checking and maintenance to ensure continued operation and to minimize the risk of vandalism. In addition, the stations need to be visited regularly to develop, confirm and where necessary improve stage-discharge relationships (rating curves); undertake quality control and management of the data. The mission noted that DWR was totally unprepared to perform these functions due to various factors, including lack of human resources (high rate of staff vacancies) and inadequate recurrent budgets to finance field operations (i.e. provision of vehicles, fuel and other support requirements as required).

18. Further, attempts to develop an information management system (IMS) to manage raw data streams from the hydromet network are yet to yield any results. A design of the IMS was done by the hydromet consultant (Atkins) in February 2016 and was put to tender in August 2016. However, no bidders responded to the tender. Moreover, there remains some uncertainty on how the IMS will interface with existing systems (e.g. telemetry base stations provided by SIAP+Micros–the hydromet equipment supplier – as well as existing databases such as HYDSTRA and CLIMSOFT). Most importantly, strengthening capacity for hydromet information management requires more than an information system/software. DWR will need to urgently figure out how best to organize and motivate the available human resources at both regional and district level to provide high quality hydromet data services. Without a sound institutional structure, as well as trained and motivated field teams, support tools (such as IMS) will likely not work.

19. The above issues threaten to derail the entire effort to improve hydrological information and operational decision support as envisaged in the project. The mission therefore recommends the following: (i) a review of the design, specifications and procurement packaging of the IMS to maximize bidder participation; (ii) review of overall institutional capacity requirements for managing hydrometric data and identify viable options for addressing existing constraints in the interim before NWRA becomes fully operational; (iii) explore alternative options for data management using existing systems, with some adjustments to allow data transfer between systems, including data transfer to the decision support system for early flood warning; and (iii) suspend procurement of the second batch of hydrological stations until DWR comes up with a sound management plan for the network of hydrological stations already installed.

20. **Disbursements are slightly below FY2016/17 projections, but commitments have increased significantly.** Cumulative disbursement to date stand at US$72 million representing about 55 percent of original funding and 60 percent of available resources[5]. Total expenditure and commitments now stand at US$110 million, representing about 90 percent of the total available IDA and GEF resources. Disbursements for FY2016/17 are now projected at about US$19.5 million[6] (see Table 1), which would bring the total cumulative disbursements to US$91.5 million (76 percent of available funding) by June 30, 2017.

Table 1 – FY2016/17 – Disbursements (US$ millions)[7]

Q1		Q2		Q3		Q4		FY2016/17 (Total)	
Proj	Actual	Proj	Actual	Proj (revised)	Actual	Proj (revised)	Actual	Proj (revised)	Actual
5.0	4.73	10	4.85	5.0		5.0		19.5	

21. The mission was pleased with the progress made in implementing the "Pompo-Pompo" Action Plan and committing the large balance of uncommitted funds that was noted during that previous mission. There

[5] Original project funding (IDA+GEF) was USD131.58 million, and this has now reduced to about USD$122 million due USD-XDR exchange rate fluctuations

[6] An earlier projection (made in July 2016) estimated that disbursements would reach US$35 million by June 30, 2017

[7] These revised projections are based on a medium performance scenario (base case)

is now uncommitted balance of only US$10.6 million (8 percent of the total IDA and GEF). The TT is urged to cautiously allocate the remaining amount taking into account possible further exchange losses, contingencies on existing contracts, and additional project management costs during the proposed 12 months' extension (primarily construction supervision costs for the Kamuzu barrage). In allocating the remaining funds, priority should be given to activities that contribute directly to the achievement of the project development objectives.

22. **Overall, project implementation has picked up pace over the last 6 months and there appears to be a heightened sense of urgency within the TT to get things done**. Project expenditures (a proxy indicator of the speed of implementation) have increased from 38 percent in July 2016 to 49 percent of available funding, suggesting an increased utilization rate. The catchment management component still shows lower expenditure levels compared to the other components, but this is expected to change with the signing of works contracts for various catchment infrastructure. The mission urged the TT to pay close attention to implementation schedules for the small infrastructure packages; strengthening supervision; anticipating problems and being proactive in taking timely actions. Most importantly, the team needs to institutionalize a regular review of progress on all contracts against agreed milestones and take corrective actions where necessary. The mission noted that project M&E was generally working very well – both for input and output monitoring. The first set of evaluation surveys are programmed to start June-July 2017, and these will focus on assessing the effectiveness of catchment interventions – looking at factors such as the survival rate of the trees planted; adoption rate of promoted soil and water conservation measures by farmers; effectiveness of river embankment protection measures, amongst others. Finally, consistent with the recommendations of the July 2016 mission, the TT developed and has been using an "Actions Monitoring" dashboard that has proved valuable in tracking implementation of actions and decisions taken by the TT.

23. **The mission however noted serious gaps in the monitoring of safeguards implementation**. The mission noted that despite efforts by the Environmental Specialist assigned from the Environmental Affairs Department (EAD), the absence of dedicated Environmental and Social Safeguards Specialists within the TT is increasingly causing lapses in management of safeguards issues. In spite of the magnitude and complexity of various ongoing works (Kamuzu Barrage and construction of the Shire River Basin Agency (SRBA) office) and upcoming interventions (markets, rural road upgrades, small scale irrigation schemes, and flood management infrastructure), both environmental and social safeguard issues are managed by a single Environmental Specialist who works part-time on the Project. This has led to gaps in the monitoring of safeguards throughout sub-project cycles, which in turn has translated into instances of serious non-compliance and important social issues receiving negligible to no attention. For instance, with respect to the ongoing construction of the SRBA office building in Blantyre, the mission noted that a number of important safeguards related steps have been overlooked during the planning and implementation of this sub-project. Most notably, the contractor has mobilized and civil works have been initiated without relevant permits and clearances from both the Environmental Affairs Department (EAD) and the World Bank being secured. In addition, relevant environmental and social mitigation measures from the Environmental and Social Management Plan (ESMP) have not been included in the works contractor.

24. Further, ESMPs for various small-scale infrastructure (markets, rural road upgrades, small scale irrigation schemes, dykes) have been drafted and reviewed by the Bank but no particular attention has been paid to issues related to resettlement. For instance, economic losses and land acquisition for market construction have not been duly assessed and documented. Similarly, individuals' properties (land, crops, trees etc) to be impacted during dykes' construction have not been assessed. Given the seriousness of these lapses in safeguards implementation, the mission recommends the following for immediate implementation: (i) suspend all civils works at the SRBA offices in Blantyre until both EAD and the World Bank have retroactively cleared the relevant safeguard documents – ESIA and ESMP; (ii) carry out an assessment of land and livelihood impacts for upcoming (or retroactive for ongoing) catchment and flood management infrastructure and prepare relevant documentation–such as voluntary land donation forms and other

agreements reached with the community–that can be appended to the draft ESMPs; and (iii) recruit or designate a dedicated social safeguards specialist to follow up and manage all the social issues listed above.

IV. KEY AGREEMENTS AND DECISIONS

25. The key agreements and decisions reached with the TT and MAIWD during the mission are summarized in the following paragraphs. Key actions agreed are summarized in Table 2.

26. **Project performance ratings**. Overall implementation progress is downgraded to *moderately unsatisfactory*, due to persistent delays on some of the project activities, especially Kamuzu barrage and hydromet sub-components; lapses in safeguards compliance and continued slow progress on the institutional agenda. The PDO rating however is maintained at *moderately satisfactory* due to the fact that about three quarters of the project results indicators are either achieved or are assessed as likely to be achieved within the remaining project period.

27. **The project will undergo a level 2 restructuring** in order to (i) formalize the changes to the result framework as agreed during the October 2015 mid-term review; (ii) extend the project closing date by 12 months to January 31, 2019 to allow for completion of the Kamuzu barrage rehabilitation works. The restructuring is subject to Bank management approval, and will be processed no later than **June 30, 2017.**

28. **MAIWD will fast-track the process of operationalizing NWRA**. MoAIWD will liaise with the Department of Statutory Bodies to fast-track the process of operationalizing NWRA, starting with the appointment of the Governing Board and recruitment of the Executive Director by **June 30, 2017**.

29. **The TT will suspend procurement of the second batch of hydromet monitoring equipment until DWR comes up with a sound management plan for the network of hydrological monitoring stations currently being installed**. The management plan should address not only the immediate requirements of securing the stations to minimize the risk of vandalism; it must also include requirements for routine checking and maintenance; developing, confirming and improving stage-discharge relationships; and undertaking quality control and management of the data. Preparation, implementation and monitoring of the plan will be spearheaded by the Deputy Director (Surface Water Division). Monitoring will be based on key performance indicators (KPIs). The KPIs may include, but not necessarily limited to the following: (i) site visits and inspections; (ii) log of equipment performance – number of site failures; (iii) log of equipment down time and response; and (iv) daily delivery of raw, quality-assured hydrological data to HYDSTRA.

30. **Given current budget constraints on the project, MAIWD will explore the possibility of transferring some of the flood management infrastructure to the Malawi Flood Emergency Recovery Project**. Similarly, some of the flood management infrastructure that is already designed could be financed under the Malawi Flood Emergency Recovery Project. This arrangement would help to strengthen the linkages between the two projects and enable more efficient use of resources for the benefit of the target population in the Shire basin.

31. **Finally, the TT will suspend all civils works at the SRBA offices in Blantyre until both EAD and the Bank have retroactively cleared the relevant safeguard documents – ESIA and ESMP**. In addition, the TT will carry out an assessment of land and livelihood impacts for upcoming (or retroactive for ongoing) catchment and flood management infrastructure and prepare relevant documentation – such as voluntary land donation forms and other agreements reached with the community – to be appended to the draft ESMPs.

32. **The next implementation support mission is tentatively scheduled for July 2017**. In the interim, the Bank will continue its close monitoring and technical discussions with the TT to help ensure that the agreed actions detailed in this Aide Memoire are implemented.

Table 2 – Key Agreed Actions

#	Action	Target Date	Responsibility	Status
1	Finalize and publish the Shire Basin Plan	June 30, 2017	TT (Component A1 Lead)	In progress
2	Appoint NWRA Governing Board	April 28, 2017	DWR	In progress
3	Recruit NWRA Executive Director	June 30, 2017	DWR	
4	Complete installation of the first batch of hydromet and biophysical monitoring stations	April 30, 2017	TT (Component A3 Lead),	In progress
5	Prepare management plan for hydrological stations and submit for Bank review	March 15, 2017	DWR	Done
6	Implement management plan for hydrological stations; collect and manage hydrological data	Continuous, starting March 15, 2017	DWR	Plan under Bank review
7	Install Operational Decision Support System (ODSS) server at DWR and DCCMS	April 30, 2017	TT (Component A3 Lead)	In progress
8	Design and install data transfer software between new telemetry stations being installed and the ODSS server	April 15, 2017	TT (Component A3 Lead)	In progress
9	Complete performance evaluation of the ODSS	May 30, 2017	TT (Component A3 Lead)	In progress
10	Complete land acquisition for proposed weather radar and confirm arrangements with MACRA regarding potential interference between C band radar and the nearby mobile telecom tower	September 30, 2017	DCCMS	In progress
11	Complete first set of evaluation surveys to assess the effectiveness of catchment interventions	July 30, 2017	TT and M&E consultant	Not yet starred
12	Carry out an assessment of land and livelihood impacts for catchment and flood management infrastructure and update safeguards documentation	May 30, 2017	TT (Component B3 Lead and Component C2 Lead)	In progress
13	Commissioning of Phase 1 of Kamuzu barrage rehabilitation works	August 31, 2017	TT (Component C1 lead)	In progress
14	Complete Phase 2 civil works for Kamuzu barrage	September 30, 2017	TT (Component C1 lead)	In progress
15	Complete bid evaluation and sign works contracts for Batch 1 flood management infrastructure	March 31, 2017	TT (Component C2 Lead)	Done
16	ESIA/ESMP for SRBA office building cleared by both EAD and Bank	April 28, 2017	TT	ESIA cleared by EAD.
17	Recruit or designate a dedicated social safeguards specialist to the TT	June 30, 2017	TT	In progress
18	Complete level 2 restructuring of the project	June 30, 2017	TT and WB	In progress

ANNEX 1 – UPDATED RESULTS FRAMEWORK[1]

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**	**Target Values**			**Actual Achievement January 2017**	**Likelihood of achieving indicator target by project closing date**	
			Y4	**Y5**	**Y6**			
			Aug 15-Jul 16	Aug 16-Jul 17	Aug 17-Feb 18			
PDO Level Results Indicators								
Shire basin plan developed	Yes/No	No	State of Shire basin report	Basin planning DSS developed	Shire basin plan developed	Draft Shire basin plan completed	Indicator is on track to be achieved by the project closing date	+
Average Management Effectiveness Scores for 6 targeted protected areas/forest reserves	METT Score	39	50		65	53	Indicator is on track to be achieved by project closing date	+
Households in target areas re-classified to lower flood risk	Number	0	1,000	5,000	10,000	865	Indictor is off track. Target needs to be revised down	-
Improved operation of the upgraded Kamuzu barrage	Yes/No	No			Operational DSS in use	Operational rules/DSS developed and in use. Phase 1 of barrage upgrading work completed	Indicator is off track. Phase 2 of barrage upgrading works is 9 months behind schedule and will not be completed by project close	-
Direct project beneficiaries, of which female (%)	Number (in 1000) and (%)	0	150 (50%)	200 (50%)	250(50%)	372	Indicator is on track to be achieved by the project closing date.	+

[1] This is the revised result framework agreed during the October 2015 mid-term review, but changes are not yet formalized. The changes will be formalized through a Level 2 restructuring planned later this FY.

	Unit of Measure	Baseline	Target Values			Actual Achievement January 2017	Likelihood of achieving indicator target by project closing date	
			Y4	Y5	Y6			
			Aug 15-Jul 16	Aug 16-Jul 17	Aug 17-Feb 18			
Component A - Shire Basin Planning								
Establishment of a Shire River Basin Institution	Yes/No	No	Established	Operational	Operational	Both SRBA and NWRA still not formally established or operationalized, although there has been some hiring of staff using project funds	Indicator is significantly behind schedule. Unlikely to be achieved by project close	-
Hydromet stations with accessible data in near real time	Number	0	0	20	30	17	Indicator is on track to be achieved by the project closing date	+
A functional geodatabase developed	Yes/No	No	Centralized data repository	Shire basin centralized spatial database	Spatial database is functional	Centralized spatial data repository is available, and uploading of most of the water resources data is on-going.	Indicator is on track to be achieved by the project closing date	+
Average warning time for flood forecast information to reach targeted communities	Hours	No baseline	0	4	12	No data to report. ODSS developed, but not yet tested due to lack of hydromet data	Indicator is on track to be achieved by the project closing date	+

	Unit of Measure	Baseline	Target Values			Actual Achievement January 2017	Likelihood of achieving indicator target by project closing date	
			Y4	Y5	Y6			
			Aug 15-Jul 16	Aug 16-Jul 17	Aug 17-Feb 18			
Component B - Catchment Management								
Proportion of households within targeted sub-catchments engaged in sustainable land and water management	%	15	45	65	75	49	Indicator is slightly behind schedule, but expected to pick up as more VLAPs enter implementation stage	+/-
Number of Village Level Action Plans (VLAPs) approved	Number	0	137	282	305	305	Indicator has been achieved	+
Area under sustainable land and water management in targeted micro-catchments (VLAP areas)	Ha	0	14,460	24,460	24,460	13,100	Indicator is slightly behind schedule, but expected to pick up as more VLAPs enter implementation stage	+/-
Length of riverbank protection undertaken	Km	0	48	148	248	992	Indicator has been achieve (surpassed)	+
Number of Common-Interest Groups (CIGs) established and operational	Number	0	130	279	279	0	186 CIGs established and undergoing training. Indicator is on track to be achieved by project closing date	+
Total value of livelihood investment grants managed by targeted Group Villages (GVs)	Million MK	0	40	120	220	0	No disbursement yet – pending completion of CIG training. Indicator is on track to be achieved by project closing date	+

	Unit of Measure	Baseline	Target Values			Actual Achievement January 2017	Likelihood of achieving indicator target by project closing date	
			Y4	Y5	Y6			
			Aug 15-Jul 16	Aug 16-Jul 17	Aug 17-Feb 18			
Component C - Water Related Infrastructure								
Kamuzu barrage upgraded and fully operational	Yes/No	No		Phase 1 construction completed	Phase 2 construction completed	Phase 1 civil works and mechanical works completed. Pre-commissioning tests under way	Overall construction is nine months behind schedule. Indictor is off track and cannot be achieved by project close	-
Number of GVs with improved community flood management infrastructure	Number	0	4	20	40	7	Indicator is off track. Target needs to be revised down	-
Preparation studies for water-related infrastructure	Number	0	2	3	4	1	Indicator is behind schedule, but likely to improve. Two feasibility studies to be launched soon	-/+
Budgeted management plan established for Elephant Marshes	Yes/No	No	No	Yes	Yes	All analytical studies completed. Management plan under preparation	Indicator is on track to be achieved by project close	+

ANNEX 2 – DETAILED REVIEW OF CATCHMENT AND ECOLOGICAL MANAGEMENT ACTIVITIES

Introduction

1. This Annex provides a more detailed review of the progress on catchment management and GEF-funded ecological management activities, drawing on discussions during the mission and field visits. The mission participated in review meetings in Lilongwe for three days with members of the TT. The mission then traveled to Blantyre where they were joined by the Implementation Service Provider for Catchment Management (ISP-CM) for two days in the field, visiting sites in the Kapichira and Chingale districts, including meetings with the respective District Commissioners and senior District Council (DC) staff. Field visits focused on ongoing market infrastructure development, and a range of soil and water conservation works in communities.

Summary of Progress

2. **Progress against agreed actions**. Good progress has been made by the TT, DCs and ISP-CM to address the agreed actions identified for sub-components B1, B2 and B3 from the previous mission – see Table 1 below. Of the 33 agreed actions, 25 were fully completed to the satisfaction of the Bank; four were in progress and are well on the way to be completed, and four were not started. The four actions not started included two related to communications, and two related to the Farm Field School (FFFS) initiative. These two FFS actions will be completed, but were delayed due to the lag in starting the FFS operation as planned.

3. **Institutional Capacity for Catchment Planning and Monitoring.** By December 30, 2017, all 305 Village Level Action Plans (VLAPs), integrated with procurement plans, had been completed. A total of 238 VLAPs have been approved by District Councils (DCs). The DCs have identified technical staff and extension officers to support VLAP implementation during the next dry season, but further effort is required with some Councils to ensure this collaboration continues to grow. The National Guidelines for Integrated Catchment Management and Rural Infrastructure were formally launched in October, 2017, marking a significant project achievement, but additional actions are needed on dissemination and raising awareness. After some initial delays, the Farm Field School (FFS) initiative was launched with the training of Master Trainers (TM) organized by FAO in Kasungu. At this point, 31 FFSs have been established across all four catchments, anchored around Lead Farmers who were trained. The mission visited sites where maize-related field trials were underway; the work seems to be occurring to a high standard with good documentation.

4. **Rehabilitation of Targeted Catchments**. Community-based land and water conservation activities from approved VLAPs have made good progress over the review period; the area of soil and water conservation treatments increased from approximately 4,500 ha to 13,100 ha, reaching 54 percent of the end of project target of 24,460 ha. Notable successes include 1,831 community nurseries established, above the project target of 1,734 nurseries; with a good supply of seedlings now available, riverbank protection has now completed 992 km of targeted rivers, well above the 248 km project target. On the other hand, forest rehabilitation is now at 4,306 ha, or only 43 percent of the end of project target. Given the rapid progress in VLAP plan completion and approval, targets for all soil and water conservation works will likely be achieved by project closure. In addition, 183 communities with approved VLAPs have received the first tranche of the Community Environment Conservation Fund (CECF) grants that give a financial incentive to engage in SLW activities.

5. **Support Alternative Rural Livelihoods**. A total of 185 Common Interest Groups (CIGs) have been formed and trained by against an end-of-project target of 306 CIGs. The Community Savings and Investment Promotion (COMSIP) agency was supporting training by DC staff to CIGs under contract to the ISP-CM, but this relationship was terminated due to poor performance by some COMSIP trainers and

the general "hands-off" approach being taken. The remaining CIGs will be selected by March 31, 2017 and training initiated by the ISP-CM in collaboration with DCs. Disbursement of start-up grants to trained CIGs will commence in the next few weeks. With small infrastructure, contracts for markets and roads were awarded to the successful bidders; works for the markets have started. Contracts have been awarded for bridges, culverts, and road upgrading; work will begin after the rainy season. With proposed irrigation schemes covering 561 ha, incoming bids indicate a cost overrun of $1.2 million. The TT will need to reduce the scope of the irrigation activities to fit available budget.

Table 1 – Progress against Previous Agreed Critical Actions

Aide-Mémoire Action Point Description	Delivery Date	Progress Made by 31st Dec'16
Print hard copies of the guidelines	August 31, 2016	Done.
Prepare soft copies on memory sticks	August 31, 2016	Done.
Develop awareness products (jingles, posters, press release, panel discussion for TV/radio)	September 30, 2016	Done, including a Panel Discussion that was aired on 16th & 17th Oct'16 on MBC-TV.
Official launch workshop	October 31, 2016	Done. The official launch was done on 19th Oct'16.
Develop one case study of good catchment management practices in each district	December 31, 2016	Not yet concluded. However, the initial case studies have been identified. The Communications Specialist and Catchment management TT leaders are reviewing the list to choose the final list.
Develop a creative brief for a video on success stories in catchment management	December 31, 2016 TT	Not yet done and delayed. This is dependent on delivery of the above action point.
Develop and launch a specific communication campaign on catchment management	Not indicated	Not yet done.
Meeting between TT, five DCs, extension workers, and ISP-CM to discuss requirements and modalities for increased role of DCs in VLAP implementation	August 16, 2016	Done.
Verify list of District field extension officers to support project	August 19, 2016	Done.
Briefing sessions with selected field staff	September 9, 2016	Done.
On the job training for selected field staff for one month	September 12, 2016	Done.
Contract COMSIP for additional livelihood training	September 16, 2016	Done. COMSIP was contracted in Nov'16 and has already concluded training the first group of 185 CIGs.
Reinstate the performance-based allocation to districts for project-related operating costs	August 15, 2016	Done. Additional funding for the Oct-Dec 2016 quarter has been based on results of the previous assessment.
Updated inventory of motorcycles in project districts	August 19, 2016	Done.
Initiate purchase/repair of motorcycles	August 29, 2016	Done.
Transfer of additional operating funds to DCs	September 9, 2016	Done.
Procure additional GPS units	September 30, 2016	Not yet finished. Procurement process still underway.

Complete designs and tender documents for roads and bridges	August 30, 2016	Done.
Complete procurement process and sign works contracts for roads and bridges	November 30, 2016	Partly done. Contracts for rural roads have been signed but the procurement process for rural bridges is at evaluation stage.
Complete procurement process and sign works contracts for market centers	November 30, 2016	Done. The construction of market facilities is currently underway in all 13 market centres.
Mobilize additional engineering support from Department of Irrigation	August 1, 2016	Done.
Finalize design and tender documents for irrigation schemes	August 30, 2016	Done. The works have been tendered.
Complete soil analysis (for irrigation)	October 30, 2016	Done. The analyses results fed into the design work.
Complete procurement process and sign works contracts for irrigation schemes	November 30, 2016	Not yet concluded but underway. The works have been advertised and bids will be opened on 24th Jan'17.
Prepare 18-month work plan to absorb additional funds	August 31, 2016	Done.
Initial demonstrations of energy-efficient stoves in selected VLAPs	December 31,2016	Not yet initiated.
Selection and enrolment of 4 participants in the Training of FFS Master trainers planned for August in Kasungu	July 31, 2016	Done.
Selection and contracting of International FFS Master Trainers for Training of Facilitators (ToF)	August 31,2016	Done, the international FFS Master Trainers helped in facilitating training of local Trainers.
Selection of lead farmers and extension officers to be trained	August 31,2016	Done. The identified Lead Farmers and Field extension workers have already been trained.
Organize 1st ToF	September 30, 2016	Done.
Organize 2nd ToF	October 31, 2016	Not yet done. This has been re-scheduled to mid-2017.
Initiate implementation of the 25/50 FFSs during the 2016-2017 cropping season	November 30, 2016	Done, and initiated.
Evaluation of the first 25/50 FFSs	April 1, 2017	Not yet initiated.

6. **Ecological management activities**. GEF-supported ecological management activities have progressed well since the last mission. The mission noted good impacts and strong ownership of the forest co-management support in the five forest reserves supported by the program. Protected areas interventions have also proceeded well with some particular successes noted since the last mission, most notably (i) the interdiction by Park authorities at Lengwe National Park of a major illegal logging operation in the forests of 'New Lengwe' that provide key watershed protection to the flood-prone lower Shire floodplains; (ii) successful installation of solar water pumping technology at nine water holes in Old Lengwe which has generated immediately-obvious benefits for wildlife at this site; (iii) successful implementation of community support packages to Civil Society Organizations around Lengwe and Liwonde National Parks, implementation of the latter now supported by Africa Parks Network who now hold concession management responsibility for Liwonde National Park; and (iv) good progress and strong local ownership of forest co-management activities at the 6 sites supported with GEF support. .

7. Further, project TA activities that support the integration of biodiversity and ecosystems information into the Basin plan have proceeded well and are on track for completion. Specific analytical work on nature-based tourism development and protected areas financing are also on track and initial findings of these studies were reviewed and discussed by the mission. In addition, TA activities that support wetland planning and management in the Elephant marshes are on track for completion and the results of this work were reviewed by the mission. The results of hydro-morphological work and modelling will be of particular relevance to the ongoing EIA work for the proposed Shire Valley Irrigation Project (SVIP).

8. Based on overall performance since the last mission, and positive results in the completion of previous agreed actions, the implementation rating for sub-components B1, B2, B3 and B4 is *Satisfactory*.

Detailed Status Emerging Issues

B-1: Develop Institutional Capacity for Catchment Planning & Monitoring

9. **Village Level Action Plans (VLAPs).** Up until December 31, 2016, all 305 targeted VLAPs had been completed, based on a collaboration between the ISP-CM and the participating DCs. This result was achieved well before the proposed completion date of August, 2017. In addition, the transcribing of the VLAPs for Upper Lisungwi and Upper Wamkulumadzi catchment areas in the format agreed earlier with the District Councils and all the VLAPs were submitted for approval. The transcribing work for VLAPs for Kapichira and Chingale will be concluded by the end of January, 2017. A total of 238 VLAPs with attached procurement plans, have now been approved by DCs. The remainder will be approved in the next month or two, allowing these communities to engage with soil and water conservation works during the upcoming dry season.

10. **National Catchment Planning Guidelines.** The National Guidelines for Integrated Catchment Management and Rural Infrastructure were officially launched in Kapichira in October 2017. This is a significant achievement for the project and the country. Malawi is one of the few countries in the region with these kinds of national guidelines, which are viewed as a good global practice within the Bank. While the guidelines are now officially released and initial awareness raising completed, further dissemination of the report and awareness raising and training needs to be undertaken. Along this track and subject to budget availability, the mission recommends additional hard copies of the guidelines should be printed and disseminated to stakeholders during further awareness raising and training events. Also, it may be useful to develop smaller brochures and products more suited to communities (in the vernacular language).

B-2: Rehabilitate Targeted Catchments

Community-Based Works

11. **Soil and water conservation works** have made impressive progress from the last mission, taking advantage of the dry season and the fact that good progress had previously been made with completing VLAPs and having them approved by the respective DCs. This allowed for these small scale, community based, physical works to be undertaken as soon as the rainy season ended. Table 1 provides a summary of progress since last mission.

Table 1. Summary of soil and water conservation work progress in B2

Activity	Project Target	Achievement to June, 2016	% Achieved	Achievement to December 2017	% Achieved
Soil and Water Conservation	27,692 ha	4,552 ha	16	14,086 ha	58
River Bank Protection	248 km	54 km	22	948 km	400

Degraded Forest Rehabilitation	10,000 ha	811 ha	4	4,306 ha	43
Community Nurseries	1,734 sites	631 sites	36	1,831	106

12. It is clear that progress has significantly scaled up since the last mission, during the dry season, which is the only time of the year when these field works can take place. River bank protection and community nurseries have already exceeded end-of-project targets, building on earlier no regret interventions undertaken with communities, while more detailed planning was being done, and to help build support by the communities. The table shows that almost 10,000 ha of soil and water conservation works were completed during the last dry season. In the next dry season, it is expected that works equivalent to this figure or more, will be completed. There is a strong likelihood that the end-of-project target of 27,692 ha will be achieved. With rehabilitation of degraded forests, progress this past dry season was impressive and gives the team confidence that the overall end-of-project target will be met.

13. **Institutional arrangements** are in place with communities to facilitate this work. Project Implementation Committees (PICs) are in place in all 34 Group Village Areas (GVAs) and members have been trained in basic financial management and simple procurement. All PICs have active commercial bank accounts. Ongoing support is being provided by the project, particularly in financial management, through the activities of five locally recruited financial management specialists. A total of 207 VLAPs out of 305 have now received funding for small scale field works.

14. **Mission observations of issues and opportunities**. From the field visits, a number of observations can be shared:

a) **Scaling up.** During the last mission, the ISP-CM made a proposal that the implementation of the interventions in the VLAPs should be fast-tracked across all catchment areas, and this was agreed. The ISP-CM further proposed that this would best be achieved by obtaining support from District Council technical and extension staff. To facilitate this approach, the ISP-CM, held meetings with the respective DCs to identify government frontline staff and specific VLAPs where DC field staff would help supervise and oversee implementation of the interventions on a day-to-day basis; albeit with the ISP-CM retaining overall responsibility. Most DCs have responded positively, which should see an improved rate of progress in this sub-component in the coming dry season. The one exception appears to be Ntcheu where there has been a recent rotation of senior DC staff who are not fully familiar with the project. The TT has agreed to meet the DC at its earliest convenience to discuss the project and seek confirmation of future support.

b) **Nurseries.** Nurseries were provided with additional seeds and grass via PICS this past year, but PICs sometimes left the ordering a bit late to ensure timely delivery. Also there was a quality issue with fruit tree seedlings ordered by some PICS. Suggestion for this final year of the current project phase is to do a mass order by the project to a major seed supplier. This would be at the end of the dry season and also include high quality bamboo seedlings. The ISP-CM could explore where to procure suitable quantities for seed and bamboo plants, and the TT would pay the suppliers. It will be important however, as a first step to ensure there are sufficient funds in the project to finance this cost.

c) **Streambank protection.** Last mission, some farmers had expressed reticence to adopt riverbank (or streambank) protection, which involves establishing a 10 meter buffer strip along each side of specified water courses to reduce sedimentation. The project has addressed this issue on lands where farmers object, by planting a narrower row of trees along the river bank.

d) **Work quality.** The mission observed that work quality is generally improving and that communities are proud of the work they have completed. Minor quality issues were seen in various spots and actions identified to address them. For example, it will be important to protect new bamboo plantings from grazing and to ensure the plants are well-watered in the first year, beyond what the rains provide.

Contract Based Works

15. Component B (across B2 and B3) provides investment financing and technical inputs to establish small infrastructure within the catchment, with potential sites identified from the initial catchment and sub-catchment level planning. Following the mid-term review and budget evaluation, these activities now include: market centers, upgrading of roads, bridges and culverts, and small-scale irrigation schemes (mainly upgrading degraded systems). Small, multi-purpose dams and rehabilitating major gullies were dropped for this phase of the project; these can be addressed in a second program phase. Progress with procurement has been good (Table 2) although it is behind schedule. Regardless, it is expected that market centers, roads, bridges and culverts will be completed by project closure. For the irrigation schemes, bids have been opened, and it is hoped that implementation of contracts can begin with the onset of the dry season in the next couple of months. Also with irrigation, the bids are indicating that if all 12 schemes are undertaken, the cost overrun for this activity could be as much as USD1.2 million, which the project does not have to spare from within this component, or other project components. During the mission, it was agreed that the TT will reduce the number of schemes to match the available budget. Further, much work still remains to support Water User Groups and Associations as they develop and gain experience. For the market infrastructure, the mission visited two sites. Work quality appears to be good. The ISP-CM will liaise with contractors to see if at least one male and female "sit down" toilet can be installed in the toilet blocks to allow better access by disabled and elderly market patrons. It was confirmed that the designs already include ramps for wheelchairs into all blocks.

Table 2. Progress with B2 and B3 infrastructure

Contracted Infrastructure	Revised Target from MTR	Progress to Date	Expected Progress by January, 2018
Markets centers	9 centers	Contracts signed in November, 2016 and all works are currently underway.	All nine market centers will be completed by September, 2017
Feeder roads	83.5 km	Contract has been signed and all works will commence after the rainy season.	Work will take five months beginning late March or early April
Bridges and culverts	10 sites	Procurement is at evaluation stage. The evaluation report is ready for submission to IPC's approval.	All bridges will be completed if the work is initiated by April, 2017
Irrigation schemes	12 schemes and 561 ha	Procurement process underway. Bids were opened in January, 2017.	It is unlikely that all schemes will be completed by January 2018. Beyond construction, follow on work with institutions is needed

16. The ISP-CM produced the first drafts of the Environmental and Social Management Plans (ESMPs) for the infrastructure projects (markets, roads, bridges and irrigation schemes) and shared them with the TT. The ESMPs were reviewed by the Environmental Affairs Department and the comments were subsequently sent back to the ISP-CM for revision. The revisions were completed and the final review of these ESMPs are now in progress.

17. One issue brought to the attention of the previous mission was the requirement by the GoM for soil-chemical analysis to be conducted by the ISP-CM for selected irrigation sites. With considerable effort by the ISP-CM and support from the TT, the results of the soil surveys were released and incorporated into the irrigation designs.

18. The mission discussed ongoing supervision of the small scale civil works during the construction phase. Since these are public works, the normal route is for oversight to be provided by the Director of Public Works at the District level. Participation by Directors of Public Works is already taking place with

the construction of market infrastructure. The DC will need to assign specific specialists for the other activities, but this going to require ongoing engagement by the TT and the ISP-CM to ensure this happens. In addition to whatever support might emerge from the DCs, the ISP-CM is considering recruiting engineering interns from within Malawi (engineering graduates who are unemployed and need experience) and also bringing in a small number of junior engineers from Mott MacDonald outside of Malawi who could gain experience with the project through their support at little cost.

19. The Community Environment Conservation Fund (CECF) was established earlier as an incentive for communities to engage with the project. The CECF provides a USD 1,500 grant (in three tranches of USD 500) to each of the participating GVAs as communities demonstrate a commitment to engage around conservation activities. The grant is used as a revolving fund to provide small loans for any purpose, and add onto internal savings and loans money that can help meet short-term needs of villagers. Each tranche is linked to a specific milestone, for example the first tranches was based on completion of the VLAP. The second tranche is based on 50 percent of the soil and water conservation works in the plan being completed and no defaults on any CECF loans to individuals. The third tranche is based on 75 percent of the works being completed and no defaults on loans. In order to ensure proper functioning of the CECF, the ISP-CM has facilitated formation of CECF fund management committees in each (funded) VLAP. Each committee is responsible for the proper management and operation of the fund and for ensuring implementation of the VLAP in their area upon which, receipt of further funding is dependent. By December 31, 2016, all 305 CECFs had been formed. The project has disbursed the initial tranche of the CECF grants to 183 VLAPs, amounting to USD 91,500. The next step will be to finish delivering the first tranche to the remaining VLAPs as they have now completed their plans. For the second tranche, the ISP-CM needs to assess communities in terms of meeting the key criteria of completion of planned works to the agreed percentage and no defaults on small loans by community members. It is expected that the second tranche could be largely distributed by December 2017. The third tranche won't be fully disbursed by the closure of this phase of the project. This concept has been well-received by communities and it has served as a strong motivator to engage with the project.

B-3: Support Alternative Rural Livelihoods

20. This sub-component is designed to support demand and market driven income-generating activities (IGAs) to gradually decrease dependency on low performance agriculture and unsustainable harvesting of forest products as sources of income. Work is progressing fairly well on the livelihood activities. The project is expected to support the development of around 306 Common Interest Groups who will then develop business plans and access grant financing for small business development.

21. The ISP-CM developed a partnership with the Community Savings and Investment Promotion (COMSIP), a local NGO that works with community groups to support internal savings and income schemes, and then use these funds for investments in small enterprise development. COMSIP was contracted to provide advanced training to the final pool of CIGs (in collaboration with DC officers) and prepare CIGs to use funds from the project's Enterprise Start-Up Grant, to launch small-enterprises.

22. The ISP-CM facilitated training in Financial Literacy, Business Management and Group Dynamics for an initial 185 CIGs that passed the two rounds of screening, and met the CIG criteria and passed the Business Feasibility Assessment (BFA). The training was conducted by COMSIP in association with District Community Development Officers and Assistants, and was attended by 2,174 members (comprising 963 males and 1,211 females). COMSIP set up the training process, but the actual training was by the DCs. COMSIP failed to perform as expected and largely took a hands-off approach. In one case, it was alleged that a COMPSIP trainer showed up inebriated and had to be removed. It was agreed that COMSIP was not adding value and they were terminated by the ISP-CM. The ISP-CM will now coordinate the training for the last 120 CIGs. The 185 formed and approved CIGs have developed comprehensive Business Plans, Environmental Standards, a proper constitution and CIG loan agreements. These CIGs will

soon be able to access loans from the enterprise development funds to be set up at GVH level. It is expected that the second lot of about 120 CIGs will be identified by the end of the January to March 2017 quarter and subjected to the requisite training process soon after identification.

23. The establishment and delivery of the enterprise development funds to PICs/GVHs that will finance CIG small business development has been delayed while the ISP-CM formed, assessed and trained CIGs. This is prudent; the Bank agrees with ensuring that groups are in place and well-trained before grant financing is disbursed. This takes more time but ensures better sustainability.

24. Another major achievement was the development of market linkages between selected project-supported communities and key private sector firms. The ISP-CM reached out to Chibuku Products Limited (CPL), which indicated a willingness to work with the CIGs/farmers in certain catchment areas to provide inputs for their commercial beer production. Farmers/CIGs will grow white maize and sorghum and the CPL will provide sorghum seed and assured markets for the final production. Due to limited availability of seed from CPL however, a decision was jointly reached with CPL to roll out the sorghum production in Upper Lisungwi and Upper Wamkulumadzi catchment areas only. A total of 2,050 kg of sorghum seed was distributed to the two catchment areas. Another agreement was reached with Moringa Miracles Limited (MML) to provide Moringa seeds to the farmers and assured markets for the produce (leaves with high medicinal values). MML provided a total of 700 kg seed and this was distributed to the farmers in the catchment areas, with a focus on the drier, less productive agricultural areas like TA Phambala in Upper Lisungwi and Kapichira catchments. Seed was also delivered to a few areas in Chingale and to GVHs Soka, Golden, Chikalema and Kalupsa in Upper Wamkulumadzi. All seed has either been directly planted out to site or raised in tree nurseries alongside the seed provided by the project. As with the tie-up with CPL, the linkage with MML is a very positive development.

25. During the MTR in October 2015, it was proposed to initiate a Farmer Field School (FFS) program to support the adaptation and adoption of different soil, water and land conservation practices by the targeted farming communities in the context of their VLAPs. The plan was to first build the capacity in the respective watersheds/districts to train FFS facilitators. One potential master trainer, selected from the district agricultural office in each watershed/district, would be trained as FFS master trainers, able to organize a FFS program and train FFS facilitators. To train these FFS master trainers, the selected potential FFS master trainers would participate in a joint Training FFS master trainers (TM) together with participants from other projects in Malawi and organized by FAO-Malawi in close coordination with the extension department in the Ministry of Agriculture (MoA). The FFS concept was rolled out during the last quarter of 2016, with the training of FFS Master Trainers (TM) organized by FAO in Kasungu, drawing at least one participant from each one of the four catchments. The training was delayed due to delays in contracting an international FFS Master Trainer to facilitate these trainings. Meanwhile, 31 FFS have been established across the four catchments, anchored around the Lead Farmers that were trained. The second training of facilitators for the FFS concept has been re-scheduled to mid-2017. The mission visited two sites where FFSs were in progress. In both sites, trials were underway to improve yields from maize, based on different spacing regimes. There was good understanding of the trials by participating community members, and good documentation.

26. **Performance incentive for DCs**. Last year, a performance incentive program was developed to reward good performing DCs with additional operating budgets over the regular baseline support. The system was based on a number of agreed performance criteria. The assessments of DC performance are being done on a quarterly basis with the support of M&E officers from line departments. Performance has been improving across the councils over the past six months. The one exception is Ntecheu DC, ostensibly because of the recent turnover of senior staff.

27. The issue of fixing motorcycles in DC offices to provide transport for field staff needs to be accelerated (as opposed to buying new motorcycles). The concept was agreed last mission. The TT met with DCs last year appraise the councils of the initiative and ask for estimates of the numbers of bikes to

be repaired and then for the DCs to send three quotations for repairs. At this point, only Zomba has complied with the quotations. The Internal Procurement Committee (IPC) in the Government of Malawi will have to review the quotations. It will be important for the TT to again visit the remaining DCs and speed this process up to ensure that DC field staff have independent transport at the start of the dry season. The mission was made aware that DCs also need updated information on the project data base, and copies of any reports that have been produced. The TT agreed to take care of this minor action.

28. **Summary of Agreed Actions for sub-components B1, B2 and B3.** Table 3 provides a summary of actions agreed during the mission.

Table 3 – Agreed actions for sub-components B1, B2 and B3

	Action	Delivery Date	Accountable	Comments
	B1			
1	Print additional hard copies of the national catchment management guidelines for distribution to stakeholders	June 30	TT	Ensure that all DCs and extension workers in B2 work have a copy
2	Implement additional awareness events for guidelines	December 31	TT	
	B2			
3	Finalize the roadmap for further demonstrations of energy-efficient stoves in selected VLAPs	March 31		
4	Implement 2nd FFS training	July 31		
5	Subject to budget availability, explore where to procure suitable quantities for seed and bamboo plants in mass	February 28 for bamboo and March 15 for seeds	ISP-CM	First cost requirements to confirm budget availability
6	Complete motorcycle repairs for DCs	April 30	TT and DCs with IPC	TT to motivate DCs to provide 3 quotations and bring paperwork to SRBMP conference
7	Update project information/data base for all CMPs, SCMPs and VLAPs	April 30	TT	Better sustainability when DC staff change
8	Complete assessment of CECF for 2nd round	Ongoing	ISP-CM	2nd round to be disbursed by end of project
	B3			
9	Disperse 1st round of CIG Grants to PICS	March 31	TT, ISP-CM	
10	Establish the remaining 120 CIGs before the end of the project	December 31, 2017	ISP-CM	

Ecological management activities under sub-component B4, A1 and C2

Detailed status review of GEF-supported ecological management activities and agreed actions is provided in Table 4 below.

Table 4 – Detailed status review of ecological management activities

Theme	Status and action needed
Elephant marshes	
Community development	A total of 46 Community groups (CBOs) are established and these CBOs are now forming an Association. These activities have been supported by DNPW with support from project-supported

	The MRAG study has helped identify the livelihood options and an additional stakeholder survey of private and public stakeholders has been undertaken to identify 'no regret' interventions. TT will consider issuing contracts for community fisheries management and conservation agriculture to service providers using community support package funds. These investments have been waiting the completion of the MRAG Synthesis Study for final and agreed guidance. Agriculture and Fisheries have already been identified to implement conservation agriculture and fisheries development, and are currently developing a work plans for these investments (expected to start in March 2017).
Analytical work and management plan	MRAG have now completed field work and submitted draft deliverables. They have also produced a draft Ramsar proposal nomination document. The study found over 20,000 water birds which will qualify the under the terms of the Ramsay convention.
Air boat	Following initial mechanical problems, the airboat is now fully operational and generating revenues from tourism. The official launch was undertaken in July 2016 by the Vice President.
Lengwe NP	
Infrastructure	The Infrastructure contract was finally awarded in September 2016. An Inception Report and Preliminary Designs were submitted and accepted in November 2016, and Final Designs and Tender documents were produced by end of December 2016. The Tender documents for Civil and Works Construction were advertised in January 2017. The project awaits the awarding of the construction contracts and work is expected to start in April 2017 and be completed by December 2017. Significant additional resources were allocated to enable completion of key Park infrastructure (and additional $1.4m).
Roads and trails	The new tractor can be used for mowing and some grading will be needed but this year the rains were not so intense. The quarterly budget requests are being used to fund this.
Park management	Patrol training is ongoing and good progress is being made against illegal hunting and snaring. . Recently (November 2016) the largest in-field law enforcement arrest in the history of DNPW was undertaken in the Extension Area of Lengwe NP when 11 Game Scouts arrested 35 illegal Mopane loggers. One of these was a Portuguese Mozambican and two other of Chinese nationality. An approximate area of 2000 hectares of deforestation equating to upto 1 million trees was attributed to the accused (an estimated GBP30 million). The case is ongoing but the accused are charged with five counts against them.
	The Park has two 4X4 vehicles provided by project in addition to the old Hilux and now functioning in support of patrols and park management. DNPW have invested in a new tractor for the park for mowing tracks. This could be adapted for grading but an attachment is still needed. There is possibility that some of the confiscated equipment as a result of the illegal logging case could come to DNPW. This might be a bulldozer, forklift,

	and several tractors. DNPW need to be pro-active in securing this equipment.
	The Entrance bridge has been temporarily repaired (by Department of Works) and will be completely rebuilt along with an all-weather road through the Infrastructure contract after the current rainy season (April 2017).
Community development	IGAs are designed to improve community relationships through tangible investments that are visible at local level. **Bee keeping, goat keeping, and maize mills** procurement. All Bee-hives have been procured, installed, and the communities have been trained. All of the four maize mills have been housed and the maize mills are now installed and operating well. The maize mill houses will also double-up as offices for the Zone Management Committees. Income generation has now started. The CBO-led goat project, which hopefully will substitute for impala and Nyala poached from the Park, has also been completed and the goats delivered to the communities together with training. A study on extractive uses from the park has been completed to explore options for improving benefit sharing from the Park with local communities. There will also be a small outlet at the Park gate to promote community-based ecotourism. Tisunge is now a community-run institution which will be renovated under the Infrastructure contract.
Communications	TNN have erected the transmission tower this is now working with cell phone coverage and internet now available at the Park with a 30km radius. It is currently 2G but at a recent meeting with the CEO of TNM (24/01/16) he agreed to upgrade to 4G in line with the new infrastructure investments at Lengwe NP. An Automated weather station to be supplied by SRBMP (Atkins) will also be installed at Lengwe NP in 2017.
Ranger radio system and communications.	Base Stations (x 4), hand held radios (x 20), and repeater masts (x 2) were installed in Lengwe NP (HQ and vehicles), Mwabvi (HQ and vehicles), and a base station installed in the AirBoat (Kaombe Ranch) by Pitronics during September/October 2016. This installation was fundamental to the successful arrest of illegal logging operations deep within the Extension Area of Lengwe NP.
Water hole installations – solar panels, protection units, and pumps	This investment was in three stages all of which have now been successfully delivered and installed. In total 11 water hole installations were completed. The first stage was drilling of bore holes, the second stage was the manufacture of the bespoke protection units/towers by Interlock in SA, and the third stage was the installation of these units together with the Grundfos solar pumps. All installations are now complete and are functioning well.
Fencing	Following the investment of 10km of new fencing in 2015 an assessment of the existing fencing was undertaken in early 2016. A contract was awarded to repair 20km of damaged existing fencing which started in October 2016. This was completed by end of December 2016.
Tourism study	This study has started in earnest and a good Inception report was presented in October 2016. The consultancy will cover an eight-month period (finishing in June 2017). The next stage is a Visioning Workshop in February 2017. Good progress so far.
Sustainable financing study.	This consultancy is ongoing and has been delayed by a few months. DNPW anticipates that this work will help Lengwe in particular secure

	longer-term resources to support patrolling. Business plans have been developed for Lengwe and Mwabvi, and we await plans for Mangochi and Elephant Marsh. Timeline for completion is end February.
Liwonde/Mangochi	
Community development	Community investments have now started at Liwonde NP and funds are being channeled through the Community Association under the guidance of APF. Good progress is being made as a result.
Mangochi Forest Reserve	It has been agreed by all Government departments and by the Minster that Mangochi FR will be managed by APN. It is expected that APN will take over the management of this important site before July 2017. This will link the site with Liwonde NP and provide an important core conservation area around which other investments can be made to the benefit of community and conservation. This is a very positive development for GEF 6 development.
Forest co-management	Neno Escarpment Forest Reserve – Developed the Strategic Forest Area Plan (SFAP), and the Local Forest Management Board (LFMB). 5 co-management plans now developed which will be implemented in January/February 2017 onwards. Mangochi Forest Reserve – Developed the Strategic Forest Area Plan (SFAP), and the Local Forest Management Board (LFMB). 17 co-management plans developed which will also be implemented in January/February 2017 onwards. Liwonde Forest Reserve - 22 co management plans were already completed under IFMSLP. Four plans have been developed under SRBMP, and all 26 of these plans are being implemented under SRBMP. Zomba/Malosa Forest Reserve - 10 Plans were already completed under IFMSLP. One plan has been developed under SRBMP, and all 11 Plans being implemented under SRBMP. Matandwe Forest Reserve - All 12 co-management plans developed under IFMSLP are now being implemented under SRBMP.
Basin wide biodiversity	
	LTS consultancy is ongoing. Maps have been re-submitted by LTS. Rapid surveys are completed and good analysis – so good work. Herbarium training is still considered insufficient. Detailed site surveys have now been completed at Mangochi FR, Liwonde FR, Zomba-Malosa FR and Tsamba FR and Neno. A (large) mammal, butterfly, and bird survey was undertaken in areas of Zomba-Malosa, Liwonde NP-Mangochi FR-Liwonde FR. The project awaits the Yr 2 Analytical report containing the results of these surveys and preliminary knowledge products. This consultancy needs to be watched carefully to make sure it sticks to the ToRs deliverables.

ANNEX 3- DETAILS OF LIVELIHOOD INFRASTRUCTURE

KAPICHIRA Catchment

Markets

Details	**Chikuli**
Name of village/TA	TA Kunthembwe
Objective of intervention	To provide better market infrastructure for agricultural produce from production areas in the catchment and promote business activities particularly fron CIGs
Key technical details (e.g. length of road/bridge, type of bridge, ha of irrigated land etc)	Four Market Sheds, Slaughter house, butchery, two double pit latrines and improvement of sanitation and drainage on the existing borehole
Number of beneficiaries (HHs)	5000
Status of procurement /contract signing	Contract Signed; construction in progress
Estimated start date of construction	12th December 2016
Estimated completion/commissioning date	25th September 2107

Roads

Details	**Kamwendo to Mzigala Rd**
Name of village/TA	TA Kunthembwe
Objective of intervention	To provide better access road for traders and the general community to markets and for other social amenities
Key technical details (e.g. length of road/bridge, type of bridge, ha of irrigated land etc)	17km including associated drainage structures
Number of beneficiaries (HHs) - estimate	2500
Status of procurement /contract signing	Contracts Agreed and signed by the Contractor
Estimated start date of construction	13th March 2017
Estimated completion/commissioning date	12th July 2017

Bridges

Details	Mulanga
Name of village/TA	TA Kunthembwe
Objective of intervention	To improve markets and for other social amenities for traders and the general community
Key technical details (e.g. length of bridge, type of bridge)	50m five span concrete deck, 30 tons; maximum height from river bed level 2m, new
Number of beneficiaries (HHs) - estimate	2500
Status of procurement /contract signing	Bid evaluation conducted; IPC yet to meet to approve the evaluation committee recommendations
Estimated start date of construction	1st May 2017
Estimated completion/commissioning date	30th September 2017

UPPER LISUNGWI Catchment

Markets

Details	Doviko	Manjawira	Senzani	Tsangano Turnoff
Name of village/TA	T/A Mpando	T/A Phambala	T/A Phambala	T/A Mpando
Objective of intervention	To provide better market infrastructure for agricultural produce from targeted schemes and upland farming	To provide better market infrastructure for agricultural produce from targeted schemes and upland farming	To provide better market infrastructure for agricultural produce from targeted schemes and upland farming	To provide better market infrastructure for agricultural produce from targeted schemes and upland farming
Key technical details (e.g. length of road/bridge, type of bridge, ha of irrigated land etc)	Four market sheds,one solar-powered borehole,one storage tank and one double pit latrine	Four market sheds,one solar-powered borehole,one storage tank and one double pit latrine	Four market sheds,one solar-powered borehole,one storage tank and one double pit latrine	Four market sheds,one solar-powered borehole,one storage tank and one double pit latrine
Number of beneficiaries (HHs)	400	400	400	400

Status of procurement /contract signing	Contracts signed, contractor on site	Contracts signed, contractor on site	Contracts signed, contractor on site	Contracts signed, contractor on site
Estimated start date of construction	5th December, 2016	5th December, 2016	5th December, 2016	5th December, 2016
Estimated completion/commissioning date	17th September, 2017	17th September, 2017	17th September, 2017	17th September, 2017

Roads

Details	**Chilenga to Phalula Road via Zinjiliza**
Name of village/TA	T/A Mpando and T/A Phambala
Objective of intervention	To provide better access road for irrigation schemes to the markets which are to be upgraded
Key technical details (e.g. length of road/bridge, type of bridge, ha of irrigated land etc)	25km
Number of beneficiaries (HHs)	1000
Status of procurement /contract signing	Contracts awarded, contractors to begin from April, 2017
Estimated start date of construction	1st April, 2017
Estimated completion/commissioning date	31st July, 2017

Bridges

Details	**Lisungwi-Kankhuni Bridge**	**Lisungwi Dip Tank**	**Chanje Bridge**
Name of village/TA	T/A Mpando,Kankhuni village	T/A Mpando , Mafuta village	T/A Phambala , Madigadi village
Objective of intervention	To replace washed away Dwale bridge	To provide all seasons access on either banks of Lisungwi river	To provide all seasons access to Tunthu Irrigation Scheme

Key technical details (e.g. length of road/bridge, type of bridge, ha of irrigated land etc)	2-span, 22m concrete deck bridge	2-span, 22m concrete deck bridge	Replacement of timber deck with concrete
Number of beneficiaries (HHs)	2000	2000	2000
Status of procurement /contract signing	Awaiting final award of contracts	Awaiting final award of contracts	Awaiting final award of contracts
Estimated start date of construction	1st April, 2017	1st April, 2017	1st April, 2017
Estimated completion/commissioning date	31st July, 2017	31st July, 2017	31st July, 2017

Irrigation Schemes

Details	**Lisungwi Irrigation Scheme**	**Chiseke Irrigation Scheme**	**Fufule Irrigation Scheme**	**Thava Irrigation Scheme**
Name of village/TA	Kabango I&II, Nyetchela, Madziamphutsi, Kuncheza, Khande and Kachere villages, T/A Mpando	Chiseke Village, T/A Mpando	Mafuta Village, T/A Mpando	Zinjiliza 2, Muyanga and Nchize villages, T/A Mpando
Objective of intervention	To upgrade the scheme to a modern status with a focus on mitigating environmental degradation	To upgrade the scheme to a modern status with a focus on mitigating environmental degradation	To upgrade the scheme to a modern status with a focus on mitigating environmental degradation	To upgrade the scheme to a modern status with a focus on mitigating environmental degradation
Key technical details (e.g. length of road/bridge, type of bridge, ha of irrigated land etc)	104 hectares	32 hectares	20.5 hectares	46 hectares
Number of potential beneficiaries (HHs)	350	100	70	150

Status of procurement /contract signing	Bids to be evaluated from 30th January, 2017	Bids to be evaluated from 30th January, 2018	Bids to be evaluated from 30th January, 2019	Bids to be evaluated from 30th January, 2020
Estimated start date of construction	1st April, 2017	1st April, 2017	1st April, 2017	1st April, 2017
Estimated completion/commissioning date	31st December, 2017	31st October, 2017	31st October, 2017	30th November, 2017

UPPER WAMKULUMADZI Catchment

Markets

Details	**Ligowe**	**Kambale**	**Kundembo**	**Chawe**
Name of village/TA	T/A Mlauli, Nicolas Village	T/A Chekucheku, Chinchembere Village	T/A Dambe , Kundembo village	T/A Dambe , Mtemankhawa village
Objective of intervention	To provide better market infrastructure for agricultural produce from targeted schemes and upland farming	To provide better market infrastructure for agricultural produce from targeted schemes and upland farming	To provide better market infrastructure for agricultural produce from targeted schemes and upland farming	To provide better market infrastructure for agricultural produce from targeted schemes and upland farming
Key technical details (e.g. length of road/bridge, type of bridge, ha of irrigated land etc)	Four market sheds,one solar-powered borehole,one storage tank and one double pit latrine	Four market sheds,one solar-powered borehole,one storage tank and one double pit latrine	Four market sheds,one solar-powered borehole,one storage tank and one double pit latrine	One communal storage building, one solar-powered borehole,one storage tank and one double pit latrine
Number of beneficiaries (HHs)	400	400	400	400
Status of procurement /contract signing	Contracts signed, contractors on site	Contracts signed, contractors on site	Contracts signed, contractors on site	Contracts signed, contractors on site
Estimated start date of construction	5th December, 2016	5th December, 2016	5th December, 2016	5th December, 2016

Estimated completion/commissioning date	17th September, 2017	17th September, 2017	17th September, 2017	17th September, 2017

Roads

Details	**Ligowe to Neno Mission via Ulande Irrigation Scheme via Ulande Irrigation Scheme**
Name of village/TA	T/A Dambe and T/A Mlauli
Objective of intervention	To provide better access road for irrigation schemes to the markets which are to be upgraded
Key technical details (e.g. length of road/bridge, type of bridge, ha of irrigated land etc)	25km
Number of beneficiaries (HHs)	1000
Status of procurement /contract signing	Contracts awarded, contractors to begin from April, 2017
Estimated start date of construction	1st April, 2017
Estimated completion/commissioning date	31st July, 2017

Bridges

Details	**Dwale Bridge**	**Kundembo Irish Bridge**	**Tsenjerani Irish Bridge**
Name of village/TA	T/A Dambe, Soka village	T/A Dambe , Kundembo village	Chiwomba Village, T/A Dambe
Objective of intervention	To replace washed away Dwale bridge	To provide all seasons access to Kundembo Irrigation Scheme	To provide all seasons access to Tsenjerani Irrigation Scheme

Key technical details (e.g. length of road/bridge, type of bridge, ha of irrigated land etc)	2-span, 22m concrete deck bridge	Irish bridge	Irish bridge
Number of beneficiaries (HHs)	2000	2000	2000
Status of procurement /contract signing	Awaiting final award of contracts	Awaiting final award of contracts	Awaiting final award of contracts
Estimated start date of construction	1st April, 2017	1st April, 2017	1st April, 2017
Estimated completion/commissioning date	31st July, 2017	31st July, 2017	31st July, 2017

CHINGALE Catchment

Markets

Details	**Chingale Market**	**Chinseu Market**	**Masaula Market**	**Msosa Market**
Name of village/TA	SC Mlumbe (STA Nkapita)	SC Mlumbe (STA Nkapita)	SC Mlumbe (STA Nkapita)	SC Mlumbe (STA Nkapita)
Objective of intervention	To provide better market infrastructure for agricultural produce from production areas in the catchment and promote business activities particularly fron CIGs	To provide better market infrastructure for agricultural produce from production areas in the catchment and promote business activities particularly fron CIGs	To provide better market infrastructure for agricultural produce from production areas in the catchment and promote business activities particularly fron CIGs	To provide better market infrastructure for agricultural produce from production areas in the catchment and promote business activities particularly fron CIGs
Key technical details (e.g. length of road/bridge, type of bridge, ha of irrigated land etc)	Four Market Sheds, Slaughter house, butchery, two double pit latrines and provision of water to the market	One Market Shed, Slaughter house, butchery, two double pit latrines and provision of water to the market	One Market Shed, Slaughter house, butchery, two double pit latrines and provision of water to the market	Four Market Sheds, Slaughter house, butchery, two double pit latrines and improvement of sanitation and drainage on the existing stand pipe

Number of beneficiaries (HHs)	5000	5000	5000	5000
Status of procurement /contract signing	Contract Signed; construction in progress	Contract Signed; construction in progress	Contract Signed; construction in progress	Contract Signed; construction in progress
Estimated start date of construction	5th December 2016	5th December 2016	5th December 2016	5th December 2016
Estimated completion/commissioning date	18th September 2017	18th September 2017	18th September 2017	18th September 2017

Roads

Details	**Chiunda to Mlelemba Road**
Name of village/TA	SC Mlumbe (STA Nkapita)
Objective of intervention	To provide better access road for traders and the general community to markets and for other social ameneties
Key technical details (e.g. length of road/bridge, type of bridge, ha of irrigated land etc)	16.7km including associated drainage structures
Number of beneficiaries (HHs) - estimate	2500
Status of procurement /contract signing	Contracts Agreed and signed by the Contractor
Estimated start date of construction	31st March 2017
Estimated completion/commissioning date	31st July 2017

Bridges

Details	**Milale Bridge**	**Kazizidwe Bridge**	**Kuche Irish Bridge**	**Nakatope Bridge**
Name of village/TA	SC Mlumbe (STA Nkapita)	SC Mlumbe (STA Nkapita)	SC Mlumbe (STA Nkapita)	SC Mlumbe (STA Nkapita)

Objective of intervention	To improve markets and for other social ameneties for traders and the general community	To improve markets and for other social ameneties for traders and the general community	To improve markets and for other social ameneties for traders and the general community	To improve markets and for other social ameneties for traders and the general community
Key technical details (e.g. length of bridge, type of bridge)	20m two span concrete deck to be upgraded from timber deck, 30 tons; maximum height from river bed level 3.38m	9m single span concrete deck to be upgraded from 7m timber deck, 30 tons; maximum height from river bed level 4.15m	9m two span concrete deck to be upgraded from 7m timber deck, 30 tons; maximum height from river bed level 4.15m	6m single span concrete deck to be upgraded from 5m timber deck, 30 tons; maximum height from river bed level 1.7m
Number of beneficiaries (HHs) - estimate	2500	2500	2500	2500
Status of procurement /contract signing	Bid evaluation conducted; IPC yet to meet to approve the evaluation committee recommendations	Bid evaluation conducted; IPC yet to meet to approve the evaluation committee recommendations	Bid evaluation conducted; IPC yet to meet to approve the evaluation committee recommendations	Bid evaluation conducted; IPC yet to meet to approve the evaluation committee recommendations
Estimated start date of construction	1st April, 2017	1st April, 2017	1st April, 2017	1st April, 2017
Estimated completion/commissioning date	31st July, 2017	31st July, 2017	31st July, 2017	31st July, 2017

Irrigation Schemes

Details	**Bilira Irrigation Scheme**	**Mango Irrigation Scheme**	**Mpoya & Mdere Irrigation Schemes**	**Ndundumala Irrigation Scheme**	**Nkhawazatha Irrigation Scheme**	**Upilewetu Irrigation Scheme**

Name of village/TA	GVH: Nkasala; STA: Nkapita; Senior Chief (SC): Mlumbe	GVH: Nkasala; STA: Nkapita; Senior Chief (SC): Mlumbe	GVH: Nkula & GVH Mlelemba; TA: Nkula	GVH: Fikira; STA: Nkapita; Senior Chief (SC): Mlumbe	GVH: Fikira; STA: Nkapita; Senior Chief (SC): Mlumbe	GVH: Fikira; STA: Nkapita; Senior Chief (SC): Mlumbe
Objective of intervention	To upgrade the scheme by providing sustainable structures and improve water delivery and management with a focus on mitigating environmental degradation	To upgrade the scheme by providing sustainable structures and improve water delivery and management with a focus on mitigating environmental degradation	To upgrade the scheme by providing sustainable structures and improve water delivery and management with a focus on mitigating environmental degradation	To upgrade the scheme by providing sustainable structures and improve water delivery and management with a focus on mitigating environmental degradation	To upgrade the scheme by providing sustainable structures and improve water delivery and management with a focus on mitigating environmental degradation	To upgrade the scheme by providing sustainable structures and improve water delivery and management with a focus on mitigating environmental degradation
Key technical details (e.g. length of road/bridge, type of bridge, ha of irrigated land etc)	7.21 ha; gravity-fed system	115 ha; gravity-fed system; diversion weir with two intake (one on either side)	25.42 ha; gravity-fed system; shared intake for the both schemes	24.76 ha; gravity-fed system	60.3 ha; gravity fed system	88.5 ha; gravity fed system
Number of potential direct beneficiaries (HHs)	30 (21 men and 9 women)	30 (21 men and 9 women)	58 (22 men and 36 women)	60 (16 men and 44 women)	65 (28 men and 37 women)	111 (68 men and 43 women)
Status of procurement /contract signing	Bids to be evaluated week starting 30th January, 2017	Bids to be evaluated week starting 30th January, 2017	Bids to be evaluated week starting 30th January, 2017	Bids to be evaluated week starting 30th January, 2017	Bids to be evaluated week starting 30th January, 2017	Bids to be evaluated week starting 30th January, 2017
Estimated start date of construction	1st April, 2017	1st April, 2017	1st April, 2017	1st April, 2017	1st April, 2017	1st April, 2017
Estimated completion/commissioning date	31st October, 2017	31st October, 2017	31st October, 2017	31st October, 2017	31st October, 2017	31st October, 2017

ANNEX 4 – DETAILS OF PLANNED COMMUNITY FLOOD MANAGEMENT INTERVENTIONS

INFRASTRUCTURE INTERVENTIONS

Traditional Authority (TA) Lundu

	Intervention	**VFAP,** and villages	**Approx. Benef #HH**	**Estimated Cost USD**	**Status**
1	**Raising the road from Paramount Chief Lundu's compound to Tomali Village, with drainage structures.** **Technical Details:** The road is frequently flooded from the Nkombezi River, as well as local runoff in the Nana and Nabomba Rivers. The intention is to provide an all-weather road by either raising the road to pass water under (in culverts) or over the road (in a drift), and to direct the drainage away from the houses and into the Illovo drainage canals with spur dykes. Some 3.5 km of road will be flood proofed. **Design Date:** 31 January 2017 **Construction Start Date:** Depends on availability of capex – may be constructed under MFERP funding. **Construction Completion Date:** n/a	**Tomali, Ingazi, Mphampha and Tsambalabowoka**	1,694	700,000	Final Design underway
2	**Flood Management along the Nkombezi River just upstream of Nchalo Trading Centre (middle Nkombezi).** **Technical Details:** The Nkombezi River breaks its banks towards the villages in GVH Mafale 1 every year. The problem is exacerbated by the Illovo Dykes, and the partially completed MFERP. The villagers want the river dredged, but this is not viable. Placing a dyke on the river bank will raise flood levels and the water will overtop the Illovo dykes, flood the facilities in the Lengwe Park, and flow around the top (western) end of the dyke. The intention is to explore several options for dyke alignments, and spillways to spill the flows, using 2D flood modelling. **Design Date:** 31 May 2017 – pending the availability of the LiDAR DEM **Construction Start Date:** Not planned for construction under the SRBMP-1 **Construction Completion Date:** n/a	**Mafale 1 -** Dzilozo, Mafale, Malemia, Joliji, Nyamphote, Pangilesi and Thom Villages.	632+ Trading Centre	500,000 +	Options analysis not yet done. Pending availability of LiDAR DEM

	Intervention	VFAP, and villages	Approx. Benef #HH	Estimated Cost USD	Status
3	**Dyke along the Mwanza River at Kanseche Village** **Technical Details:** The Mwanza River floods into Kanseche Village every year. This has been exacerbated by the Illovo Dykes, and they may be approached to support construction. The intention is to construct a 1,000-1,300m dyke to protect the village, and to tie that into the Illovo Dykes to provide a safe evacuation route. The Dyke must be designed together with dykes in Misili Village on the opposite side of the river in TA Maseya. This will also protect against flooding **Design Date:** 31 May 2017 – pending the availability of the LiDAR DEM **Construction Start Date:** Not planned for construction under the SRBMP-1, although Illovo may be approached. **Construction Completion Date:** n/a	**Kanseche**	376	300,000	Final Design not yet done. Pending availability of :LiDAR DEM
4	**Dyke at Mafale 2 village, including a crossing point to the fields.** **Technical Details:** The Illovo offtake canal overflows into Mafale 2 village every year cutting people off from their fields, and flooding houses. The intention is to provide a safe crossing point and to divert the water away from the houses with a 2km dyke, including a stormwater runoff channel. This will also protect the village from extreme floods in the Shire River. This will require an EIA waiver. **Design Date:** 11 November 2016 – crossing point, 19 December 2016 - dyke **Construction Start Date:** Crossing point – 1 March 2017; Dyke – 1 April 2017 **Construction Completion Date:** Crossing point – 1 May 2017; Dyke – 1 June 2017	**Bester and Tizola,** Mafale 2	156	1,000,000	Final design completed. Procurement of works underway
5	**A dyke along the Nkombezi River in GVH Tomali where it breaks its banks.** **Technical Details:** This is part of a suite of interventions along the Nkombezi River (see 1 and 2 above), and plans to prevent the Nkombezi River from breaking its banks towards Paramount Chief Lundu's compound. But as this will increase flooding in the Lengwe National Park, it will include protection of infrastructure in the Park, and the creation of a wetland ecosystem in the Park. **Design Date:** 31 May 2017 – pending the availability of the LiDAR DEM	n/a	n/a	?	Options analysis not yet done. Pending availability of LiDAR DEM

	Intervention	VFAP, and villages	Approx. Benef #HH	Estimated Cost USD	Status
	Construction Start Date: Not planned for construction under the SRBMP-1. **Construction Completion Date:** n/a				

TA Makhwira

	Intervention	VFAP, and villages	Approx. Benef #HH	Estimated Cost USD	Status
1	**Dyke along the Chidzimbi River to protect the Chidzimbi Trading Centre and Chidzimbi Irrigation Scheme** **Technical Details:** This will include a dyke upstream of the river East Bank Road crossings on the Chidzimbi River. The Roads Authority plans bridges across the rivers, and the dyke will integrate with these plans. **Design Date:** 30 June 2017 – may use the LiDAR DEM **Construction Start Date:** Not planned for construction under the SRBMP-1. **Construction Completion Date:** n/a	**Nantusi** Machokola and Makwiza Villages, and the Chidzimbi Trading Centre and Irrigation Scheme	2,200*	500,000	Final Design pending availability of LiDAR DEM
2	**Realignment of the Thambala River, GVH Mmodzi.** **Technical Details:** This will include a dyke to divert the Thambala River into its original channel, and a spillway and drainage canal to carry excess flows. This will spilt the water in two channels running between the houses. **Design Date:** 30 January 2017. **Construction Start Date:** 1 May 2017. **Construction Completion Date:** 1 August 2017	**Mmodzi,** Mmdozi Village	50	50,000	Final design completed. Works procurement is underway

*This includes the households using the trading centre and the irrigation scheme.

TA Maseya

	Intervention	VFAP, and villages	Approx. Benef #HH	Estimated Cost USD	Status
1	**Storm water management along the Bwabwali stream in Bereu.** **Technical Details:** This will include widening the Bwabwali Stream channel in Bereu, and providing safe crossings at key points. Spoil material may be used to provide temporary relief for Misili village (see 3 below) **Design Date:** 30 January 2017. **Construction Start Date:** 1 May 2017 pending the availability of capex – may be done using MFERP funds. **Construction Completion Date:** 1 August 2017	**Bereu, Sande, Chikutileni and Mphuleya**	1,899	700,000	Final design completed
2	**River bank strengthening, bridges over the old Mwanza and storm water management Chambuluka.** **Technical Details:** This will include providing a bridge(s) over the old Mwanza Channel to allow access to fields, and strengthening the banks to prevent overflows into the village. This will be supplemented by labour intensive works. **Design Date:** 30 June 2017. **Construction Start Date:** Not planned for construction under the SRBMP-1 – may be done using MFERP funds. **Construction Completion Date:** n/a	**Chambuluka**	300	300,000	Final Design ongoing
3	**Raising of the MASAF Road, including fish friendly culverts, and dykes to protect Misili and Sande Villages**. **Technical Details:** This will include a series of dykes as well as raising of the Masaf Road in places – over fish friendly culverts, so that the ponds still fill in floods, but the houses are protected. This may use materials excavated from 1 above. This will be optimised together with the Kanseche Dyke using the 2D model of the lower Mwanza **Design Date:** 31 July 2017 – pending the availability of the LiDAR DEM.	**Misili** Misili 1 and 2 and Sande	824	500,000	Design not yet done. Pending availability of LiDAR DEM

	Construction Start Date: Not planned for construction under the SRBMP-1 – may be done using MFERP funds. **Construction Completion Date:** n/a				

TA Mlolo

	Intervention	**VFAP,** and villages	**Approx. Benef #HH**	**Estimated Cost USD**	**Status**
1	**The realignment of the Ruo River into its original channel with dykes and spillways** **Technical Details:** This will include providing layout drawings and draft designs for options to re-align the Ruo River. This examining options for spillways and alignments to minimise the inundation in Mozambique, and the accumulation of sand sediments. **Design Date:** 31 August 2017 pending the availability of the LiDAR DEM **Construction Start Date:** Not planned for construction under the SRBMP-1 or MFERP **Construction Completion Date:** n/a	n/a	6,500	10-15 million	Options analysis not yet done. Pending availability of LiDAR DEM
2	**Flood protection for the health centre and houses in Masenjere Village.** **Technical Details:** This includes a dyke upstream of the East Bank Road and safer river crossing (150m drift) at Masenjere Village. This protects a health centre / hospital providing health services to some 30,000 people. A dyke is required on the opposite bank to protect an irrigation canal. **Design Date:** 11 November 2016 **Construction Start Date:** 1 March 2017 **Construction Completion Date:** 1 June 2017	**Namanya** Masenjere village	6,500 (includes HH using the health centre)	500,000	Final design completed. Works procurement underway
3	**Flood risk management options on the Thangadzi East floodplain to protect villages and irrigation schemes** **Technical Details:** This outline options to protect villages and irrigation schemes with dykes and river diversions. 2D Flood modelling will be used to present several options for the alignment and height of dykes and river diversions. **Design Date:** 1 July 2017 – pending the availability of the LiDAR DEM.	**Chipondeni, Chapinga and Gooke**	4,626	unknown	Options analysis not yet done. Pending availability of LiDAR DEM.

	Intervention	VFAP, and villages	Approx. Benef #HH	Estimated Cost USD	Status
	Construction Start Date: n/a **Construction Completion Date:** n/a				
4	**Closing the gap in the Thangadzi Dyke past Gooke Village** **Technical Details:** This includes closing the existing dyke against the East Bank Road, and creating crossing points (spillways) and a drainage system. The dyke is some 200m long. **Design Date:** 11 November 2016 **Construction Start Date:** 1 March 2017 **Construction Completion Date:** 1 June 2017	**Gooke**	1,000	170,000	Final design completed. Works procurement underway
5	**Protection of houses and shops along the Nafafa River in Muona** **Technical Details:** This includes a dyke and drift on the Nafafa River. The dyke protects houses upstream of the road, and shops along the road. It does not address flooding along the full length of the Nafafa River, as that needs to be addressed together with the Thangadzi floodplain interventions (see 3). Some labour intensive works may be undertaken to reduce the risks for other houses. **Design Date:** 11 November 2016 **Construction Start Date:** 1 March 2017 **Construction Completion Date:** 1 June 2017	**Chapinga** Kavala, Malothi, Maheya and Nalisoni,	100	200,000	Final design completed. Works procurement underway

TA Mbenje

	Intervention	VFAP, and villages	Approx. Benef #HH	Estimated Cost USD	Status
1	**A dyke along the Thangadzi West River to protect GV Nyang'a.** **Technical Details:** This will include a dyke along the Thangadzi West River to protect GVH Nyang'a and the Thangadzi School (abandoned due to flooding). The dyke will be some 1.6 km long and will require a EIA waiver **Design Date:** 1 June 2017 – pending the availability of the LiDAR DEM. **Construction Start Date:** Will not be constructed using the SRBMP-1 capex – may be done using MFERP funds. **Construction Completion Date:** n/a	**N'yanga**	335	400,000	Design not yet done. Pending availability of LiDAR DEM

	Intervention	VFAP, and villages	Approx. Benef #HH	Estimated Cost USD	Status
2	**Dyke / bunds along the Lalanje River, and raising the MASAF Road with culverts in GV Mbenje** **Technical Details:** This will include outlining several options for dykes or bunds along the lower Lalanje River to protect several villages, as well as raising sections of the MASAF Road with culverts. This is to allow wetting of the fields but protection of the houses and access routes. **Design Date:** 1 June 2017 – pending the availability of the LiDAR DEM. **Construction Start Date:** Will not be constructed using the SRBMP-1 capex. **Construction Completion Date:** n/a	**Mbenje** Mphetowanyama, Chambuluka, Petro 1 and 2, Mpamba, Mponya and Tomson villages	380	?	Optional analysis not yet done. Pending availability of LiDAR DEM.
3	**Cutting back, shaping strengthening the banks of the Chilimbe River in GV Mnembe.** **Technical Details:** This will include cutting back the banks of the river to carry more water, to prevent flooding of the Chilimbe School. The site will also be used as a river bank strengthening demonstration site, showing several methods with costs and pros and cons of the various options. Pamphlets will be left at the school, and a signboard will be placed along the road. **Design Date:** 20 January 2017. **Construction Start Date:** 1 April 2017 **Construction Completion Date:** 1 July 2017	**Mnembe**	12 plus Chilimba School	200,000	Final design completed. Works Procurement underway

TA Tengani

	Intervention	VFAP, and villages	Approx. Benef #HH	Estimated Cost USD	Status
1	**Construction of dykes and the extension of the footpath at the confluence of the Namiyala and Nkhande Rivers** **Technical Details:** Two dykes will be constructed one on either side of the river at the Namiyala / Nkande confluence. This will include crossing points for vehicles. The works integrate with the existing work done as NRIs. **Design Date:** 19 December 2016 **Construction Start Date:** 1 April 2017 **Construction Completion Date:** 30 June 2017	**Tengani** Mpatsa School and centre for the blind	50 + school	850,000	Final design completed. Works procurement underway.

2	**Construction of a dyke to protect the Tengani Trading Centre** **Technical Details:** A 750m dyke will be constructed along the Nkhande River to protect the trading centre and administrative buildings. **Design Date:** 11 November 2016 **Construction Start Date:** 1 March 2017 **Construction Completion Date:** 31 May 2017	**Tengani** Chikungu and Chisi	305 + Trading Centre	500,000	Final design completed. Works procurement underway

* This is the extent of the contribution from the ISP-FRM

- Constr = Final designs, and supervision of construction
- Final Design = Final Designs, BoQs and Tender Documentation
- Preliminary Design = Draft Designs and layout drawings
- Options Analysis = Outline of several options to be considered based on 2D flood modelling, includes dyke alignments and heights and pros and cons.

LABOR-INTENSIVE INTERVENTIONS

TA Maseya			
	GVH	**What must be done?**	**How will it be done?**
1	Chambuluka	Prevent the ponds in the village from flooding into the houses.	Low bunds will be built on the edge of the ponds so they can hold more water. There will be low point which will act as a spillway and a channel to carry excess water away down the Bwabwali River.
2		Plant trees and increase rainwater infiltration in the catchment area of the Bwabwali Stream.	The Malawi Guidelines to catchment management will be used to identify a range of measures like contouring, infiltration ponds tree planting to decrease and slow runoff into the streams.
3	Misili	Protecting the banks of the Mwanza River where it threatens houses	Trees can be planted along the banks of the Mwanza, 3 rows deep. This will slow the water down, causing it to drop the sand.
4	Sande	Reducing the sand deposits on the fields along the Mwanza River	Trees can be planted along the banks of the Mwanza, 3 rows deep. This will slow the water down, causing it to drop the sand.
5		Protecting the irrigation scheme well	Construct a 0.5m high earth wall around the well to stop it filling with sand.
TA Lund			
6	GVH	**What must be done?**	**How will it be done?**
7	Tomali	Direct the water away from fields and houses	Construct sandbag bunds to direct the water towards the drainage structures along the Tomali Road.
8	Paramount Chief Lundu's compound	Direct the water away from fields and houses	Construct sandbag bunds to direct the water towards the drainage structures along the Tomali Road and the Illovo drainage canals.
9	Tizola and Bester	Close off the low points on the Illovo Drainage canals to prevent them spilling into the village	The low points in the drainage canals must be closed off with sandbag walls.
TA Makhwira			
	GVH	**What must be done?**	**How will it be done?**
10	Jana	Strengthening key parts of the Chilengo River to limit flooding and reduce deposition of sand on fields	Cutting back and shape the banks of the river and plant trees using the support from the Ubale project, and as directed by the ISP-FRM.
11		Increase the capacity of the storm water channels along the Thelewani Stream.	The storm water channels and the Thelewani stream must be cut back and sandbag bunds placed as directed by the ISP-FRM.
12	Ganyu	Place low bunds to direct the water flowing over the drift at Livunzu between the houses	Build low sandbag bunds on both sides of the newly forming river channel to direct the water through the houses and to the Livunzu River.

13	Nantusi	Preventing the Nankhwazi River from flooding Nkadyamwanu village	Sandbag bunds will be constructed along the river to protect houses, and the river banks will be cut back and widened.
14		Preventing Phala River from flooding Nkadyamwanu village.	Sections of the existing berm must be moved away from the river, and trees will be planted along the sections of the bund which are weak.
TA Mlolo			
	GVH	**What must be done?**	**How will it be done?**
15	Chapinga	Manage the storm water problems along the Namichimba River.	The banks of the Namichimba River will be cut back and sandbag bunds constructed closer to the houses.
16		Protection of houses along the Chinolo and Chidima Rivers from flash floods.	Low bunds will be placed along the banks of the rivers, and as close to the houses as possible, the banks of the river will be cut back.
17		Reduce the deposition of sand on the irrigation schemes	Trees will be planted along all the relevant rivers.
18	Chipondeni	Manage the stormwater problems in Lede, Jokoniya and Chimzete villages	Sandbags and equipment to open up stormwater channels will be provided. We will work with the ISP-FRM to identify the stormwater channels and will dig channels to reduce these problems.
19		Reduce the deposition of sand on the irrigation schemes	Trees will be planted along all the rivers flowing into the irrigation schemes.
20	Gooke	Manage the stormwater problems in the villages along the edge of the mountain.	The storm water channels will be opened and sandbags bunds will be placed close to the houses.
21		Protection of the wells on the irrigation schemes.	Low bunds will be placed around the wells, and will be maintained before each wet season.
	Gooke cont.	**What must be done?**	**How will it be done?**
22		Reduce the deposition of sand on the irrigation schemes	Trees will be planted along the rivers flowing through the irrigation schemes.
23	Namanya	Reduce the deposition of sand on the irrigation schemes	Trees will be planted along the rivers flowing into the irrigation schemes.
TA Mbenje			
	GVH	**What must be done?**	**How will it be done?**
24	Nyang'a	Reducing damage to the irrigation wells in the Chimbalo and Chimvuli Irrigation Schemes.	Low bunds will be placed around the wells, and will be maintained before each wet season.
25		Storm water management in Nyang'a South.	The storm water channels in the village must be widened and cut back.

26	Mnembe	Reducing damage to houses and fields located along tributaries upstream of the M1 Road – starting with the priority rivers	Selected parts of the rivers must be cut back and sandbags placed as close to the houses as possible
27		Reducing the sediment damage to the irrigation schemes	Trees must be planted along the banks of the Nyamphembere River to reduce flow speeds so the rivers deposit the sediment on the banks.
TA Tengani			
	GVH	**What must be done?**	**How will it be done?**
28	Mgona	Preventing Floods from the Kanyanyala River from damaging houses in Mgona village.	Culverts along the MASAF Road must be opened. Sandbags must be placed to protect vulnerable houses.
29		Protection of houses and Masaf Road from flash floods in the Njiza River.	Culverts along the MASAF Road must be opened, and the river channel widened and sloped back. Sandbags must be placed as close to the houses as possible.
30		Preventing flooding of Ng'ambong'ambo River into Gauzeni Village.	The banks of the river will be strengthened by planting trees and placing sandbags.
31	Tengani	Riverbank strengthening works along Namiyala and Nkhande Rivers	Planting of trees along the banks to reduce erosion.
32	Chikhawo	Protection of houses in Vizyalona and Andiseni Villages from flash floods in the Namichimba River.	Sand bags should be placed along the river, and the river banks opened and sloped.

ANNEX 5 – STATUS OF HYDROMET STATIONS

					Installation Status	Operational Status	Cases of Vandalism	Gauge Reader or Caretaker
Type (PTX/SE/Radar)	**District**	**Actual (Long)**	**Actual (Lat)**	**New /Rehab**	**Completed or on-going**	**Sending data or not**	**(Yes/No)**	
PTX	Mangochi	14.28744 S	35° 16392 E	rehab	completed	Yes	No	No
PTX	Nsanje	16° 73349 S	35° 27903 E	rehab	on-going			Yes
PTX	Machinga	15.06725 S	35.21412 E	rehab	completed	Yes	No	Yes
Radar	Machinga	15.05978 S	35.26538 E	new	on-going			No
PTX	Balaka	15° 08370 S	35° 02382 E	new	completed	Yes	No	Yes
PTX	Neno	15° 47644 S	34° 7514 E	new	completed	Yes	No	Yes
Radar	Neno	15° 44285 S	34° 86430 E	rehab	completed	Yes	No	Yes
PTX	Blantyre	15° 38941 S	34° 90713 E	rehab	completed	Yes	No	Yes
SE	Chikwawa	16° 03287 S	34° 80286 E	rehab	completed	Yes	Yes	
PTX	Nsanje	16° 40428 S	34° 16343 E	rehab	on-going			Yes
PTX	Mangochi	14.06933 S	34.91719 E	rehab	completed	Yes	No	Yes
PTX	Thyolo	16.00159 S	035.31957 E	rehab	on-going			No
PTX	Thyolo	16.03720 S	35.25474E	rehab	completed	Yes	No	Yes
PTX	Thyolo	15.9989 S	035.30672 E	rehab	completed	Yes	No	Yes
PTX	Mulanje	16.10386 S	35.47572 E	rehab	completed	Yes	No	Yes
PTX	Mulanje	16.07966 S	035.67348 E	rehab	completed	Yes	No	Yes
PTX	Nsanje	16.48858 S	035.24876 E	rehab	on-going			Yes
PTX	Thyolo	16.22309 S	35.30707 E	rehab	on-going			Yes
Staff Gauges Only	Mangochi	14.62613 S	035.18290 E	rehab	on-going			No
Radar	Nkhotakota	12.78782 S	034.19665 E	rehab	on-going			No
PTX	Nkhotakota	12.23549 S	033.98415 E	rehab	on-going			No
PTX	Nkhata Bay	11.77699 S	034.20203 E	rehab	on-going			No
SE	Rumphi	10.76096 S	034.19842 E	rehab	on-going			No
PTX	Rumphi	10.86521 S	034.17942 E	rehab	on-going			No
PTX		0645504 (UTM)	8472425 (UTM)	rehab	on-going			No

Automatic Rainfall Logger Stations									
#	**Station Name**	**Province**	**District**	**Responsible Officer**	**Latitude**	**Longitude**	**Elevation (m)**	**New/Rehab**	**Status**
1	Kasinthula	Southern	Chikwawa	H Chipangula	16.07554	34.8654	93	Rehab	Ongoing
2	Thuchila	Southern	Mulanje	Samson Mulenga	15.91609	35.35618	686	Rehab	Ongoing
3	Mpemba	Southern	Blantyre	Thomas Chirwa	15.87722	34.9592	887	Rehab	Ongoing
4	Mikolongwe	Southern	Thyolo	Mike Magulu	15.85549	35.21923	916	Rehab	Ongoing
5	Chiradzulu	Southern	Chirazulu	Moris Sarify	15.74081	35.12828	1080	Rehab	Ongoing
6	Mbulumbuzi	Southern	Chirazulu	H Thayo	15.63891	3515774	1090	Rehab	Ongoing
7	Lisungwi	Southern	Neno	B D Nyamithambo	15.44778	34.8513	423	Rehab	Ongoing
8	Chingale	Southern	Zomba	J Chingwalu	15.39994	35.1804	626	Rehab	Ongoing
9	Phalula	Southern	Balaka	Charles Gusinyu	15.21566	34.88676	575	Rehab	Ongoing
10	Liwonde	Southern	Manchinga	Yohane Namalaka	15.0667	35.23167	No info.	Rehab	Ongoing
11	Bembeke	Central	Dedza	Salome Billy	14.35827	34.41722	1604	Rehab	Ongoing
12	Bwengu	Northern	Mzimba	Denis Adams Kaunda	11.06131	33.92456	1074	Rehab	Ongoing
13	Chamama	Central	Kasungu	William Msunge	12.9267	33.7863	1221	Rehab	Ongoing
14	Dzalanyama	Central	Lilongwe	Felix Katanga	14.20604	33.59135	1148	Rehab	Ongoing
15	Euthini	Northern	Mzmba	R G Chisi	11.45437	33.42664	1175	Rehab	Ongoing
16	Kasiya	Central	Lilongwe	G Tsankhulo	13.776	33.36656	1092	Rehab	Ongoing
17	Lisasadzi	Central	Kasungu	Bison Mateyu	13.17072	33.50897	1109	Rehab	Ongoing
18	Lobi	Central	Dedza	M Machila	14.39402	3407315	1281	new	Ongoing
19	Malomo	Central	Ntchisi	Betha Mwale	13.14206	33.83725	1064	Rehab	Ongoing
20	Mchinji	Central	Mchinji	Duncan Siwella	13.79933	32.88328	1183	Rehab	Ongoing
21	Mpenu	Central	Lilongwe	Charles Gusinyu	14.01025	33.97419	1189	Rehab	Ongoing
22	Mpherembe	Northern	Mzimba	Tweya	11.28636	33.60429	1197	Rehab	Ongoing
23	Mponela	Central	Dowa	Albert Kumwenle	13.55453	33.74272	1291	Rehab	Ongoing
24	Mwimba	Central	Kasungu	Dan Khuchuwayo	13.27875	33.38662	1065	Rehab	Ongoing
25	Nathenje/ Nathanje	Central	Lilongwe	WKG Kanthonga	14.08015	33.90755	1087	Rehab	Ongoing
26	Njolomole	Central	Ntcheu	E Zachepa	14.66695	34.54021	1411	Rehab	Ongoing
27	Rumphi	Northern	Rumphi	Happy Mwenitete	11.01869	33.85951	1054	Rehab	Ongoing
28	Santhe	Central	Kasungu	Benson Mwisama	13.46089	33.39311	1074	Rehab	Ongoing
29	Sharp Valley	Central	Ntcheu	Evas /Jere	14.60145	34.73323	616	Rehab	Ongoing
30	Sinyala	Central	Lilongwe	Mmaseko	14.18188	33.62549	1124	Rehab	Ongoing
31	Zombwe	Northern	Mzimba	Miriam Mkhoma	11.31962	33.8334	1148	Rehab	Ongoing

Automatic Weather Stations									
#	**Station name**	**Province**	**District**	**Responsible Officer**	**Latitude**	**Longitude**	**Elevation (m)**	**Rehabilitation**	**New**
1	Bolero	Northern	Rumphi	R Thomas	10.9812	33.74474	1113	Rehab	Ongoing
2	Bvumbwe	Southern	Thyolo	E F Kanjoka	15.92461	35.07002	1166	Rehab	Ongoing
3	Chichiri	Southern	Blantyre	EF Tadeyo	15.80342	35.03755	1120	Rehab	Completed
4	Chileka Airport	Southern	Blantyre	David Elondwe	15.68013	34.97221	766	Rehab	Ongoing
5	Chitedze	Central	Lilongwe	J Mpira	13.98461	33.64032	1082	Rehab	Ongoing
6	Chitipa	Northern	Chitipa	C Muhango	9.70563	33.26937	1250	Rehab	Ongoing
7	Kamuzu International Airport	Central	Lilongwe	G D Chavunguma / Stella Jumbe	13.78032	33.7739	1194	Rehab	Ongoing
8	Karonga Airport	Northern	Karonga	Epiyana Mwambka	9.95431	33.89526	526	Rehab	Ongoing
9	Kasungu	Central	Kasungu	Masauts Phiri	13.01542	33.4683	1068	Rehab	Ongoing
10	Likoma Airport	Northern	Likoma	Arthur Manyuku	12.07625	34.73732	492	Rehab	Ongoing
11	Makoka	Southern	Zomba	G Maona	15.51897	35.23156	1028	Rehab	Ongoing
12	Mangochi	Southern	Mangochi	Laster Kalambo	14.48828	35.26423	490	Rehab	Ongoing
13	Mimosa	Southern	Mulanje	P Lubelo	16.0828	35.61913	653	Rehab	Ongoing
14	Monkey Bay	Southern	Mangochi	David Kambalame	14.08079	34.9189	476	Rehab	Ongoing
15	Mzimba	Northern	Mzimba	Haward Msewa	11.90454	33.59916	1338	Rehab	Ongoing
16	Mzuzu Airport	Northern	Mzimba	Francis Nyrenda	11.44676	34.01419	1239	Rehab	Ongoing
17	Nkhata Bay	Northern	Nkhata Bay	A Chimbwila	11.62048	34.24663	513	Rehab	Ongoing
18	Nkhota Kota	Central	Nkhota Kota	Edward Damtsa	12.92484	34.282	515	Rehab	Ongoing
19	Ntaja Met	Southern	Machinga	J Muhalu	14.88382	35.52363	711	Rehab	Ongoing
20	Salima	Central	Salima	Newton Chirambe	13.75394	34.58443	507	Rehab	Ongoing
21	Thyolo	Southern	Thyolo	N Chitsulo	16.1264	35.1363	817	Rehab	Ongoing
22	Chikhwawa	Southern	Chikwawa	ES Chiputula	16.03029	34.78833	106	Rehab	Ongoing
23	Chitala	Central	Salima	Iwalani Chinkhata	13.67707	34.2706	577	Rehab	Ongoing
24	Dedza RTC	Central	Dedza	Banenhni	14.38024	34.31671	1576	Rehab	Ongoing
25	Dowa	Central	Dowa	F G Kachilika	13.64782	33.92966	1370	Rehab	Ongoing
26	Kaluluma	Central	Kasungu	Zakeya Banda	12.58334	3351186	1197	Rehab	Ongoing
27	Kaporo	Northern	Karonga	Happy Nyirenda	9.74178	33.86485	522	Rehab	Ongoing
29	Mkanda	Central	Mchinji	Leach Chunga	13.51424	32.98047	1101	Rehab	Ongoing
30	Mulanje DoA	Southern	Mulanje	R Kazera	16.02703	35.51175	654	Rehab	Ongoing

31	Mwanza	Southern	Mwanza	Lourence Nyimbo	15.61761	34.5598	692	Rehab	Ongoing
32	Naminjiwa	Southern	Phalombe	NM Chanza	15.75692	35.67012	768	Rehab	Ongoing
33	Namwera	Southern	Mangochi	Incent Mateya	14.36101	35.5062	901	Rehab	Ongoing
34	Neno	Southern	Neno	M. Tandaude	15.39763	34.65363	No info.	Rehab	Ongoing
35	Nsanje	Southern	Mulanje	Antony Chutsankhado	16.92092	35.25486	36	Rehab	Ongoing
36	Ntakataka	Southern	Dedza	`Chilingulo	14.21523	34.53149	No info.	Rehab	Ongoing
37	Ntchenachena	Northern	Rumphi	Vinjeru Luhanga	10.75315	34.02332	1295	Rehab	Ongoing
38	Ntcheu Nkhande	Central	Ntcheu	C Manda	14.79066	34.60425	1287	Rehab	Ongoing
39	Ntchisi	Central	Ntchisi	Eviness Jumbe	13.34045	33.92245	1370	Rehab	Ongoing
40	Vinthukutu	Northern	Karonga	Widnex B Phiri	10.42066	34.21119	588	Rehab	Ongoing
41	Zomba Rtc	Southern	Zomba	Dayimoni,Njerene	15.40456	35.31449	868	Rehab	Ongoing

ANNEX 6 - LIST OF PEOPLE MET

#	Name	Department / Designation
Technical Team		
1	Alice Gwedeza	National Spatial Data Centre / Principal Mapping Officer
2	Joseph Kanyangalazi	Principal Land Resources Conservation Officer
3	Bryson Msiska	Environmental Affairs / Environmental Officer
4	Dyce Nkhoma	Disaster Management Affairs / Chief Relief and Rehabilitation Officer
5	Jester Nyirenda	National Parks and Wildlife / Assistant Director
6	Joseph Kalowekamo	Energy / Deputy Director
7	Khumbo Lungu	Energy / Chief Energy Officer
8	Esau Banisi	Irrigation Officer
9	Lusungu Sinda	Irrigation / Irrigation Engineer
10	Rex Kanjedza	Water Resources / Principal Water Resources Development Officer
11	Stanley Chabvunguma	Climate Change and Meteorological Services
12	Stella Gama	Forestry / Assistant Director
13	Sydney Kamtukule	Water Resources / Principal Hydrologist
14	Toney Nyasulu	Water Resources/ Senior Hydrogeologist
15	William Mgoola	National Parks and Wildlife / Assistant Director
16	W.P.C. Chipeta	SRBMP / Project Coordinator
17	Sylvester Jere	SRBMP / Procurement Specialist
18	Humphrey Kamwendo	SRBMP / Project Liaison Officer
19	Chisomo Nayeja	SRBMP / Financial Management Specialist
20	Horace Nyaka	SRBMP/ Communications Specialist
21	Panje Ngulinga	SRBMP / ICT Specialist
Project Technical Team/Project Steering Committee		
22	Dokani Ngwira	Chief Director, MAIWD
23	Jolamu Nkhokwe	Director of Climate Change and Meteorological Services
24	Geoffrey Mamba	Department of Irrigation Services
25	James Chiusiwa	Coordinator, Department of Disaster Management Affairs
26	Pepani Kaluwa	Deputy Director, Water Resources Department
27	Hyde Sibande	Chief Hydrologist, Water Resources Department
28	John Mussa	Director, Land Resources Conservation
29	James Chilima	Director, Forestry Department
30	Mr. C. Chkhosi	Controller of Statutory Corporation
31	Fidelia Moyo	Regional Water Resources Manager, Water Resources Department
32	Geoff Chavula	Director, Shire River Basin Agency
33	Felix Mangani	Surveyor General, National Spatial Data Centre
34	Lewis Mhango	Director, Department of Energy
Other Partners		
35	Richmond Makasa	Civil Engineer, Malawi Flood Emergency Recovery Program
36	Jephtar Chagunda	Engineer, Voyants / Pamodzi Consulting
37	Moses Kachale	Millennium Challenge Account - Malawi