GOVERNMENT OF THE REPUBLIC OF MALAWI
Ministry of Agriculture

IRRIGATION, RURAL LIVELIHOODS AND AGRICULTURE DEVELOPMENT PROJECT

FINAL REPORT
ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK FOR PROPOSED
IRRIGATION ACTIVITIES

VOLUME 2
| 1. Nkhate Main Canal Taking Water from Thangazi River to Nkhate Scheme | 2. Dried up Nkhate River Below the River Diversion Point |
| 3. Consultation With Members to- be at the Proposed Luviri Irrigation Scheme | 4. Irrigating the Family's Dry Season Maize at Malaba Irrigation Scheme |
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ACKNOWLEDGEMENTS

This Environmental and Social Management Framework has been prepared with the support and consultations of many people. The authors are grateful to all of them. The consultations included smallholder farmers and agricultural extension workers in selected existing irrigation schemes (Domasi Irrigation Scheme, Likangala Irrigation Scheme, Limphasa Irrigation Scheme, Muona Irrigation Scheme, Mate Irrigation Scheme, Kadziwamwini Irrigation Scheme, Ngolowindo Irrigation Scheme), district officials such as District Commissioners, District Agricultural Development Officers, District Environmental Officers, and Irrigation Officers in selected districts earmarked for project activities such as Dedza, Phalombe, Chitipa, Rumphi, Karonga and Chikwawa. In addition a number of senior officers in the Department of Environmental Affairs, Department of Irrigation and Ministry of Agriculture provided considerable administrative and logistical support during the assignment.

A detailed list of all people who were involved or consulted in one way or another is provided in appendix 5.
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<tr>
<td>DADO</td>
<td>District Agriculture Development Officer</td>
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<tr>
<td>DC</td>
<td>District Commissioner</td>
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<td>DDP</td>
<td>District Development Planning System</td>
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<tr>
<td>DEA</td>
<td>Director of Environmental Affairs</td>
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<tr>
<td>DEAP</td>
<td>District Environmental Action Plan</td>
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<tr>
<td>DEMM</td>
<td>Decentralised Environmental Management Manual</td>
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<tr>
<td>DOI</td>
<td>Director of Irrigation</td>
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<td>EAD</td>
<td>Environmental Affairs Department</td>
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<td>EDO</td>
<td>Environmental District Officer</td>
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<td>HIV</td>
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<td>IRLADP</td>
<td>Irrigation, Rural Livelihoods and Agricultural Development Project</td>
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<td>Local Government Act</td>
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<td>LRCD</td>
<td>Land Resources and Conservation Department</td>
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<td>MIM</td>
<td>Malawi Institute of Management</td>
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<tr>
<td>MMNE</td>
<td>Ministry Of Mines, Natural Resources and Environmental Affairs</td>
</tr>
<tr>
<td>MOAIFS</td>
<td>Ministry Of Agriculture, Irrigation and Food and Security</td>
</tr>
<tr>
<td>MPRSP</td>
<td>Malawi Poverty Reduction Strategy Paper</td>
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<td>NLP</td>
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EXECUTIVE SUMMARY

This document serves as an Environmental and Social Management Framework (ESMF) for the proposed Irrigation, Rural Livelihoods and Agricultural Development Project, which the Government of Republic of Malawi intends to implement in 11 selected districts in Malawi. The purpose of the Environmental and Social Management Framework is to provide a strategic guide for the integration of environmental and social considerations in the planning and implementation of the project activities of the project. Currently, the Malawi Government is seeking the financial support of the World Bank for an Irrigation, Rural Livelihood and Agricultural Development Project. The estimated cost for the proposed Irrigation, Rural Livelihoods and Agricultural Development Project is US$ 30,000,000.00 (about MK 3,240,000,000.00).

1.0 THE PROPOSED PROJECT AND SCOPE OF ACTIVITIES.

The proposed Irrigation, Rural Livelihoods and Agricultural Development Project is integrated in nature, and has a number of sub-components which are Irrigation Rehabilitation And Development, Extension And Technology Transfer, Market Development, Institutional Support And Capacity Development. The component of much interest and covered in this environmental and social management framework is the Irrigation Rehabilitation and Development Component.
2.0 RATIONALE FOR THE PROPOSED PROJECT.

The Government of Malawi has put in place The Malawi Poverty Reduction Strategy Paper (MPRSP) as an overarching strategy for poverty reduction in the country through broad-based participatory approaches. The agriculture sector, including irrigation farming has been identified as a priority area of intervention in the MPRSP on the basis and belief of that it is a key source of pro-poor economic growth in medium term. Specific priority areas of interventions include the following: expansion of access to agricultural inputs and technologies, promotion of small scale irrigation schemes, promotion of production of livestock, reduction of land shortage and environmental degradation.

To this end, two issues surround the justification for the Government of Malawi to implement the proposed Irrigation, Rural Livelihoods and Agricultural development Project. These are:

(a) Poor Productivity of Rain fed Smallholder Agriculture.

Crop production in Malawi over recent years has been characterized by low and stagnant yields, particularly in maize production systems. Average maize yields have remained below 1.0 metric ton/ha for the past decade and below comparable potential. Low and stagnant yields have been influenced by dependence on rain fed farming and low level of irrigation development, declining soil fertility, and overall poor agricultural practices. Consequently, the majority of Malawians in rural areas face severe food insecurity for larger parts of the year, and poverty in general because of low crop outputs, which provide basic source of food and household income. The proposed project will address some the critical factors contributing to low crop production in Malawi.

(b) Potential for irrigation development to improve food security and economic growth.

Agricultural intensification through irrigation has the potential to double yields and provide two harvests per hectare to the small farmer in a given year. Investments in harvesting and management of water during period of plenty for irrigation use during period of scarcity are critical to meeting the food and fiber requirements for a growing population. Present government estimates indicate that the total formal or semi-formal irrigated area in Malawi is only about 28,000 hectares (against a potential of up to 0.5 million ha), of which 6,500 ha is under self-help small holders schemes, 3,200 hectares is under government-run smallholder schemes, and 18,300 ha is under estates, which suggests a significant scope for further irrigation development. The proposed project activities are designed to expand irrigation farming in order to reach areas that are more suitable, and contribute adequately to food production and economic growth.

3.0 PROPOSED DEVELOPMENT ACTIVITIES AND TARGETS.

Most of the future development activities to be executed under the irrigation rehabilitation and development component of proposed Irrigation, Rural Livelihoods and Agricultural Development Project will be rehabilitation of small scale irrigation schemes, construction of small scale reservoirs, development of small scale farmer demand driven rainwater harvesting projects, and catchment conservation. About 11 existing schemes of about 150 hectares each will rehabilitated; 14 reservoirs with storage volumes of about 100,000 cubic metres will developed under rehabilitation and development of small storage reservoirs and small scale irrigation schemes.

Development of small-scale farmer driven rainwater harvesting structures will involve construction of 1760 backyard structures, one for 10 -15 households; construction of 83 livestock's water storage structures; construction of 878 domestic water harvesting tanks; development of agro-forestry demonstration plots, and establishment of soil conservation measures covering over 3500 hectares in fragile catchment areas.

4.0 JUSTIFICATION FOR THE PREPARATION OF THE ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK FOR THE PROJECT.

The need to under take an environmental and social management framework for the project emanates from the following observations:
Under section 24 (1) of Malawi Government's Environmental Management Act, Number 23 of 1996 and Government of Malawi's Guidelines for Environmental Impact Assessment of December, 1997, the proposed Irrigation, Rural Livelihoods and Agricultural Development Project falls under prescribed list of projects for which environmental impact assessment is mandatory prior to implementation. The basis is that the proposed project constitutes several components of activities, which would generate considerable changes and significant effects to different components of the environment including land resources, water resources, forest resources and biological diversity in areas of locations. Thus, this framework is designed to establish in advance some appropriate level of environmental management measures for synchronization in range of project activities from planning stage to implementation of the actual mitigation and remedial measures.

The proposed Irrigation, Rural Livelihoods and Agricultural Development Project falls under prescribed list of projects (category B) under the World Bank's Operational Policy (OP4.01 Environmental Assessment), under the World Bank's Operational Policy (OP4.09) Pest Management. Project environmental and social impact assessments are required in such circumstances to put in place policy and operational frameworks to ensure mitigation of potential environmental and social impacts during the planning stage to mitigate some negative impacts.

5.0 POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS FROM THE PROJECT ACTIVITIES.

The project activities will be many, and will vary in size, the locality of the activity, the scope of the activity and the approach in implementation. However, most of these activities will involve civil engineering and construction works. General and typical environmental impacts would include the following: loss of forest resources, increase in soil erosion, loss of fragile ecosystem, soil and water contamination, dust emissions, exposure of agro-chemicals, siltation of water course, incidence of flooding, salinization of soils, changes in migration patterns of animals, incidences of communicable diseases and health hazards to workers.

General and typical social impacts of the project activities would include the following: loss of land for human settlement, loss of garden for local people, loss of grazing lands and rivers for local people, loss of crops and other properties for local people, spread of sexual transmitted diseases including HIV/AIDS within the area, conflicts over land use and ownership, disruption of footpaths, roads for people and disruption of patterns of local villages.

6.0 KEY STRATEGIES IN THE ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK.

This environment and social management framework has been prepared as a guide for initial screening of the proposed project sites and the proposed projects for negative impacts which would require attention prior to project implementation. The framework outlines a number strategies in undertaking the exercise. These include the following:

- An outline of a comprehensive checklist for the potential environmental impacts and their sources.
- An outline of a comprehensive checklist for the potential social impacts and their sources.
- Systematic procedures for participatory screening process for project sites and project activities for environmental and social considerations.
- Step by step procedures for forecasting the main potential environmental and social impacts of the planned project activities.
- An example of environmental management plan for addressing negative externalities in the course of project implementation and operations within environs.
- Step by step monitoring and evaluation system for implementation of mitigation measures.
- An outline of recommended capacity building measures for environmental planning and monitoring in the project activities.

7.0 POTENTIAL USERS OF THE ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK.

As a reference material, the framework will be useful to several stakeholders who will be involved in planning, implementation and monitoring of the proposed project. Some of the key users of this framework are as follows:

- Funding agencies/donors for the proposed Irrigation, Rural Livelihoods and agricultural Development Project.
- District Executive Committee members in the selected districts for the project.
- Politicians and local traditional leaders in the selected districts for the project.
• Senior central government officials responsible for policymaking and project planning.
• Central government officials responsible for environmental planning and management.
• Government extension workers working with local communities in the selected districts for the project.
• Non-governmental organisations involved in natural resource management in the selected districts for the project.
• The planners and engineers involved in the preparation of plans and designs of the project activities.
• Civil engineering and building contractors to be involved in the implementation of plans and designs of the projects.
• Those smallholder farmers to be involved in the implementation, management and operations of the project activities.
CHAPTER ONE: BACKGROUND INFORMATION ON THE PROJECT AND THE STUDY

1.1.0 INTRODUCTION.

This document serves as an Environmental and Social Management Framework (ESMF) for the proposed Irrigation, Rural Livelihoods and Agricultural Development Project which the Government of the Republic of Malawi intends to implement in selected 11 districts in Malawi. The Environmental and Social Impact Assessment Management Framework has been prepared as a guide for the integration of environmental and social considerations in the planning and implementation of the proposed irrigation related project activities.

The proposed Irrigation, Rural Livelihoods and Agricultural Development Project is integrated in nature, and has a number of sub-components which are Irrigation Rehabilitation and Development, Extension and Technology Transfer, Market Development, Institutional Support and Capacity Development. The component of much interest and covered in this report is the Irrigation Rehabilitation and Development Component. A number of sub-components are proposed under this component and these include:

- Selective rehabilitation of existing government owned irrigation schemes.
- Development of new small-scale irrigation schemes.
- Rehabilitation of existing small scale reservoirs and development of new reservoirs.

The estimated cost for the proposed Irrigation, Rural Livelihoods and Agricultural Development Project is US$30,000,000.00 (about MK 3,240,000,000.00), while the estimated cost for the Irrigation Rehabilitation and Development Component is US$14,800,000.00 (about MK1,598,400,000.00).

This Environmental and Social Management Framework (ESMF) covers the first three sub-components: Development of New Small Scale Irrigation Schemes, Small Scale Farmer Demand Driven Rainwater Harvesting and Catchment Conservation, and Rehabilitation of Existing Small Scale Reservoirs and Development of New Reservoirs. These sub-components include livestock water storage structures, agro-forestry and other small-scale farm based activities. A separate Environmental and Social Impact Assessment (ESIA) has been prepared for the proposed rehabilitation of selected existing government owned irrigation schemes which have been earmarked for immediate management transfer to smallholder farmers. An Environmental and Social Impact Assessment report has been presented as Volume 1. This Environmental and Social Management Framework (ESMF) has been presented as Volume 2.

1.2.0 SELECTED DISTRICTS AS PROJECT IMPACT AREAS.

The proposed Irrigation, Rural Livelihoods and Agricultural Development Project activities will cover the identified 11 districts which are Nsanje, Chikwawa, Blantyre, Phalombe and Zomba in the Southern region; Dedza, Lilongwe and Salima in the Central region, and Chitipa, Rumphi and Nkhatabay in Northern Region. Depending on demand and resources for particular activities, the activities will be spread in the identified districts depending on demand of the beneficiaries and resources for particular component. In view of this, not all activities under sub-components will take place in each district under project impact. Some activities of one sub-component will take place in some districts while others will take place in other districts. Map of Malawi is presented on page 2, highlighting the districts to be covered by the project.

1.3.0 OBJECTIVES OF THE PROPOSED IRRIGATION, RURAL LIVELIHOODS AND AGRICULTURAL DEVELOPMENT PROJECT

The project seeks to increase incomes and improve rural livelihoods in a sustainable manner, by raising the productivity of smallholder farms and improvement of incomes of farmers in the selected 11 districts of Malawi. The strategies will include enhancement of integrated necessary services and enabling conditions in areas of irrigation schemes, water harvesting, input supply, extension and technology transfer, farmer cooperatives and associations, and crop marketing.

The objectives are:

(a) To support the implementation of Government's National Irrigation Development Policy and Strategy through rehabilitation of existing irrigation schemes.

(b) To support the implementation of Government's new extension strategy by implementing pluralistic extension services and technology transfer to raise agricultural productivity.

(c) To improve market access and efficiency of smallholders.
LEGEND
- Cities
- District Headquarters

- Major Rivers
- International Boundary
- Lakes
1.4.0 IMPLEMENTING AGENCY OF THE PROJECT

The proponent of the Irrigation, Rural Livelihoods and Agricultural Development Project is the Government of Republic of Malawi, and the project-implementing agency is the Ministry of Agriculture. Contact details of the ministry are as follows:

Official Address : The Secretary for Agriculture, Irrigation and Food Security, Ministry of Agriculture, Government of Republic of Malawi
Postal address : P.O. Box 30314, Capital City, Lilongwe 3, Malawi.
Physical Address : Capital Hill Circular, Area 20, City of Lilongwe.
Facsimile : 265-01-.788-738
Contact Persons : Dr Andrew Daudi - The Secretary for Agriculture

1.5.0 RATIONALE FOR THE PROPOSED PROJECT.

Agriculture is the mainstay of Malawi's economy and it accounts for about 36% of growth domestic product (GDP), and about 87% of the total employment. The agriculture sector supplies about 65% of the raw materials to the limited Malawi's manufacturing sector, and is the most important source of income for the poor, accounting for about 63.7% of all income generated by households.

Poverty in Malawi is widespread, and is more severe in rural areas where about 85% of the country's population resides. Recent governments' estimates indicate that about 66.5% of the rural population live in poverty as compared to 54.9% in urban areas. (The poor in this case are defined as those people whose consumption of basic needs is below the minimum level, estimated at about MK 30.00 per day in 2000). The pervasiveness of poverty in Malawi is reflected by poor socio-economic indicators. For example, life expectancy in Malawi dropped from 43 years at birth in 1996 to about 39 years at birth in 2000. In 2000, 49% of children under 5 years of age were found to be stunted (low height of age), being a direct consequence of malnutrition. In addition, it was found out that the poor consume only 66% of the recommended daily calorie requirement - highlighting high levels of food insecurity.

In 2002, the Government of Malawi put in place The Malawi Poverty Reduction Strategy Paper (MPRSP) as an overarching strategy for spearheading sustainable poverty reduction through broad based participatory approaches. The agriculture sector, including irrigation farming has been identified as a priority area of intervention in the MPRSP on the basis and belief that it is a key source of pro-poor economic growth in medium term. Specific priority areas of interventions include the following: expansion of access to agricultural inputs and technologies, promotion of small scale irrigation schemes, promotion of production of livestock, reduction of land shortage and environmental degradation.

In light of the background outlined above, three agricultural development issues emerge in the justification of the proposed Irrigation, Rural Livelihoods and Agricultural Development Project:

1.5.1 Poor productivity of rain fed smallholder agriculture.

Malawi agriculture over recent years has been characterized by low and stagnant yields, particularly in maize production systems. Average maize yields have remained below 1.0 metric tonne per hectare for the past decade and below comparable potential. Low and stagnant yields have been influenced by dependence on rain fed farming and low level of irrigation development, declining soil fertility, and overall poor agricultural practices. The country experiences unreliable rainfall and extended periods of dry spells which adversely affects the productivity of its agriculture. Consequently, the majority of Malawians face severe food insecurity for larger parts of the year because of low crop outputs, which provide basic source of food and income to the majority of Malawians.
1.5.2 Potential for irrigation development to improve food security and economic growth.

Investments in harvesting and management of water during period of plenty for irrigation use during period of scarcity are critical to meeting the food and fiber requirements for a growing population. Agricultural intensification through irrigation has the potential to double yields and provide two harvests per hectare to the small farmer in a given year. Investments in harvesting and management of water during period of plenty for irrigation use during period of scarcity is critical to meeting the food and fiber requirements for a growing population. According to recent findings by The Food and Agriculture Organizations in Malawi, farmers who are involved in irrigation schemes are more self-sufficient and economically better off than rain fed farmers. In the mid-1990s, the donor community to irrigation provided only limited support because the Government of Malawi focus was on supporting rain fed crop production. In recent years, the GOM is committed to expanding sustainable irrigation development to promote rural economic growth and food security. At present, government estimated total formal or semi-formal irrigated area in Malawi is only about 28,000 hectares (against the estimated potential of up to 0.5 million ha), of which 6,500 ha is under self-help small holders schemes, 3,200 ha is under government-run smallholder schemes, and 18,300 ha is under estates, which suggests a significant scope for further irrigation development. About 62,000 ha are under simple, traditional irrigation (wetland cultivation). The total irrigation potential of Malawi has been estimated about 0.5 million ha (Dept. of Irrigation). Most of the irrigation presently is from surface water, either from diversion weirs or by pumping from rivers, or increasingly from shallow wells in Dambos (wetlands) where temporary or perched water tables are close to the surface.

The proposed project aims to explore activities for expansion of the irrigation farming in Malawi.

1.5.3 The need of marketing infrastructures for smallholder agriculture.

Most smallholder farmers in the rural areas have weak linkages to favorable input and output markets. Consequently, most households generate quite low outputs and profits from agricultural activities. Smallholder farmers face critical information and infrastructure constraints which results in high input costs and low output prices. Isolation of their produce from profitable markets also locks them into cropping patterns of non-diversified production. Smallholders' crop diversification has meant getting into burley tobacco production with its attendant limitations. Input costs—particularly fertilizer prices, have also been high because of high transport and other costs; fertilizer, for example, domestically retails at three times that of world prices. This calls for smallholders organizing themselves better to do bulk purchases to reduce transactions costs and lower the unit cost of fertilizers or building capacities on alternative soil conserving technologies. This project will address marketing constraints faced by smallholders under the project and address aspects of input supply faced by resource poor farmers.

1.6.0 PURPOSE OF THE ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

1.6.1 Justification for the Preparation of the Environmental and Social Management Framework.

The need to under take an environmental and social management framework for the project emanates from the following observations, among others:

- Under section 24 (1) of Malawi Governments' Environmental Management Act, Number 23 of 1996 and Government of Malawi's Guidelines for Environmental Impact Assessment of December, 1997, the proposed Irrigation, Rural Livelihoods and Agricultural Development Project falls under prescribed list of projects for which environmental impact assessment is mandatory prior to implementation (List A, page 25 of the guidelines). The basis is that the proposed project constitutes several components of activities, which would generate considerable changes and significant effects to different components of the environment including land resources, water resources, atmospheric resources and biological diversity in areas of locations. Thus, the EISA is designed to establish in advance some appropriate level of environmental management measures for synchronization in range of project activities from project planning stage to implementation.
The proposed Irrigation, Rural Livelihoods and Agricultural Development Project falls under prescribed list of projects (category B) under the World Bank's Operational Policy (OP4.01 Environmental Assessment), under the World Bank's Operational Policy (OP4.09 Pest Management), under the World Bank's Operational Policy (OP4.12 Involuntary Resettlement). Project environmental and social impact assessments are required in such circumstances to put in place policy and operational frameworks to ensure mitigation of potential environmental and social impacts during the planning stage, thereby avoiding long-term negative environmental and social externalities. World Bank Operation Policy (4.12 Involuntary Resettlement) has been covered more in detail in a separate assignment.

1.6.2 Aim and Objectives of The Environmental and Social Management Framework

The aim of the environmental and social management framework is to establish procedures for initial screening of the negative impacts which would require attention, prior to project implementation within sites.

Key specific objectives for the assessment are:

(a) To outline the development objectives of the proposed Irrigation, Rural Livelihoods and Agricultural Development project.

(b) To describe in general, the major components of the proposed future project activities.

(c) To review environmental policies, and procedures of the Government of Malawi in implementation of public sector projects and relevant the World Bank Operational Policies to be triggered by the proposed activities for consideration in the planning and implementation of the project activities.

(d) To forecast the main potential environmental and social impacts of the planned and future project activities.

(e) To develop an environmental management plan with recommended mitigation measures and strategies for addressing negative externalities in the course of project implementation and operation within environs.

(f) To recommend a screening process for scheme sites and project activities for environmental and social considerations.

(g) To recommend appropriate capacity building for environmental planning and monitoring in the project activities.

1.7.0 POTENTIAL USERS OF THE ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK.

This framework has been prepared as reference manual for different stakeholders to be involved in the planning, implementation, management and operation of the proposed small-scale irrigation schemes and small and medium scale water harvesting reservoirs for rapid assessment of the environmental and social impacts of sub-projects, and for application of appropriate mitigation measures in chosen a geographical zone. As a reference material, the framework would be useful to the following stakeholders:

(a) Funding agencies/donors for the proposed Irrigation, Rural Livelihoods and agricultural Development Project.

(b) District Executive Committee members in the selected districts for the project.

(c) Politicians and local traditional leaders in the selected districts for the project.

(d) Senior government officials responsible for policy making and development planning.

(e) Government extension workers working with local communities in the selected districts for the project.

(f) Non-governmental organizations involved in natural resource management in the selected districts for the project.

(g) The planners and engineers to be involved in the preparation of plans and designs of the project activities.

(h) Civil Engineering and building contractors to be involved in the implementation of plans and designs of the projects.

(i) Smallholder farmers to be involved in the management and operations of the project activities.

1.8.0 APPROACH TO THE PREPARATION OF THE ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK.
The focus of the assignment is to highlight the potential environmental and social impacts for the planned future activities of the project, and recommend a management plan for addressing potential negative impacts. In order to achieve these targets, the basic tenet of the strategy involved high degree of consultations with the various stakeholders. The rationale of these extensive consultations was to take on board views from a cross section of people, at least from local level, district level, and central government level.

The strategies of executing this assignment followed the five steps:

(a) Review existing conditions of the schemes, and identification of areas for rehabilitation and redevelopment activities for the irrigation schemes.
(b) Review of typical implementation approach and processes for the proposed rehabilitation and redevelopment activities within the irrigation schemes.
(c) Identification and analysis of potential environmental and social impacts the implementation processes will likely trigger and generate within and around the irrigation schemes.
(d) Development of screening process for negative impacts for proposed project sites and project activities.
(e) Identification of appropriate mitigation measures for the predicted impacts and compilation of a management plan for addressing environmental and social impacts during implementation, operation and maintenance of the project activities.

1.8.1 Information Gathering for the Environmental and Social Management Framework.

The information for this study has been collected through a number of research methods, which include field survey, and investigations, stakeholder consultations, review of related literature from published and unpublished documents.

(i) Field surveys of the Schemes.
The consultants undertook site investigations and field surveys to selected districts and irrigation schemes between October 19 and 23, 2004. The consultants visited Likanga Irrigation Scheme and Njala Irrigation Scheme in Zomba between October 19 and 21, 2004; visited Domasi Irrigation Scheme in Machinga on 22 October, 2004; visited Mkhate Irrigation Scheme in Chikwawa on October 24, 2004, visited Muona Irrigation Scheme in Nsanje on October 25, 2004, visited Livunzu Irrigation Scheme on November 13, 2004; visited Limpasa Irrigation Scheme in Nkhata Bay on October 27 and 28, 2004. The consultants visited some selected sites for new projects in Rumphi, in Karonga, in Chitipa between October 30 and November 7, 2004. The field surveys enabled the consultants to identify the environmental setting of the irrigation schemes, identify some of the existing physical conditions and gaps within the schemes. In additions, the site visits allowed to consultations with district agricultural officers, ground level staff such as the agricultural extension staff and project beneficiaries on their feelings of the current problems, as well the potential impacts of the proposed rehabilitation activities.

(ii) Stakeholder consultations.
A series of stakeholder consultations were conducted through out the study period and the drafting process of the framework. Some of the consultations were round table discussions and/ or focus group discussions with key stakeholders such as senior officials in the Ministry of Agriculture, Department of Irrigation, Department of Environmental Affairs, District Agricultural Development Officers and extension workers, and farmer association committee members. A list of all people who were consulted has been provided in appendix 5. This arrangement provided a unique opportunity to interact, solicit the views of key stakeholders such as the extension workers, the farmer associations and the villagers around the schemes who will be directly involved and affected in the implementation of the proposed project.

(iii) Questionnaire.
Questionnaires with an outline of the proposed project activities on the sites were circulated to various stakeholders especially the Extension Workers and District Agricultural Development Officers. These were administered during field survey to the selected districts and schemes between October 20 and November 16, 2004. The aim was to obtain opinion on the key potential environmental and social impacts of the project activities within the areas and also to get additional views on appropriate mitigation measures for the negative impacts.

(iv) Literature review.
Some information presented in this environmental and social management framework was obtained from available published and unpublished documents. Examples of this information include baseline data on rainfall,
flora and fauna, population statistics, socio-economic data, altitude and hydrology regimes of the area, rainfall figure of the area and the maps used in the report. All the documents used are duly acknowledged in appendix 6.

1.9.0 CONSTRAINTS AND LIMITATIONS OF THE PREPARATION OF THE FRAMEWORK.

The information presented in this report is by and large consistent with the data and information gathered through the various sources and approaches outlined above. However, just as in any studies, the exercise experienced a number of constraints and as a result, there could be some gaps of information in the report as the consultants could not exhaust the collection of primary data.

One constraint was that some institutions and people (who are ideally key stakeholders to the project) understood differently, the purpose of the environmental and social management framework due to limitations of their formal education and lack of advance awareness of the exercise. In view of this the consultants devoted some considerable time in awareness discussions including question and answer sessions prior to settling down to real issues for consultations.

Secondly, the consultants experienced significant difficulties in receiving the responses to the questionnaires distributed to stakeholders partly because of the relatively short time for the exercise. Thirdly, the consultants could not interview and discuss with all stakeholders such as project planners, extension workers and districts executive members due to time limitations of the exercise. As such, while the findings/issues advanced in this report reflect the general views and feelings of some selected people, they may not cover the specific issues from some unique situations or some individuals affected by the project.

Lastly, but not least, some information in the report was processed from secondary sources and such data include maps, land resources, atmospheric resources, water resources, biological resources, socioeconomic data on poverty situation in Malawi and data on the role of agriculture to the economy of Malawi. It is therefore necessary to understand such as information with the time reference and the limitations in cases of interpolations.

1.10.0 FORMAT OF THE REPORT

This framework is organized in six chapters. Chapter One provides a background information to the proposed Irrigation, Rural Livelihoods and Agricultural Development Project (IRLADP) such as the justification for the proposed project in Malawi, aim and objectives of the project, the major components of the projects, proposed impact areas, it current status, estimated costs. In addition, the chapter outlines the objectives the Environmental and Social Management Framework, and the approach and methodology in developing the framework.

Chapter two provides an overview of baseline information of Malawi's key environmental resources such as land resources, water resources and biological resources, and on the other hand explains in general terms the institutional set up which support the regulatory framework. In addition the chapter describes Malawi's relevant policies, laws and institutional set up which regulate and manage resource utilization, protection of sensitive areas including aquatic and land ecosystems, land use control and protection of endangered species. The chapter outlines procedures for implementation of public sector projects.

Chapter three outlines the nature and scopes of the proposed activities under the proposed project, the environmental components likely to be affected by the project activities, the nature and potential sources of the main environmental and social impacts in the implementation and operation of the project activities.

Chapter Four provides step by step screening process for sites for future projects, screening process for main environmental and social impacts from future irrigation related projects. The Chapter provides standards and procedures including checklists showing how identified future project activities whose locations are unknown will address environmental and social issues.

Chapter Five lays out the pesticide management plan. This includes pesticide procurement, transportation, storage, application and disposal. The chapter explains how pesticides should be handled in view of their toxicity and potency. A list of pesticides commonly used in Malawi is presented in Appendix 6 to complement the chapter.
Chapter Six describes the relevant environmental and social training and capacity building measures for stakeholders at all levels to adequately participate in the implementation. The chapter includes specific training activities for the stakeholders and the cost estimates to facilitate the training programme.

Chapter Seven outlines the typical environmental management plan for the impacts for integration into the irrigation related project activities. The plan includes responsible authorities for collaboration in the implementation of the mitigation measures. The chapter includes recommendations of appropriate monitoring activities by different stakeholders at local level, district level and national level to ensure compliance to mitigation measures.

Chapter Eight describes the implementation plan by providing information on the proposed implementation arrangements, particularly at the scheme level where all the activities will take place. The chapter also gives a summary of the costs required for training and the sources of funding for the other project activities.
CHAPTER TWO: ENVIRONMENTAL SETTING: A REVIEW OF MALAWI’S ENVIRONMENTAL RESOURCES, AND POLICY, LEGISLATIVE AND REGULATORY FRAMEWORK FOR DEVELOPMENT PROGRAMMES.

2.1.0 REVIEW OF CONDITIONS OF NATURAL RESOURCES IN MALAWI.

Malawi is endowed with diverse natural resources, which include some of the most fertile soils, forest and water resources which accommodate diverse species of flora, fauna and fish resources. However, these resources are currently challenged by complex interaction of several factors which include the rapid rate of population growth of about 2% per annum. This imposes ever-intensive pressure on the natural resources utilisation, leading to unsustainable land use, depletion of forest resources, and loss of biodiversity, heavy soil erosion and water pollution.

The following paragraphs review some of the key country’s natural resources such as land resources, atmospheric resources, biological resources, and water resources as well as the agricultural activities.

2.1.1 Land Resources

(a) Land availability and agriculture.

Malawi covers an area of about 11.8 million hectares of which 9.4 million is land and the remaining 2 million is under water bodies. Agricultural estates occupy 1.2 million hectares and the area potentially available for agriculture by smallholder farmers is approximately 6.5 million hectares after adjusting for wetlands, steep slopes, and traditional protected lands as presented in the following table:

<table>
<thead>
<tr>
<th>Land Category</th>
<th>Million hectares</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total land area of Malawi</td>
<td>9.4</td>
<td>100</td>
</tr>
<tr>
<td>Less national parks, forests and game reserve</td>
<td>-1.7</td>
<td>18</td>
</tr>
<tr>
<td>Land available for agriculture</td>
<td>7.7</td>
<td>82</td>
</tr>
<tr>
<td>Land available for smallholder agriculture and estates</td>
<td>7.7</td>
<td>82</td>
</tr>
<tr>
<td>Land under estates</td>
<td>1.2</td>
<td>16</td>
</tr>
<tr>
<td>Land available for smallholder farmers</td>
<td>6.5</td>
<td>69</td>
</tr>
</tbody>
</table>

*Source: Malawi National Land Policy, 2002, page 7*

Based on recent survey by Malawi Government’s National Statistics Office, about 55% of the smallholder farmers have less than one-hectare of cultivable land, which does not meet their basic food needs. As a result, more than half of the population are unable to produce enough for food and cash such that the majority live below the poverty line of US$140 per capita income annually.

(b) Land Tenure Regimes in Malawi

Malawi embraces the capitalist ideals with regard to land ownership. There are five distinct land tenure classes existing in Malawi, which are detailed as follows:

(i) Customary Land

This is land held in trust for all people of Malawi by the president, who delegates his authority to traditional chiefs. This constitutes about 75% of the total 9.4 million hectares of the land. The land is commonly held and distributed to the people by local chiefs. Although each person has recognised ownership to a piece of land, he or she cannot trade on it as the land can be reassigned to other people in case the chiefs deem it fit. Therefore, there is no incentive for owners to invest into long-term conservation of the land. A coherent...
system in the distribution of land exists in both patrilineal and matrilineal societies. This system has allowed smallholder agriculture to survive without access to bank loans.

(ii) **Leasehold Land**
This is part of private land that is leased by individuals or other legal residents. The lease period varies according to type of use that someone has applied for. Currently these fall into three groups of 21 years old leases for agricultural uses, 33 to 99 years old for property and infrastructure developments, and over 99 year lease for those who would wish to sublease to tenants of 99 years. About 8% of the land in Malawi is in this category.

(iii) **Registered Land**
This is grouped into two classes called customary registered and adjudicated land. The first exists in Lilongwe District only. This land is registered in the family leader name with all family names in that area registered including the size of their land holdings. Their implicit freehold status as the families can trade in its holding by leasing out or selling bits of it with groups consent. Loans can therefore be obtained on strength of their certificates to the land.

The second class is a simplified leasehold system, which allows owners to have certificates for their pieces of land based on survey and registration number. This is common in the urban areas, but has been applied in rural areas for agricultural, commercial and residential uses. In case the government decides to transfer the existing irrigation schemes to farmer groups, leasehold system would be an option for transferring the schemes.

(iv) **Freehold Land**
This is land, which has been granted to persons for perpetuity. The government has no specific control on transactions except on planning permission on uses. This lease is now limited to Malawian citizenship only. It is difficult to enforce conservation measures on this land because of the exclusivity, which the persons enjoy, particularly some owners who live overseas.

(v) **Government Land**
The is land which is owned and used by government for public utilities, schools, hospitals, government offices and other properties, markets, government irrigation schemes and other public goods throughout the country.

(vi) **Public Land**
Land managed by agencies of the government and traditional leaders in trusts for the people of Malawi, openly used or accessible to the public at large. This includes catchment areas, protected forest reserves, national parks, game reserves, dambos, community forests, riverines, flood plains, wet lands, military sites and others.

(C) **Main soils types.**
The country has four main soil classes, namely:

(i) **Latosols:** these are red -yellow soils which include the ferruginous soils of Lilongwe -Kasungu plains, West Mzimba Plains, and some parts of Southern region. These are among the best agricultural soils in the country. The weathered ferrallitic soils, some with a high lateritic content can be easily exhausted. Ferrelistic soils cover large parts of the plains along the western border of the country.

(ii) **Lithosols.** Lithosols are the shallow stony soils that associate with deep slopes. These occur in areas of broken relief in the country. Examples are found in highlands of Viphya Plateau, Nyika Plateau, Dedza Escarpment, Dzaianyama Range and Kirk Range.

(iii) **Calcimorphic soils.** This group includes the alluvial soils of the lacustrine and riverine plains, the vertisols of the lower Shire River Valley, the Phalombe –Lake Chilwa Plains, the mopanosols of Liwonde, Balaka, and Bwanje Valley.

(iv) **Hydromorphic soils.** These are grey soils of the hydromorphic group which are found either in seasonally or permanently wet areas, as in Lake Chilwa Plain, Lower Shire Valley, and other localised marshy areas known as dambos.

The soils of much interest in this project are calcimorphic and hydromorphic soils. These soils occur in low-lying areas including flood plains and riverines which are the potential areas for irrigation related project activities which are under consideration in this environmental and social management framework.
2.1.2 Climate and Rainfall.

Malawi climate is influenced by proximity to the huge lake that covers almost two thirds of its entire length. The climate is tropical continental with three distinct seasons, the hot - rainy season from November to April, the cool - dry season from May to July, the hot- dry season from August to November.

Annual rainfall in Malawi ranges from 700 to 1900 millimetres. Topography and proximity to the lake influence its distribution. Least rainfall (about 700-800 millimetres per year) is registered in rain shadow areas such as the rift valley, west of shire highlands, north west of Viphya and Nyika highlands. Moderate rainfall (800-1200 millimetres) occurs mostly in plains, which include Lilongwe – Kasungu Plains and West Mzimba Plains. Most of the arable and food crops are planted in this rainfall belt. High rainfall (1400-1900 millimetres per year) is experienced in high plateau areas such as Mulanje Mountains, Zomba highlands, Viphya and Nyika Highlands.

The mean annual minimum and maximum temperatures for Malawi range from 12 to 32 degree Celsius. The highest temperatures occur at the end of October or early November, but thereafter, the rains bring moderating effects. The cold periods are in June and July. Hightest temperatures are recorded in the Shire Valley and along the lake shore while the lowest temperature are recorded over the high altitude areas particularly the Shire Highlands, the Viphya and Nyika Highlands.

2.1.3 Forest Resources

Eighty (80) percent of the Malawi's total terrestrial land area is forest area. This translates to 3.6 million hectares. Ninety-seven percent of this forest area is covered with indigenous forests. Forests are a vital natural resource in Malawi. They supply 90 percent of the country's energy needs and provide timber for construction and other industrial use. Hydro-electricity constitutes only 2.5 percent of the total energy consumed in Malawi. Forests help maintain air, soil and water quality; influence biochemical processes; regulate run-off and groundwater, reduce downstream sedimentation and the incidence of flash flooding in addition to controlling soil erosion; provide watershed protection and enhance water resources. About half of Malawi's forest cover is on customary land, owned by the local communities. The rest of the forest area is in National Parks and Wildlife Reserves either gazetted areas or proposed forest reserves (NEAP 1994). The extremely high reliance on biomass for energy needs imposes heavy strains on the biological diversity of the forest ecosystem in the country. A commitment to conserve the biological diversity and the natural resource base in Malawi is enshrined in the Republican Constitution under section 13 paragraph 4d (v). The forest resource base is being rapidly depleted by firewood and pole extraction, land clearing for cultivation and felling of high-grade timber species. This is a big threat to sustainable agriculture development in Malawi. As such, sustainable management and conservation of the forest ecosystem is imperative.

2.1.4 National Parks and Wildlife Reserves.

National Parks and Wildlife Reserves in Malawi occupy 11.6 percent of the country's area, which is a total of 1.3 million hectares. About 8,700 hectares of this area form water body National Park – Lake Malawi. UNESCO designated the Lake Malawi National Park as a World Heritage Site. The rest of the area constitutes 5 national parks and 4 wildlife reserves. Malawi's national parks and wildlife reserves are endowed with about 3,500 species of plants, 4,000 species of animal species and about 1,000 micro organisms. To date there are 1,500 species of vertebrates. 163 mammals; 92 reptiles; 54 amphibians; 620 species of birds and 583 species of fish that have been described (NEAP 1998). The above fauna and flora occupy different habitats. Some of the animal and fish species are rare, endangered and endemic to Malawi. Additionally, wildlife has aesthetics, scientific, cultural and recreational values of Malawi's population. Therefore, protection, conservation and sustainable utilisation of wildlife resources are of vital importance to Malawi because they provide food, timber, tourism attraction, and sources of biological diversity. Illegal exploitation including encroachment, and poaching into the protected areas, and wildlife reserves continue to deplete the flora and fauna in this component.
Malawi water resources are in two main categories namely: surface and ground water resources. Surface water resources are derived from precipitation. The rich surface water resources comprise a network of rivers and lakes that count for about 20% of the country's area. The drainage system is divided into 17 water resources areas. The dominant water body is Lake Malawi and the Shire River systems, which are interlinked since the Shire River serves as the only outlet of Lake Malawi. Other extensive surface water bodies include Lakes Chilwa, Malombe, and Chiuta. And other important rivers are North Rukuru, South Rukuru, Lilongwe, Ruo, Dwangwa, Bua, Phalombe and Mwanza. The hydro chemistry of the majority of the surface resources in Malawi is alkaline earth (calcium and magnesium) delineated by the cation group and by carbonate system in the anion group. Most of the surface waters are classified as soft, to moderately soft. Few areas have hard water. The microbiological quality of most major rivers is generally poor all the year round especially those that are draining through cities and towns. Typical count of faecal bacterial colonies range between 50 to 100 per 100 millimetres of sampled water. The physical quality of surface water is also affected by human activity occurring in various catchment areas. High-suspended solids are found in most of the surface water bodies. High population growth has forced people to cultivate marginal areas, to clear vast expanses of land for tobacco, other crops and livestock farming. This has resulted in excessive soil erosion, loss of soils fertility, destruction of catchment areas, and loss of biological diversity and the natural resources base. Malawi contains some of the world's important wetland ecosystems. The most important wetlands include the shorelines plains of Lakes Malawi, Lake Chilwa, and Lake Chiuta, a diversity of Dambo ecosystems, and the Elephants and Ndindi Marshes in the lower Shire Valley. Wetlands are the habitats of important plant and animal species such as birds in the Lake Chilwa plains, and the elephants in Ndindi marshes. In addition, the wetlands forms some sheltered fish spawning, nursery grounds and as habitat for adult fish. The biological diversity of wetlands and other water resources have been negatively affected by high population pressure and over exploitation.

2.2.0 AN OVERVIEW OF POLICIES, LAWS AND PROCEDURES FOR IMPLEMENTATION OF PUBLIC SECTOR PROJECTS

Over the last ten years, The Government of Malawi has adopted a new republican constitution, and a number of new policies and legislation with the ultimate aim of promoting and consolidating sustainable socio-economic development in the country through the mainstreaming of environmental considerations in project planning and implementation. These include: the National Environmental Action Plan, the National Environmental Policy, the National Land Policy, Vision 2020, the National Growth Strategy, the National Irrigation Development Policy and Strategy, the National Land Use and Management Strategy, the Malawi Poverty Reduction Strategy Paper, the Decentralization Policy, the Environmental Management Act, and Local Government Act among others. The following paragraphs highlight some selected policies and laws which are applicable in the planning and implementation of public sector projects, more especially those in the agricultural and irrigation sector.

2.2.1 The Republic of Malawi Constitution, 1995.

A new Constitution of the Republic of Malawi came into force in 1995. Section 13 (d) of the Constitution sets a broad framework for sustainable environmental management at various levels in Malawi. Among other issues it calls for prudent management of the environment and accords future generations their full rights to the environment. The constitution also provides for a framework for the integration or application of international environmental and foreign case law into the national legal system.

2.2.2 The National Environmental Policy, 1996 and The Environment Management Act, number 23 of 1996

The National Environmental Policy was adopted in 1996, and aims at narrowing the gap between the degradation of natural resources and the environment on one hand, and sustainable production and economic growth on the other. It provides a national framework through which other policies can be reviewed within the principles of sound environmental management and sustainable development. Among the guiding principles is the recognition of the participation of the private sector and non-government organization in the projects. The Environment Management Act number 23 of 1996 provides the basic legal and administrative framework for environmental planning and management including environmental impact assessment for prescribed projects. The administration of environmental impact assessment is managed by the Director for Environmental Affairs in the Environmental Affairs Department of the Ministry of Mines, Natural Resources and Environmental Affairs. Section 9 of the Environment Management Act sets out the powers, functions and duties of the Department of Environmental Affairs and those of the Director of Environmental Affairs.
Section 16 has provisions for the establishment, the powers and duties of an inter-agency Technical Committee on Environment (TCE). The Technical Committee on Environment is composed of multi-disciplinary professionals and is the technical arm for the Department of Environmental Affairs which provides technical expertise and recommendations on matters of environmental planning and management including environmental impact assessment of projects.

Section 10 has provisions for the establishment, powers and duties of the National Council on Environment (NCE). This is a policy making body which advises the Minister and the government on all matters regarding mainstreaming of environmental planning in public and private sector projects. Its role includes overseeing the processing of environmental impact assessment.

The Department of Environmental Affairs provides secretarial services to both the Technical Committee on Environment and the National Council on Environment.

Section 24 of the Environmental Management Act specifies the steps to be followed in the preparation of project impact assessment. In compliance to section 24 of the act, the Guidelines for Environmental Impact Assessments were put in place in December 1997. The guidelines provide a list of prescribed project for environmental impact assessment.

Section 27 of the act specifies that any project subject to environmental impact assessment cannot be approved by any licensing authority in Malawi for implementation until a satisfactory impact study report is approved and a certificate is issued by the Director for Environmental Affairs.

2.2.3 The Pesticides Act No. 12 of 2000

The Pesticides Act No. 12 of 2000 provides for the control and management of the import, export, manufacture, distribution, storage, disposal and use of pesticides. It also provides for the establishment of the Pesticides Control Board. The relevance of this Act to the irrigation schemes is that the use of pesticides must be carefully controlled to protect life and the environment. Hence the use of pesticides at the irrigation schemes must conform to the Act and in addition, to the requirements of Integrated Paste Management, (IPM).

2.2.4 The National Decentralization Policy and the Local Government Act.

Since 1998, Malawi Government embarked on a nation wide decentralization programme to devolve political and administrative powers to resource custodians and users at district and grass root level. The National Decentralisation Policy, under way in Malawi, is the key policy that aims at promoting effective local participation in development planning and resource management.

Under the Local Government Act (LGA) Number 42 of 1998, 39 district authorities were established to spearhead local planning and development. The act provides a wide range of duties to the local authorities including environment management of their respective areas. In the context of the proposed Irrigation, Rural Livelihoods and Agricultural Development Project, it is expected that local authorities in the selected district will play a pivotal role in the implementation process under the supervision of the District Agricultural Development Officers.

Pursuant to the requirements under The National Decentralization Policy and the Local Government Act, the process of decentralizing environmental management to district level under the auspices of the Ministry of Mines, Natural Resources and Environmental Affairs, has been progressing quite well over the last five years. District Environmental Offices have been established, and are functional in 27 districts of the country. In addition, district environmental sub-committees have been formed and trained in decentralized environmental management system. By end of 2003, 22 districts had prepared and put in place their District Environmental Action Plan for synchronizing environmental planning in socio-economic development activities within the districts. All the selected 11 districts of the project focus have in place, district environmental offices and the district environmental action plans.

2.2.5 The Malawi Poverty Reduction Strategy Paper, 2002

The Government of Malawi has put in place The Malawi Poverty Reduction Strategy Paper (MPRSP) as an overarching strategy for spearheading sustainable poverty reduction through broad based participatory approaches. The agriculture sector, especially small holder farming, has been identified as a priority area of intervention in the MPRSP on the basis and belief that it is a key source of pro-poor economic growth in medium term. The specific priority areas of interventions include the following: expansion of access to agricultural inputs
and technologies, promotion of small scale irrigation schemes, promotion of production of livestock, reduction of land shortage and environmental degradation, reduction of HIV/AIDS infections and effects in the agriculture sector.

The strategy recognizes the nexus between poverty reduction activities and environmental degradation. In order to overcome this, the Malawi Poverty Reduction Strategy Paper also prioritized law enforcement to protect natural resources, alternative livelihoods strategies to take pressure off the scarce resources, and a mass awareness campaigns to save the environment.

2.2.6 The National Land Policy, 2002 and the Land Act

The National Land Policy was adopted in 2002 and focuses on land as a basic resource common to all people of Malawi. The new policy provides opportunities for the people of Malawi to embark on a path of socially and environmentally sustainable development. In addition, the policy highlights a numbers of approaches for redressing problems facing land resources. Some of relevant provisions to the proposed Irrigation, Rural Livelihoods and Agricultural Development Projects are as follows:

- The policy recognizes agriculture development as the major benefactor land use sector. The policy guarantees full legal protection to e customary land tenure to the people of Malawi in order to enable the ordinary Malawians adequately participate in agricultural activities and other rural livelihoods.

- The policy recognizes several sectoral policies and strategies in physical planning fisheries, environment, forestry, irrigation and wildlife and for this reason; it encourages multi-sectoral approach in land use and management at local and districts level.

- The policy recognizes environmental impact assessment of all big land development projects, and those planned in fragile ecosystems in order to protect biodiversity and water resources.

Two main statutes which regulate land use are the Land Act and the Town and Country Planning Act, Number 26, 1988. These statutes deal with land tenure and land use quite comprehensively. The issues of land tenure and land use are recognized as critical in sustainable environmental management in Malawi. The Land Act and The Town and Country Planning Act highlights the sustainable use of land resources by strengthening and clearly defining security of tenure. This is essential, as people are more inclined to manage well land that they know belongs to them. The proposal to transfer the government owned schemes to local people is within this framework.

2.2.7 The National Land Resources Management and Strategy, 1998

The aim of the National Land Resources and Strategy is to promote utilization of Malawi’s land resources through environmentally friendly agricultural activities. Some of the selected policy objectives are to promote integrated land conservation measures in all forms of agricultural practices, and to protect and preserve environmentally fragile areas such as steep slopes, stream banks, water sheds and dams. This policy is quite relevant in the implementation of the proposed Irrigation, Rural Livelihoods and Agricultural Development Project because a number of the activities fall within the framework of this policy such as the construction of rainwater harvesting structures, promotion of agro-forestry activities, watershed and catchment conservation project activities.

2.2.8 The National Irrigation Development Policy and Strategy.

This policy advocates among others the promotion of sustainable irrigation development system, which can adequately contribute to food security in the country with minimal degradation of water resources and the environment. There are indications that the total irrigable land in Malawi is about 500,000 hectares, but that currently, about only 62,000 hectares are utilized of which only 6500 hectares is by smallholder farmers. The policy highlights that some constraints to further irrigation development which include inadequate access to appropriate technologies/equipment by potential small holder farmers, inadequate trained personnel in irrigation technologies and subsequent limited training programmes for farmers in irrigation. The policy outlines a number of strategies towards improvements in irrigation agriculture, and some of them include the following:
- Promotion of small-scale small holder irrigation schemes in all potential areas.
- The transfer of management of government owned schemes to small holder beneficiaries in order to improve production and environmental management.
- Facilitating the participation of private sector in construction and maintenance of the irrigation schemes and in crop marketing from the schemes.

The implementation of some of these objectives by the Government of Malawi are already underway, and some smallholder farmers associations are already managing the existing irrigation schemes at Domasi Irrigation Schemes, Likangala Irrigation Scheme and Muona Irrigation Schemes among others.


The Government of Malawi adopted the water resources policy in 1994 with the aim of providing a comprehensive and integrated water resource conservation and management within the country. The Ministry of Water Development is responsible for the coordination of the implementation of the policy.

Two main statutes which regulate water resource protection, conservation, and planning and catchment management are the Water Resources Act, 1969 and the Water Works Acts of 1995. The Water Resources Act is the legal framework for the establishment, powers and duties of the Water Resources Board. This is a policy making body which advises the Minister and the government as a whole on all matters regarding water resource protection, abstraction, conservation, planning and catchment management. Its role includes overseeing the processing of application for water rights and monitoring water abstraction. The Water Works Act of 1995 provides the legal framework for the establishment of the three regional water boards, namely The Southern Region Water Board, The Northern Region Water Board and Central Region Water Board. These boards provide water supply and catchment management in their respective geographical command areas.

The Ministry of Water Development is responsible for the following issues, which relate to irrigation:
- Protection of water resources and catchments management.
- Water resource planning and development
- Review of applications for water abstraction
- Water quality management including control of pollution.
- Maintenance of the water resource data bases

In some areas, water flows in rivers have been declining, and there is greater demand on rather limited resources especially in the dry seasons. In schemes like Likangala in Zomba this is now becoming a serious issue with the informal new users abstracting water in riparian areas upstream of longer term established users.

The Director of Irrigation will work with Ministry of Water Development, the Water Resources Board, National Irrigation Board, district assemblies, traditional authorities and communities to develop measures to minimise the conflicts on water resource use. The thrust will be on improvement of water use efficiency in these selected project impact areas.

2.3.0 MALAWI’S OBSERVATION AND COMPLIANCE TO INTERNATIONAL POLICIES AND CONVENTIONS

Malawi endorses and adheres to a number of internationally acceptable policies, conventions, treaties and protocols in order to augment the national policies and laws. These include conventions and protocols outlined below.

(a) The convention of biological diversity
(b) The convention on international plant protection.
(c) The convention on wetlands of significant importance.
(d) The convention on conservation of migratory species of wild animals.
(e) The convention concerning the protection of world and natural heritage.
(f) The convention on desertification and drought.
(g) African convention on conservation of nature and natural resources

2.4.0 AN OVERVIEW OF WORLD BANK SAFEGUARD POLICIES APPLICABLE ON THE PROJECT.

The proposed Irrigation, Rural Livelihoods and Agricultural Development Project has triggered three of the World Bank’s safeguard policies, namely, OP 4.01 Environmental Assessment, OP 4.09 Pest Management, and OP
4.12 Involuntary Resettlement. The following paragraphs review the first two applicable safeguard policies. Safeguard Policy on Involuntary Resettlement I has been comprehensively handled in a separate study.

2.4.1 Environmental Assessment (Operational Policy 4.09)

The objective of OP 4.01 is to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate analysis of actions and of their likely environmental impacts. This policy is triggered if a project is likely to have potential (adverse) environmental risks and impacts in its area of influence. Thus, the construction and rehabilitation of irrigation facilities is likely to have environmental impacts, which require mitigation. Hence the requirement to carry this environment and social assessment for the project.

2.4.2 Pest Management (Operational Policy 4.09)

The objective of OP 4.09 is to promote the use of biological or environmental control methods and reduce reliance on synthetic chemical pesticides. In Bank-financed agricultural operations, pesticide populations are normally controlled through Integrated Pest Management (IPM) approaches. In Bank-financed public health projects, the Bank supports controlling pests primarily through environmental methods. The policy further ensures that health and environmental hazards associated with pesticides are minimized.

2.4.3 Involuntary Resettlement (Operational Policy 4.12)

The objective of OP 4.12 is to avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs. Furthermore, it intends to assist displaced persons in improving their former living standards; it encourages community participation in planning and implementing resettlement and in providing assistance to affected people, regardless of the legality of title of land. This policy is triggered not only if physical relocation occurs, but also by any loss of land resulting in: relocation or loss of shelter; loss of assets or access to assets; loss of income sources or means of livelihood, whether or not the affected people must move to another location.

A summary of the World Bank's safeguard policies and position of the government on the proposed project are detailed in Annex 4.
3.1.0 PROPOSED DEVELOPMENT ACTIVITIES AND TARGETS.

Most of the future development activities to be executed under the irrigation rehabilitation and development component of the proposed Irrigation, Rural Livelihoods and Agricultural Development Project will be rehabilitation of small scale irrigation schemes, construction of small scale reservoirs, development of small scale farmer demand-driven rainwater harvesting structures, and catchment conservation. The component of much interest in this report is the irrigation rehabilitation and development component. Table 2.1 below summarizes initial development targets and geographical distribution of these future project activities under each sub-component.

Table 3.1: Summary of the development targets of the future project activities for irrigation rehabilitation and development component.

<table>
<thead>
<tr>
<th>DESCRIPTION OF SUB-COMPONENT</th>
<th>SCOPE AND DEVELOPMENT TARGETS</th>
<th>DISTRICTS/FOCUS AREAS</th>
</tr>
</thead>
</table>
| (a) Rehabilitation of Existing Small Storage Reservoirs and Small Scale irrigation Schemes | Rehabilitation of 11 small scale existing irrigation schemes (about 150 hectares each)  
- Rehabilitation of 14 small scale reservoirs with storage volumes of about 100,000 cubic metres. | Dadza  
Rumphi  
Chikwawa |
| (b) Development Of New Small Water Reservoirs | Construction of 14 new small scale water reservoirs with storage volumes of 50,000 to 100,000 cubic metres per structure | Dadza  
Rumphi  
Chikwawa  
Lilongwe  
Phalombe |
| (c) Development of Small Scale Farmer Driven Rainwater Harvesting Structures and Catchment Conservation | Construction of 1760 backyard structures, one for 10 - 15 households.  
- Construction of 83 livestock’s water storage structures  
- Construction of 876 domestic water harvesting tanks  
- Development of agro-forestry demonstration plots  
- Establishment of soil conservation measures covering 3500 hectares in fragile catchment areas. | Dadza  
Rumphi  
Chikwawa  
Phalombe  
Blantyre  
Nsanje  
Nkhatabay  
Lilongwe  
Salima  
Machinga  
Zomba |
| (d) Development of new small scale irrigation schemes | Establishment of 14 new irrigation schemes within the sphere of influence of the small dams outlined in (b) above | Dadza  
Rumphi  
Chikwawa  
Lilongwe  
Phalombe |
3.2.0 DESCRIPTION OF PROJECT ACTIVITIES AND SOURCES OF ENVIRONMENTAL AND SOCIAL IMPACTS.

A number of project activities will be implemented under each of the sub-components outlined in table 3.1 above in the selected 11 districts. The activities normally executed under the proposed small-scale irrigation schemes, dams/reservoirs, rehabilitation of small-scale irrigation schemes and water-harvesting structures have been identified and typical phases or stages are outlined below. This exercise has been done in order to highlight some of the main sources of the environmental and social impacts in project activities of this nature. The activities are grouped under the following phases:

- Planning and design activities
- Construction works /rehabilitation activities of the irrigation infrastructures.
- Operation and maintenance activities of the Irrigation Infrastructure.
- Decommissioning and closure of the Irrigation Schemes.

3.3.0 OUTLINE OF THE TYPICAL POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS FROM THE ACTIVITIES

Irrigation related project activities generate several environmental and social impacts during implementation, operation as well as during decommissioning. This is because the irrigation activities involve extensive civil works during construction and rehabilitation, intensive abstraction and use of water resources, depletion of forest resources and interaction of many people within a project location area. The activities also generate impacts that result in incidences of water-borne and water related diseases, pollution by agro-chemicals, degradation and salinization of soil. Irrigation and related activities also cause water logging of soils, changes in ground and surface water levels, both inside and outside the command areas, and water pollution as well as eutrophication. Consequently, several environmental components are affected in one way or the other by such activities.

Table 3.2 below outlines the typical project activities and summarizes the specific components of the environment and social systems which would be affected (positively or negatively) within a geographical area of project implementation.
Table 3.2: An Outline Of Typical Project Activities And Examples Of Potential Impacts Of New Small Scale Irrigation Schemes, Small Scale Dams, Water Harvesting Structures and Rehabilitation of Small Scale Irrigation Schemes.
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<thead>
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<th>Operation</th>
<th>Land Preparation</th>
<th>Planting of crops</th>
<th>Water abstraction</th>
<th>Water application</th>
<th>Water Control</th>
<th>Pest Control</th>
<th>Harvesting f crops</th>
<th>Processing of Produce</th>
<th>Marketing of Produce</th>
<th>Labour force activities</th>
<th>Scheme Management</th>
<th>Marketing of crops within the site</th>
<th>Operation of water pumps, boreholes</th>
<th>Infrastructure maintenance</th>
<th>Scheme Closure</th>
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<td>Rehabilitation of small dams</td>
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<td>Rehabilitation of the area</td>
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<td>Removal of the structures</td>
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Notes: X indicates the component of the environment has potential impact (maybe negative or positive).
3.4.0 PROPOSED PROJECT ADMINISTRATION AND MANAGEMENT STRATEGY.
The Government of the Republic of Malawi intends to establish an independent Project Management Unit (PMU) outside the government bureaucratic administrative system. It is envisaged that a separate Project Management Unit. The project management unit would be based in the City of Lilongwe. The administrative staff will be employed on short term contract work conditions in order to establish a strong and responsive project management strategy. The composition of the proposed project management unit will be as follows:

3.4.1 Project Steering Committee.
The Steering Committee will be responsible for policy guidance and direction in the implementation of the project. The committee will supervise the Project Management Unit through a technical Committee. The Committee will be meeting four times in a year to review work plans, progress reports on project implementation and finance disbursement from the Project Management Unit.
The composition of the Project Steering Committee will be as follows:
- The Secretary for Agriculture, Irrigation and Food Security, as Chairperson
- The Secretary For Local Government and Rural Development as Vice-Chairperson
- The Secretary for Mines, Natural Resources and Environment affairs
- The Secretary to Treasury
- The Secretary for Water Development.
The Director for Planning in Ministry of Agriculture will be the Secretary to the Project Steering Committee.

3.4.2 Project Technical Committee.
The Project Technical Committee (PTC) will be a technical advisory arm of the Project Steering Committee. The committee will be composed of the directors in the ministries represented in the Project Steering Committee. The Chairperson will be the Controller for Agricultural Extension and Technical Services, while The Project Co-ordinator will be the secretary to the Technical Committee. The committee will be meeting on a quarterly basis and as and when it is necessary.

3.4.3 Project Management Unit
The project Management unit (PMU) will be responsible for strategic planning and implementation of the project. Among others, the project management unit will be responsible for day to day project administration, supervision of the project activities, procurement of goods and services for implementation of the activities, coordination of multi-sectoral training in course of the project implementation, coordination of internal and external evaluation and audits. The project management unit will have highly motivated staff in order to establish to effective and responsive project management structure. Key staff will be the following:
- One Project Co-ordinator, and One Project Officer
- One Financial Controller, and One Assistant Financial Controller
- One Procurement Specialist
- One Administrative Assistant, and Secretary
- Two Office Assistant, and Three Drivers

3.4.4 District Irrigation Advisory Service and the Co-Ordination of Projects at District Level.
The implementation of projects in the selected districts will be under direct supervision of district assemblies in respective districts. Local assemblies' The Agriculture and Natural Resources Committee (ANRC), Planning and Development Committee (PDC) and The District Environmental Sub-Committee (DESC) will provide guidance in implementation. It is expected that an Irrigation Advisory Service (composed of multi-disciplinary specialists will be established) will be put in place to support each district in implementation of the project activities. The District Irrigation Advisory Services (DIAS) will responsible for day to day services related to planning, design, construction and supervision of the activities. The District Agricultural Development Officer (DADO) will provide secretarial services and be responsible for project monitoring and evaluation reports to the Project Management Unit in Lilongwe on regular basis.
CHAPTER FOUR: THE SCREENING PROCESS OF THE PROJECTS AND SITES AND PROJECT ACTIVITIES.

4.1.0 INTRODUCTION TO THE SCREENING PROCESS

The sections below (steps 1-7) detail the stages of the environmental and social screening process (the screening process) leading towards the review and approval of engineering plans for the development and rehabilitation of irrigation and agricultural development activities under the Proposed Irrigation, Rural Livelihoods and Agricultural Development Project (IRLADP).

The purpose of this screening process is (a) to determine which construction and rehabilitation activities are likely to have potential negative environmental and social impacts; (b) to determine appropriate mitigation measures for activities with adverse impacts; (c) to incorporate mitigation measures into the development plans; to review and approve construction and rehabilitation proposals, and (d) to monitor environmental parameters during the construction and rehabilitation of irrigation facilities and other agricultural development activities and their subsequent operation and maintenance.

The extent of environmental work that might be required prior to the commencement of construction and rehabilitation of irrigation facilities will depend on the outcome of the screening process described below. A flow chart illustrating screening process is provided in Appendix 2.

The proposed activities to be done on each of the seven stages during the screening process are detailed in the following paragraphs.

4.2.0 STEP 1: SCREENING OF PROJECT ACTIVITIES AND SITES.

Prior to going to the field, a desk appraisal of the construction and rehabilitation plans, including scheme designs, will be carried out by the District Executive Committee at the district level.

Subsequently, the initial screening in the field will be carried out through the use of the Environmental and Social Screening Form (Annex 1). This form will be completed by qualified members of the Area Executive Committee, with assistance from the District Environmental Sub-Committee (which includes a District Agricultural Development Officer), as necessary.

Completion of this screening form will facilitate the identification of potential environmental and social impacts, determination of their significance, assignment of the appropriate environmental category, proposal of appropriate environmental mitigation measures, and conduct of an Environmental Impact Assessment (EIA), if necessary.

The initial environmental and social screening will also indicate the need for a Resettlement Action Plan (RAP) which would be prepared on the basis of the Resettlement Policy Framework (RPF) prepared for Irrigation, Rural Livelihoods and Agricultural Development Project (IRLADP).

To ensure that the screening form is completed correctly in the various project locations, environmental training will be provided to members of the Area Executive Committee and members of the District Executive Committees including its District Environmental Sub-Committee, as required.

4.3.0 STEP 2: ASSIGNING THE APPROPRIATE ENVIRONMENTAL CATEGORIES

The assignment of the appropriate environmental category to a particular construction or rehabilitation activity will be based on the information provided in the environmental and social screening form (Annex 1). The District Environmental Sub-Committee (DESC) will be responsible for categorizing a construction or rehabilitation activity either as A, B, or C – in the case of complex situations, in consultation with the Department of Environmental Affairs (DEA) of the Ministry of Forestry, Fisheries and Environmental Affairs. As required, members of the District
Environmental Sub-Committee will receive environmental training so that they can perform this function effectively. The District environmental Office is the secretariat to the DESC and will therefore take a leading role in capacity building issues of the DESC.

The assignment of the appropriate environmental category will be based on provisions in OP 4.01 Environmental Assessment. Consistent with this operational policy, most construction and rehabilitation activities under Irrigation, Rural Livelihoods and Agricultural Development Project (IRLADP) are likely to be categorized as B, meaning that their potential adverse environmental impacts on human populations or environmentally important areas – including wetlands, forests, grasslands, and other natural habitats – are site-specific, few if any of the impacts are irreversible, and can be mitigated readily.

Some rehabilitation activities such as the water proofing of leaky roofs or painting buildings might be categorized as “C” if the environmental and social screening results indicate that such activities will have no significant environmental and social impacts and therefore do not require additional environmental work. Thus, if the screening form has ONLY “No” entries, the proposed activity will not require further environmental work, and the District Environmental Sub-Committee will recommend approval of this proposal and implementation can proceed immediately.

The environmental category “A” (significant, irreversible impacts) most likely will not apply to the majority of construction and rehabilitation activities to be funded for The Proposed Irrigation, Rural Livelihoods and Agricultural Development Project (IRLADP)... However, members of the Area Executive Committee as well as the District Environmental Sub-Committee will have to pay particular attention to proposals involving the construction of new facilities and the provision of related infrastructure services such as new dams, new irrigation schemes, new borrow pits as sources of construction materials.

Activities categorized as A or complex Bs (for Prescribed Projects, List A) will require EIAs. These would be reviewed and approved by the DEA through normal procedures and the World Bank prior to the commencement of construction. In the event that RAPs will have to be prepared for such activities, these would be reviewed and approved by the Commissioner for Lands in the Ministry of Lands, Housing, Physical Planning & Surveys as well as the World Bank prior to the commencement of project activities.

4.4.0 STEP 3: CARRYING OUT ENVIRONMENTAL WORK

After reviewing the information provided in the environmental and social screening form (Annex 1), and having determined the appropriate environmental category, the District Environmental Sub-Committee with assistance from members of the Area Executive Committees will carry out the required environmental work, that is to determine, whether (a) the application of simple mitigation measures outlined in the Environmental and Social Checklist section 6.1. will suffice; or whether (b) a separate Environmental Impact Assessment (EIA) needs to be carried out, using the national EIA guidelines referred to in Annex 3.

Environmental and Social Checklist: The Environmental and Social Checklist in annex 1 will be completed by qualified members of the Area Executive Committee and District Agricultural Development Officer. Activities categorized as simple Bs might benefit from the application of mitigation measures outlined in this checklist. In situations where the screening process identifies the need for land acquisition, qualified service providers would prepare a RAP, consistent with OP 4.12.

If there are already existing standard designs, the District Environmental Sub-Committee, in coordination with the planning team of the District Executive Committee, will assess them for impacts on the chosen land site and modify the design to include appropriate mitigation measures.
For example, if the environmental screening process identifies loss of fertile agricultural fields as the main impact from the construction of the dam or irrigation scheme, the mitigation measure would be for the District Environmental Sub-Committee and members of the planning team (The District Executive Committee) to choose a site further away from the fertile gardens so that the livelihoods systems are maintained.

Throughout this process, the District Environmental Sub-Committee would assist members of the Area Executive Committee.

Environmental Impact Assessment (EIA):

In some cases, the results of the environmental and social screening process may indicate that the planned activities are more complex and therefore require an EIA prior to the construction or rehabilitation of an irrigation facility. It is recommended that an EIA be carried out for the construction of the projects included on List "A" of Government of Malawi's Guidelines for Environmental Impact Assessment in the Department of Environmental Affairs.

The EIA will identify and assess the potential environmental impacts of the proposed construction activities, evaluate alternatives, as well as design appropriate mitigation measures, management, and monitoring measures. These measures will be captured in the Environmental Management Plan (EMP) which will be prepared as part of the EIA for each project activity.

The preparation of the EIA and the EMP will be carried out in consultation with the relevant stakeholders, including potentially affected persons. The District Environmental Sub-Committee in close consultation with the Environmental Affairs Department and on behalf of the Irrigation, Rural Livelihoods and Agricultural Development Project (IRLADP) project management unit will arrange for the (i) preparation of EIA terms of reference; (ii) recruitment of local service providers to carry out the EIA; (iii) public consultations; (see Annex 3) and (iv) review and approval of the EIA through the national EIA approval process.

4.5.0 STEP 4: REVIEW AND APPROVAL OF THE PROJECT ACTIVITIES

(a) Review

Under the guidance of the District Environmental Sub-Committee, the relevant sector committees (Area Executive Committees) at the district level will review (i) the results and recommendations presented in the environmental and social screening forms; (ii) the proposed mitigation measures presented in the environmental and social checklists; and (iii) as appropriate, progress of EIAs for more complex projects as per List A or B of Malawi's Environmental Impact Assessment Guidelines to ensure that all environmental and social impacts have been identified and effective mitigation measures have been proposed.

(b) Recommendation for Approval/Disapproval: Based on the results of the above review process, and discussions with the relevant stakeholders and potentially affected persons, the District Environmental Sub-Committee will make recommendations to the District Executive Committee for approval/disapproval of the review results and proposed mitigation measures.

(c) Approval/Disapproval: The District Executive Committee will be responsible for approving/disapproving the recommendations of the District Environmental Sub-Committee.

(d) Endorsement: Subsequently, the District Executive Committee will forward its recommendations to the District Assembly for endorsement.

(e) National level review and approval: After the first stage of screening the DESC will determine which of the projects require a formal EIA or audit. In cases where EIAs are required for proposals that would fall under List A or B of Malawi's environmental guidelines, these would be reviewed and approved by the Environmental Affairs
Department of the Ministry of Forestry, Fisheries and Environmental Affairs. The corresponding RAPs would be reviewed and approved by the Ministry of Lands, Physical Planning and Surveys.

4.6.0 STEP 5: PUBLIC CONSULTATION AND DISCLOSURE

Public consultations are critical in preparing an effective proposal for the construction and rehabilitation of the project activities. The first step is to hold public consultations with the local communities and all other interested/affected parties during the screening process and in the course of preparing the EIA. These consultations should identify key issues and determine how the concerns of all parties will be addressed in the terms of reference for the EIA which might be carried out for construction and rehabilitation proposals.

According to Malawi's Guidelines for Environmental Impact Assessment (December 1997), public consultations are an integral component of the EIA requirements, and the document identifies the following principal elements:

a. Developers are required to conduct public consultation during the Project brief and EIAs.

b. The Director of Environmental Affairs may, on the advice of the Technical Committee on Environment (TCE), conduct his or her own public consultation to verify or extend the work of a developer.

c. Formal EIA documents are made available for public review and comment. Documents to which the public has access include Project Briefs, EIA terms of reference, draft and final EIA reports, and decisions of the Director of Environmental Affairs regarding project approval. The Director, on the advice of the TCE, will develop practices and procedures for making these documents available to the public. It is very unusual that an EIA will need to contain proprietary or market-sensitive information (i.e. technological, financial) which a developer would prefer to remain confidential. Unless public knowledge of such information is crucial to project review, and as provided under Section 25(5) of the EMA, the Director will comply with requests that such information does not appear in an EIA.

d. Certificates approving projects will be published by the developer and displayed for public inspection.

Annex G of the Guidelines for Environmental Impact Assessment (December 1997) provides details concerning the public consultation methods in Malawi. Such methods include press conferences, information notices, brochures/fliers, interviews, questionnaires and polls, open houses, community meetings, advisory committees, and public hearings. The guidelines for public consultation include, among others, a requirement that major elements of the consultation program should be timed to coincide with significant planning and decision-making activities in the project cycle. In terms of Malawi's EIA process, public consultation should be undertaken during (i) the preparation of the EIA terms of reference; (ii) the carrying out of an EIA; (iii) government review of an EIA report; and (iv) the preparation of environmental terms and conditions of approval. Further details are provided in Appendix G of the Malawi's Government Guidelines for Environmental Impact Assessment.

In the context of Irrigation, Rural Livelihoods and Agricultural Development Project, the Government of Malawi will ensure that the relevant stakeholders, including potentially affected persons, will be consulted with regard to the potential impacts of the proposed construction and rehabilitation of irrigation or water facilities and related project activities. Consultation methods suitable in Irrigation, Rural Livelihoods and Agricultural Development Project would include community meetings, public hearings or information notices which would be organized by the Office of the District Commissioner. Copies of the ESMF for Irrigation, Rural Livelihoods and Agricultural Development Project would be made available to the public through these channels of communication.

To meet the consultation and disclosure requirements of the Bank, the Malawi Government will issue a disclosure letter to inform the Bank of (i) the Government's approval of the ESMF and the RPF; (ii) the actual disclosure of these documents to all relevant stakeholders and potentially affected persons in Malawi, and (iii) the Government's authorization to the Bank to disclose these documents in its Info shop in Washington D.C. The steps towards disclosure of the safeguard documents have to be completed prior to appraisal of Irrigation, Rural Livelihoods and Agricultural Development Project as required by the Bank’s Disclosure Policy OP 17.50.
4.7.0 STEP 6: MONITORING

Environmental monitoring needs to be carried out during the construction and rehabilitation of the irrigation facilities as well as during their operation and maintenance. The following monitoring arrangements for of Irrigation, Rural Livelihoods and Agricultural Development Project are proposed:

Rehabilitation of Existing Irrigation Schemes, Construction of Small Water Reservoirs and Other Project Activities

The Proposed Irrigation, Rural Livelihoods and Agricultural Development Project will rehabilitate several schemes nation-wide; therefore, monitoring will take place at the community level in the respective areas.

During the rehabilitation of the existing irrigation schemes, construction of the small scale dams, designated members of the Village Development Committees and District Executive Committees, will be responsible for the monitoring of (i) construction techniques and the inclusion of environmental design features as required in the architectural plans; (ii) provisions for traffic safety, reduction of noise and dust levels; (iii) construction of site waste management (proper storage of construction materials, sanitation, solid waste disposal, waste water disposal); and (v) the implementation of plans for the restoration of the construction sites once the rehabilitation work has been completed. Area Executive Committees shall support the village level committees at all stages of the work including monitoring. The district and area committees will also take part in all monitoring and evaluation exercises.

To ensure effective operation and maintenance of the irrigation facilities, the Farmer Associations within the schemes or dams will appoint maintenance Committee to ensure regular maintenance of the facilities.

The Office of the Controller of Lands Services, of the Ministry of Lands, Physical Planning and Surveys will be responsible for monitoring the implementation of the Resettlement Policy Framework (RPF).

4.8.0 STEP 7: MONITORING INDICATORS

In order to be able to assess the effectiveness of the proposed construction and rehabilitation of irrigation facilities and their subsequent operation and maintenance, the following monitoring indicators are proposed:

<table>
<thead>
<tr>
<th>Component Of The Project</th>
<th>Some Of The Proposed Indicators For Selected Activities</th>
</tr>
</thead>
</table>
| Land acquisition and Resettlement of people from the project site | • Hectarage of land acquired.  
• Number of people compensated and relocated.  
• Number of land use conflicts in course of projects  
• Number of cultural heritage and sites affected. |
| Construction works/Rehabilitation works | • Hectarage of forest clearance.  
• Length of infrastructure constructed/rehabilitated.  
• Hectarage of leveled land  
• Volume of the reservoirs/dams  
• Height of the dams.  
• Number of pit latrines for excreta disposal for workers  
• Number of boreholes within the site. |
<table>
<thead>
<tr>
<th>Operational and maintenance of projects</th>
<th>Quality of construction materials for canals, dams</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of conflicts of rights to land and water</td>
</tr>
<tr>
<td></td>
<td>Water abstraction permits.</td>
</tr>
<tr>
<td></td>
<td>Quality of water discharged from schemes and dams.</td>
</tr>
<tr>
<td></td>
<td>Number employment opportunities for locals</td>
</tr>
<tr>
<td></td>
<td>Number of pit latrines for excreta disposal for workers</td>
</tr>
<tr>
<td></td>
<td>Number people/committee who attended HIV/AIDS awareness, environmental management training</td>
</tr>
</tbody>
</table>
CHAPTER FIVE: CAPACITY BUILDING FOR ENVIRONMENTAL MANAGEMENT AND MONITORING

5.1.0 ENVIRONMENTAL RELATED TRAINING ACTIVITIES OF STAKEHOLDERS FOR THE PROJECT.

The proposed Irrigation, Rural Livelihoods and Agricultural Development Project activities will be numerous and challenging. Successful implementation of the project activities will require dynamic and multi-disciplinary professionals. Therefore, regular short and tailor made training courses and seminars will be required to reinforce the capacity and skills of the stakeholders and farmers during the entire project period. Training and seminars will also be required for building capacity and awareness in social and environmental issues including effects of deforestation and HIV/AIDS. Table 5.2 below provides costs estimates for the identified capacity building activities. The basis of the estimates is on some of the following:

- Prevailing costs of goods and services offered in typical urban area or rural area.
- An average number of 30 people for District Executive Committee
- An average number of 30 people for an Area executive Committee.
- The length of training sessions will depend on the course, and will vary from 3 days to about 2 weeks.
- The estimated costs include training costs/fees, hire of rooms, food for participants per diems, and transport costs. Training subsistence allowances have been estimated at MK2000.00 per participant per day while a lump sum of MK500,000.00 has been included for each training session to cover the costs of the trainer.

Table 5.1: Summary of Capacity Building Requirements and Cost Estimates.

<table>
<thead>
<tr>
<th>RECOMMENDED TYPE OF TRAINING (TRAINING ACTIVITY)</th>
<th>TARGET GROUP / TRAINER</th>
<th>MEANS OF VERIFICATION</th>
<th>COST ESTIMATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Environmental and Social Impact Assessment of the projects - Screening process. - Use of checklists - Preparation of terms of reference. - Identification of Impacts - EIA report preparation and processing - Strategic action planning for Environmental Management - Policies and laws in Malawi - World Bank safeguard policies</td>
<td>-District Executive members -District Environment Sub-committees -Extension workers in project impact areas.</td>
<td>-11 members of District Environment Sub-committees are trained. -11 Area Development Committee members are trained. -11 Extension workers in project impact areas trained.</td>
<td>MK 830,000 (one session during the entire project period) Venue: Boma Length: 5 days</td>
</tr>
<tr>
<td>Course Title</td>
<td>Participants</td>
<td>Cost</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>-----------</td>
<td></td>
</tr>
<tr>
<td>Pest Management</td>
<td>Scheme Farmers</td>
<td>MK 1,020,000</td>
<td></td>
</tr>
<tr>
<td>Types of pests</td>
<td>Scheme Management Committee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identification of pests</td>
<td>- 11 members of scheme management committee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biological control of pests</td>
<td>- 11 Extension Workers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical control of pests</td>
<td>- 30 Farmers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical control (pesticide)</td>
<td>TRAINER: PCB, MINISTRY OF AGRICULTURE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length: 5 days</td>
<td>Venue: Farm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pesticide Management</td>
<td>Scheme Procurement Committee</td>
<td>MK 2,040,000</td>
<td></td>
</tr>
<tr>
<td>Types and Use</td>
<td>- 11 members of Scheme Procurement Committee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Packaging, labeling and handling</td>
<td>- 11 Extension Workers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage, Stacking and Release</td>
<td>- 30 Farmers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical pesticides record maintenance</td>
<td>TRAINER: PCB, MINISTRY OF AGRICULTURE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length: 5 days</td>
<td>Venue: The Farm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pesticide Procurement</td>
<td>Scheme Store Keepers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identification of Pesticide dealers</td>
<td>- 11 Extension Workers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pesticides Handling &amp; Transportation</td>
<td>- 30 Farmers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Record Maintenance</td>
<td>TRAINER: PCB, MINISTRY OF AGRICULTURE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length: 5 days</td>
<td>Venue: The Farm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pesticide Application and Disposal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Types and Handling of equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pesticides Toxicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety of Applicators (OSHA)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Aid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Care, Cleaning and Disposal of Pesticides and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV/AIDS and Project Implementation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impacts of HIV/AIDS on social wellbeing, livelihood and projects</td>
<td>- 11 Extension workers in project impact areas trained.</td>
<td>TO USE NAC RESOURCES</td>
<td></td>
</tr>
<tr>
<td>Mitigation measures</td>
<td>- Scheme farmers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Care of victims</td>
<td>TRAINER: NAC, PANNED PROGRAMME ALREADY UNDERWAY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length: 5 days</td>
<td>Venue: Boma</td>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

**Notes:**
- MK stands for Malawi Kwacha, the national currency.
- The courses include training for Scheme Farmers, Scheme Management Committee, and Scheme Store Keepers Committee, among others.
- The courses are designed to inform farmers about pest management, pesticide control, and HIV/AIDS mitigation strategies.
### Water Management
- When to irrigate
- How much water to apply
- For how long
- Water rights

### Crop Management
- Crop selection
- Crop rotations
- Cropping calendar
- How to apply fertilizer
- Use of organic manure / compost
- Weeding
- Crop harvesting & storage

### Maintenance of the Irrigation scheme
- Detecting the damaged irrigation structures
- Materials needed to maintain the damaged structures

### Hygiene and sanitation
- Water supply
- Sanitation
- Water and sanitation related diseases
- Infrastructure needed on the scheme for sanitation enhancement

### Water Management
- Extension workers and Farmers
- Extension workers and Farmers
- 11 Extension Workers
- 30 Farmers

### Crop Management
- Extension workers and Farmers
- Extension workers and Farmers
- 11 Extension Workers
- 30 Farmers

### Maintenance of the Irrigation scheme
- Extension workers and Farmers
- 11 Extension Workers
- 30 Farmers

### Hygiene and sanitation
- Extension workers and Farmers
- 11 Extension Workers
- 30 Farmers

### Table

<table>
<thead>
<tr>
<th>Water Management</th>
<th>Training</th>
<th>Venue</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>When to irrigate</td>
<td>PRIVATE CONSULTANT OR MINISTRY OF AGRICULTURE</td>
<td>The farms</td>
<td>5 days</td>
</tr>
<tr>
<td>How much water to apply</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For how long</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water rights</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Crop Management</th>
<th>Training</th>
<th>Venue</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop selection</td>
<td>PRIVATE CONSULTANT OR MINISTRY OF AGRICULTURE</td>
<td>The farms</td>
<td>5 days</td>
</tr>
<tr>
<td>Crop rotations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cropping calendar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How to apply fertilizer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of organic manure / compost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weeding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crop harvesting &amp; storage</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maintenance of the Irrigation scheme</th>
<th>Training</th>
<th>Venue</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detecting the damaged irrigation structures</td>
<td>PRIVATE CONSULTANT OR MINISTRY OF AGRICULTURE</td>
<td>The farms</td>
<td>5 days</td>
</tr>
<tr>
<td>Materials needed to maintain the damaged structures</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hygiene and sanitation</th>
<th>Training</th>
<th>Venue</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water supply</td>
<td>PRIVATE CONSULTANT OR MINISTRY OF AGRICULTURE</td>
<td>The farms</td>
<td>5 days</td>
</tr>
<tr>
<td>Sanitation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water and sanitation related diseases</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infrastructure needed on the scheme for sanitation enhancement</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 5.2.0 JUSTIFICATION FOR THE PROPOSED TRAINING ACTIVITIES

#### Training in Environmental and Social Impact Assessment
The training in Environmental and Social Impact Assessment of Projects is aimed at imparting the requisite knowledge and skill to the members of the District Administration Team and extension workers for them to appreciate the EIA process and to be able to carry out the necessary environmental tasks. Members of the Area Development Committee and the Extension Workers will need to fully understand the environmental implications of the projects so that they may be able to complete the screening forms or to provide the correct information for the EIA process to proceed as required.

#### Pest Management Training
This training is intended to avail the Scheme Farmers and the Scheme Management Committee with the knowledge to understand the various options for pest management. Such information is important for reducing the amount of pesticides used in an effort to reduce costs and to minimize adverse impacts on people's health due chemical pesticides.
Pesticides Management Training
Pesticides are hazardous to human health, and most of the people have died due to the poisonous nature of the chemicals commonly used as pesticides. Farmers have a tendency of procuring pesticides and chemicals that are not approved or recommended for the intended use, in an effort to save costs. Currently, there are pesticides that are illegally imported and marketed by dealers who do not know the properties of these chemicals and the consequences of using them. Use of wrong pesticides at the wrong time and in wrong concentrations will contribute to low yields and cause illnesses or death to the farmers. The farmers need to be taught on how the pesticides should be applied to the crops to avoid contamination / poisoning and to ensure their effectiveness.

HIV/AIDS Awareness Training
HIV/AIDS is one of the major factors that contribute to morbidity and frequent deaths among farmers and the Malawian productive labour force in general. Farmers have to be given the necessary awareness to avoid contracting HIV/AIDS and to educate them on how they can assist those that are already affected by it. The farmers should know the impacts of HIV/AIDS on their social wellbeing, livelihood and on the success of the project.

Water Management Training
As a result of the severe environmental degradation in Malawi, water is now a scarce resource and hence there is need for prudent managed to maximize its use. Over-application of water in the irrigation schemes results in leaching of the soil nutrients, which lead to low crop productivity. In a number of schemes, it has been observed that the streams are drying up downstream of the irrigation schemes. This denies availability of the commodity to downstream users as well as the natural habitat and biodiversity. Training in water management will therefore equip the farmers and extension workers with skills to ensure that water is effectively utilized and properly managed as a shared commodity.

Crop Management Training
To obtain good yields from the farms, farmers need to be trained on crop management techniques. They need to know the best recommended agricultural practices such as seed selection, crop rotation, weeding and harvesting among others. They must be trained in post-harvest crop management techniques to ensure that the quality of the crop is well maintained even after harvest. This will ensure that their produce fetches good prices on the market

Operation and Maintenance of the Irrigation Schemes
It is apparent from the site visits made to the existing irrigation schemes that the farmers lack technical knowledge for the operation and maintenance of the schemes. Weeds are left to cover the canals, thereby restricting water flow and, in some cases resulting in water overflows. Farmers need to know when to open canal gates and when to close them. They need to understand how their farming activities are affected by upstream users and how they themselves affect those downstream.

Hygiene and Sanitation Training
Farmers that are health and physically fit produce more from the farm since they are able to perform the various physical tasks efficiently and timely. Irrigation scheme must have access to potable water and good sanitation. In most of the schemes that were visited, farmers did not have clean water and appropriate sanitation facilities. Hence there were reports of prevalence of water and sanitation related diseases such as diarrhea, dysentery and skin diseases. Hygiene and sanitation training will educate the farmers to maintain good health and keep fit.

5.3.0 PROPOSED APPROACH IN EXECUTING THE TRAINING ACTIVITIES

The training activities in Environmental and Social Impact Assessment can be conducted by the Environmental Affairs Department (EAD) or private consultants under the supervision of EAD. This will have to be done at the beginning of the project, before the project activities start, so that the participants are ready in time to apply the knowledge during implementation of the project activities. Skills in the screening process will be very useful for
assessing the environmental implications of the project activities before they start.

Pest Management and Pesticide Management Training activities will be implemented by the Pesticides Control Board (PCB) who have the requisite knowledge of types of pesticides and their application. They also have the knowledge on how to apply the pesticides. The training can be implemented in collaboration with the Ministry of Agriculture who have practical knowledge and experience with different pest and pesticides. The training may be conducted during the early stages of the project activities but before that first planting season. This training should be executed twice during the project life, preferably at the beginning and at project mid-term.

Training in Project Planning and Implementation should be done before any project activities start in order to prepare the participants to use their knowledge during project implementation. The training should be done once during the project life. The Malawi Institute of Management is well placed for this training. However there are other private consultants that may also be able to conduct the training.

The HIV/AIDS awareness campaigns would be conducted by NAC under their planned national activities. The Ministry of Agriculture is already collaborating with NAC on programmes that have already been drawn up. Hence there is no provision for costs in the Table 5.2 above. This training activity should be conducted at the beginning of the project activities and annually thereafter.

Irrigation Technology and Management; Water Management; Crop Management, Procurement, Marketing and Financial training would be facilitated internally by the Department of Agriculture or the appropriate private consultants would have to be engaged to carry out the training. These training activities should be conducted at the beginning of the operation phase, soon after construction activities, to take advantage of the farming activities for practical training.

5.4.0 PROJECT EQUIPMENT FOR STAKEHOLDERS DURING PROJECT PERIOD.

The implementation of environmental mitigation measures for the project activities will require capital and office equipment such vehicles, computers, printers, photocopiers and telephones in order enhance movements and organization of meetings. It is recommended that at least one vehicle and the office equipment mentioned above should be made available to the district executive members in order to support implementation and monitoring of the recommended mitigation measures. Hence the main project budget should consider allocating these facilities

5.5.0 MANAGEMENT INFORMATION SYSTEM (MIS) FOR THE PROJECT

A well-equipped information system will be necessary for the implementation of the proposed Irrigation, Rural Livelihoods and Agricultural Development Project. It would be particularly useful in monitoring and evaluation of the environmental management activities. The Ministry of Agriculture has an infrastructure for the existing information system including basic equipment and software for geographical information systems. Efforts will have to be made to strengthen the existing information infrastructure to avoid duplication on data collection, storage and processing.
CHAPTER SIX: ENVIRONMENTAL MANAGEMENT PLAN FOR THE IMPACTS

The purpose of the Environmental Management Plan (EMP) is to clarify environmental and social impacts/enhancements, mitigation measures to be undertaken and the institutional responsibilities for: (i) the identification of environmental and social impacts; (ii) the preparation and implementation of mitigation measures; (iii) monitoring the implementation of the mitigation measures; (iv) capacity building to ensure the afore-mentioned responsibilities will be carried out effectively.

6.1.0 AN OVERVIEW OF TYPICAL ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN FOR IMPACTS OF IRRIGATION PROJECTS.

An appropriate environmental management and monitoring plan will depend on the scope of identified major impacts to be addressed in the implementation of the project. What is presented below is just an example of a simple environmental management and monitoring plan, which would easily fit in the implementation of small scale irrigation schemes and small scale dams is the case in the proposed Irrigation, Rural Livelihoods and Agricultural Development Project.
<table>
<thead>
<tr>
<th>ITEM No.</th>
<th>Environmental/ Social Impacts</th>
<th>Proposed Mitigation Measures</th>
<th>Responsible Institution</th>
<th>Monitoring Institution / Monitoring Frequency</th>
<th>Monitoring Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Relocation or loss of shelter</td>
<td>Preparation and implementation of a Resettlement Policy Framework which will include compensation plans.</td>
<td>(GOM) District Commissioners, Commissioner for Lands, Project Management</td>
<td>EAD Number of people relocated, Number compensated, Amount of money spent, % of money spent</td>
<td>During project planning, During project implementation, During and after resettlement</td>
</tr>
<tr>
<td>2</td>
<td>Loss of assets or access to assets</td>
<td>Preparation and implementation of a Resettlement Policy Framework which will include compensation plans.</td>
<td>(GOM) District Commissioners, Commissioner for Lands, Project Management</td>
<td>EAD Cost of lost assets / access to assets, Number of complaints</td>
<td>Before and after resettlement</td>
</tr>
<tr>
<td>3</td>
<td>Loss of income sources, and or means of livelihood</td>
<td>Preparation and implementation of a Resettlement Policy Framework, which will include compensation plans.</td>
<td>(GOM) District Commissioners, Commissioner for Lands, Project Management</td>
<td>EAD</td>
<td>Before project implementation, After project implementation</td>
</tr>
<tr>
<td>4</td>
<td>Spread of HIV/AIDS</td>
<td>Strengthen HIV/AIDS Awareness Campaigns in Schools, Training of school administrators and staff in HIV/AIDS issues, encouraging participation of the private and public sectors in HIV/AIDS issues and reinforcement of school curriculum with HIV/AIDS issues.</td>
<td>(GOM-NAC) Project Management, Ministry of Agric, NGOs, Gender and Community Services, Local institutions and committees, Donor community and District Assemblies</td>
<td>Min of Health EAD</td>
<td>Monthly</td>
</tr>
<tr>
<td>5</td>
<td>Loss of vegetation</td>
<td>Selective clearing of project sites, reforestation, preservation of protected plant species, use of alternative sources of energy, use of environmental friendly technologies, awareness campaigns.</td>
<td>Contractors, Project staff, District Agric. Officers, District Assemblies</td>
<td>EAD, Forestry Department Min of Agriculture</td>
<td>Before project implementation, Annually during and after project implementation</td>
</tr>
<tr>
<td>6</td>
<td>Loss of Soil</td>
<td>Stabilization of loose soil, controlled excavation, preservation of vegetation cover, controlled transportation of raw materials, appropriate landscaping.</td>
<td>Contractors, Project staff, District Agric Officer, Forestry Department, District Assemblies</td>
<td>Land Resources, EAD</td>
<td>Annually</td>
</tr>
<tr>
<td>7</td>
<td>Loss of fragile</td>
<td>Conduct feasibility studies before</td>
<td>Contractors, Project</td>
<td>Land Resources</td>
<td>Annually</td>
</tr>
</tbody>
</table>

32
<table>
<thead>
<tr>
<th></th>
<th>ecosytems</th>
<th>construction, use expert knowledge of ecologists, introduction of ecosystem conservation projects, fencing</th>
<th>Management, District, Forestry Department, District Assemblies</th>
<th><strong>Min of Agriculture</strong> EAD  Size of area affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Asbestos pollution (from roofing sheets)</td>
<td>Seal in plastic containers and dispose in appropriate landfills or designated sites, avoid exposing personnel to dust by providing them with appropriate equipment during disposal.</td>
<td>Contractors, Project Management, District Agricultural Officer</td>
<td><strong>Ministry of Health</strong> Malawi Bureau of Standards EAD PCB Number of people complaining from asbestosis Annually</td>
</tr>
<tr>
<td>9</td>
<td>Soil and water pollution resulting from the accumulation of solid and liquid waste</td>
<td>Controlled disposal of wastes and effluent by use of appropriate disposal facilities, use of appropriate drainage structures, use of cleaner technologies, proper storage of materials, awareness campaigns</td>
<td>Contractors, project management, District Agric. Officer</td>
<td><strong>EAD Water Resources Board</strong> PCB Change in chemical and biological water quality Bi-annually</td>
</tr>
<tr>
<td>10</td>
<td>Dust, Emissions, Strong Light, Noise and Vibration</td>
<td>Controlled operation times, use of appropriate equipment, proper orientation of lights, use of alternative materials, use water sprinklers to control dust, use of scrubbers</td>
<td>Contractors, Project Management, District Agricultural Officer</td>
<td><strong>EAD MBS</strong> Number of complaints Extent of property and vegetation soiling During construction</td>
</tr>
<tr>
<td>11</td>
<td>Water-borne and / or water related diseases</td>
<td>Provision of potable water supplies and sanitation facilities, capacity building in sanitation and health issues, awareness campaigns</td>
<td>Contractors, project management, District Agriculture Officer, NGOs and District Assemblies</td>
<td><strong>Min of Health</strong> Increase in water related ailments Annually</td>
</tr>
<tr>
<td>12</td>
<td>Loss of natural and cultural heritage.</td>
<td>Conduct feasibility studies, fencing, introduce proper antiquity education programmes</td>
<td>Project management, District Agric. Officer, NGOs and District Assemblies</td>
<td><strong>Dept of Tourism Min. of Education &amp; Culture</strong> Number or size of property lost Before project implementation During project implementation</td>
</tr>
<tr>
<td>13</td>
<td>Loss of animals and aquatic life.</td>
<td>Minimize vibrations and strong noise, enforcement of parks and wildlife law, conduct feasibility studies, avoid contamination of soil and water</td>
<td>project management, District Agric. Officer NGOs and District Assemblies</td>
<td><strong>Wildlife Dept. Fisheries Dept EAD</strong> Animal count Fish and aquatic life estimates Before project implementation Annually during project implementation</td>
</tr>
<tr>
<td></td>
<td>Problem</td>
<td>Description</td>
<td>RESPONSIBLE AGENCIES</td>
<td>Frequency</td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>14</td>
<td>Disturbance of marginal areas</td>
<td>Avoid extraction of raw materials from marginal areas, no construction of structures in marginal areas.</td>
<td>Project management, NGOs and District Assemblies</td>
<td>Bi-annually</td>
</tr>
<tr>
<td>15</td>
<td>Incidence of Flooding</td>
<td>Forestation of the catchment areas of the irrigation schemes</td>
<td>Forestry Department Project Management, NGO's, District Assemblies</td>
<td>Annually</td>
</tr>
<tr>
<td>16</td>
<td>Exposure to Agrochemicals</td>
<td>Encourage organic farming, and limit the use of Agrochemicals. Conduct awareness training &amp; workshops</td>
<td>Ministry of Agriculture Scheme Management Committee</td>
<td>Annually</td>
</tr>
<tr>
<td>17</td>
<td>Disruption of footpaths</td>
<td>Good irrigation scheme designs Relocation of the footpaths</td>
<td>Project Management Scheme Management</td>
<td>During design</td>
</tr>
<tr>
<td>18</td>
<td>Lack of farm inputs</td>
<td>Encourage organic farming, provide training on marketing and bulk purchasing to farmers, and provide critical marketing information to farmers regularly.</td>
<td>Scheme Management Comm. SEDOM MEDI Ministry of Trade and Private Sector Development</td>
<td>Annually</td>
</tr>
<tr>
<td>19</td>
<td>Salinisation</td>
<td>Encourage organic farming, limit the use of agro-chemicals and provide water management training to farmers</td>
<td>District Agricultural Officer.</td>
<td>Annually</td>
</tr>
<tr>
<td>20</td>
<td>Disputes over water resources</td>
<td>Provide water management training to farmers and introduce alternative sources of water such as boreholes.</td>
<td>District Agricultural Officer.</td>
<td>Annually</td>
</tr>
<tr>
<td>21</td>
<td>Water logging</td>
<td>Provide water management training to farmers</td>
<td>District Agricultural Officer.</td>
<td>Annually</td>
</tr>
<tr>
<td>No.</td>
<td>Problem</td>
<td>Proposed Solution</td>
<td>Responsible Authority</td>
<td>Frequency</td>
</tr>
<tr>
<td>-----</td>
<td>------------------------------</td>
<td>------------------------------------------------------------------------------------</td>
<td>-------------------------------------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| 22  | Prolonged presence of water  | Control crop rotation, promote the agricultural practices on the scheme and promote use of herbicides. | District Agricultural Officer       | Ministry of Agriculture, EAD | Annually    
|     | Poor growth of crops        |                                                                                   |                                     |             |
|     | Presence of salts on the soil |                                                                                   |                                     |             |
CHAPTER SEVEN: IMPLEMENTATION ARRANGEMENT

7.1.0 DEFINITION OF ROLES AND RESPONSIBILITIES
The successful implementation and monitoring of the environmental management plan depends on collaboration of different stakeholders, at local level (area level), district level and national level. This is necessary because the implementation of the activities would require inputs, expertise and resources which would be adequately taken care of if the concerned parties liaise. The following sections outline some of the selected and recommended activities to be done by each stakeholder in the environmental activities.

(a) Area and District (Local) level
- The Area Executive Committees, which include Field Assistants, will be responsible for completing the environmental and social screening lists (Annex 1) and the environmental and social checklists (Annex 2) to be able to identify and mitigate the potential environmental and social impacts of construction and rehabilitation activities. The screening process will be under the supervision of the Irrigation Scheme Manager, who will be assisted by the District Environmental Officer. As required, they will receive environmental training to be able to carry out this task.
- The District Environmental Committee and the District Environmental Sub-Committee will assist in the above tasks; its members will receive environmental training as required.
- The District Environmental Sub-Committee (DESC) will be responsible for (i) determining the environmental category and the extent of environmental work required based on the screening results; determining the need for EIA and for RAP and proposing mitigation measures for identified impacts.
- The District Environmental Officer and the Area Executive Committee will review the recommendations in the screening form, review the proposed mitigation measures, conduct public consultations and make recommendations to the District Executive Committee for approval.
- Monitoring of the construction to ensure that environmental designs are taken into consideration will be done by the District Agricultural and Natural Resources Committee.

(c) National level:
- In the event that a project activities under Irrigation, Rural Livelihoods and Agricultural Development Project fall under List A of Malawi’s Prescribed Projects as outlined in Appendix B of the environmental guidelines The Director of Environmental Affairs will be responsible for reviewing and approving the EIA.
- The Director of Environmental Affairs may also arrange for public consultations as part of the EIA process.

7.2.0 SOURCE OF FUNDING FOR THE ENVIRONMENTAL MANAGEMENT ACTIVITIES
- The resettlement and land acquisition programme will have to be funded by the Government through normal procedures for payment of compensation and through the Ministry of Lands, Housing and Physical Planning and the Office of the President and Cabinet.
- The proposed environmental training activities for the project will be funded directly by the project resources in accordance with the proposed plan laid out in Table 5.2 above. A summary of the budgetary
requirements for the proposed training activities is as follows:

- Training in Environmental and Social Impact Assessment 830,000
- Training in Pest Management 1,020,000
- Training in Pesticide Management 2,040,000
- Water and Crop Management Training 910,000
- Maintenance and Hygiene and Sanitation 910,000

TOTAL FOR THE TRAINING ENVIRONMENTAL PROGRAMME 5,710,000

- Cost estimates for the rest of the activities in the environmental management plan cannot be given now since some of the project sites and activities are not known and will be demand driven. The main consultants for the project will therefore, have to cost these activities, together with the other main project activities, to ensure that the environmental recommendations made in the environmental management plan are implemented.
APPENDIX 1: ENVIRONMENTAL AND SOCIAL SCREENING FORMS

FORM 1: PREPARATION OF A PROJECT BRIEF.

The Environmental and Social Screening Form 1 (ESSF 1) has been designed to assist in the evaluation of planned construction and rehabilitation activities under Irrigation, Rural Livelihoods and Agricultural Development Project (IRADP). The form is designed to place information in the hands of implementers and reviewers so that impacts and their mitigation measures, if any, can be identified and/or that requirements for further environmental impact assessment be determined.

The ESSF 1 contains information that will allow reviewers to determine the characterization of the prevailing local bio-physical and social environment with the aim to assess the potential impacts of construction and rehabilitation activities on this environment. The ESSF will also identify potential socio-economic impacts that will require mitigation measures and/or resettlement and compensation.

PART A: BRIEF DESCRIPTION OF THE PROPOSED ACTIVITIES

Please provide information on the type and scale of the construction/rehabilitation activity (area, required land, approximate size of structures).

Provide information about actions needed during the construction of facilities including support/ancillary structures and activities required to build them, e.g. need to quarry or excavate borrow materials, water source, channels/canals access road etc.

Describe how the construction/rehabilitation activities will be carried out; including support/activities and resources required operating it.

PART B: ENVIRONMENTAL BASELINE INFORMATION OF THE PROJECT SITE

<table>
<thead>
<tr>
<th>CATEGORY OF BASELINE INFORMATION</th>
<th>DESCRIPTION OF THE INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOGRAPHICAL LOCATION</td>
<td></td>
</tr>
<tr>
<td>• Name of the Area (T/A, Village)</td>
<td></td>
</tr>
<tr>
<td>• Proposed location of the project. (Include a site map of at least 1:10,000 scale)</td>
<td></td>
</tr>
<tr>
<td>LAND RESOURCES</td>
<td></td>
</tr>
<tr>
<td>• Topography and Geology of the area.</td>
<td></td>
</tr>
<tr>
<td>• Soils of the area</td>
<td></td>
</tr>
<tr>
<td>• Main land uses and economic activities</td>
<td></td>
</tr>
<tr>
<td>WATER RESOURCES</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>• Drainage system and surface water quality</td>
<td></td>
</tr>
<tr>
<td>• Ground water resources quantity and quality</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BIOLOGICAL RESOURCES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Flora</td>
<td></td>
</tr>
<tr>
<td>• Fauna</td>
<td></td>
</tr>
<tr>
<td>• Sensitive habitats including parks and forest</td>
<td></td>
</tr>
<tr>
<td>• Species special of scientific interest.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ATMOSPHERIC RESOURCES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Temperature</td>
<td></td>
</tr>
<tr>
<td>• Humidity and rainfall</td>
<td></td>
</tr>
</tbody>
</table>
ENVIRONMENTAL AND SOCIAL SCREENING FORM 2
(FOR SCREENING INITIAL POTENTIAL IMPACTS ON PROJECT PROPOSED SITE AND PROJECT ACTIVITIES)

Government of the Republic Of Malawi

Ministry Of Mines, Natural Resources and Environmental Affairs

PROJECT SITE AND IMPACT EVALUATION FORM

Screening of Environmental and Social Impacts for Small Scale Irrigation Projects, Small Dams, Water Harvesting Structures

GUIDELINES FOR THE EVALUATION

1. The evaluator to undertake the assignment after adequate knowledge of baseline information of the area.
2. The evaluator to undertake the assignment after adequate knowledge of proposed project activities in the area.
3. The evaluator to undertake the assignment after prior briefing/training of the exercise.
4. The form to be completed by consensus of at least three people.

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Estimated Cost (MK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>District &amp; Traditional Authority</td>
<td>Funding Agency</td>
</tr>
<tr>
<td>Project Objectives</td>
<td>Proposed Main Project Activities:</td>
</tr>
</tbody>
</table>

Name of Evaluator       Date of Field Appraisal

<table>
<thead>
<tr>
<th>SCOPE AND FOCUS OF SCREENING</th>
<th>METHODOLOGY OF SCREENING</th>
<th>POTENTIAL MITIGATION MEASURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appraisal of Impacts</td>
<td>Initial Evaluation of Scope &amp; Significance of The Impacts</td>
<td>Potential Mitigation measures for marginal impacts</td>
</tr>
</tbody>
</table>

39
### SCREENING CRITERIA FOR PROPOSED SITE FOR THE PROJECT

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
<th>Marginal</th>
<th>Extensive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor</td>
<td>Large</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

#### 1.0

**Is the project site within and/or will it affect following environmentally-sensitive areas?**

1.1 National parks and game reserve
1.2 Wet-lands
1.3 Productive traditional agricultural /grazing lands
1.5 Areas with rare or endangered flora or fauna
1.6 Areas with outstanding scenery/tourist site
1.7 Within steep slopes/mountains
1.8 Dry tropical forests such as Brachystegia species
1.9 Along lakes, along beaches, riverines
1.10 Near industrial activities
1.12 Within prime ground water recharge area
1.13 Within prime surface run off of water

#### 2.0

**SCREENING CRITERIA FOR IMPACTS DURING IMPLEMENTATION AND OPERATION**

Will the implementation and operations of the project activities within the selected site generate the following externalities/costs/impacts?

2.1 Deforestation and loss of tree species
2.2 Excessive soil erosion and siltation
2.3 Damage of wildlife species and habitat
2.5 Increased exposure to agro-chemical pollutants
2.6 Nuisance - smell or noise
2.7 Reduced water quality
2.8 Increase in costs of water treatment
2.9 Soil contamination
2.10 Health hazards to workers and communities
2.12 Siltation of watercourses, dams
2.13 Loss of soil fertility
2.14 Increasing incidence of communicable diseases
2.15 Reduced flow and availability of water for users
2.16 Long term depletion of water resource
2.17 Increased incidence of flooding
2.18 Salinization or alkalinisation of soils
2.19 Changes in migration patterns of animals
2.20 Introduce alien plants and diseases in the area

### 3.0 SCREENING CRITERIA FOR SOCIAL AND ECONOMIC IMPACTS

Will the implementation and operation of the project activities within the selected site generate the following socio-economic costs/impacts?

| 3.1 | Loss of land for human settlement, farming, grazing |
| 3.2 | Loss of property - houses, agricultural produce etc |
| 3.3 | Loss of cultural sites, graveyards, monuments |
| 3.4 | Interference in marriages for local people by workers |
| 3.5 | Spread of HIV/AIDS, STD due to migrant workers |
| 3.6 | Changes in human settlement patterns of villages |
| 3.7 | Conflicts over use of local water resources |
| 3.8 | Conflicts on land use and ownership |
| 3.9 | Disruption of important pathways, roads |

**OVERALL EVALUATION OF THE SCREENING PROCESS ON THE SITE AND PROJECT ACTIVITY**

The result of the screening process would be either the proposed project would be permitted to proceed on the site or the proposed project needs further compliance with EIA requirements. The basis of these options is listed in the table below:

- Field appraisals indicate that the site of the project will not be within environmentally sensitive areas, protected areas.

- No families will be displaced from the site.

- Identified impacts are minor, marginal and of little significance.

- Mitigation measures for the identified impacts are well understood and practiced in the area.

- The stakeholders have adequate practical experiences in natural resource conservation and management.

- Field appraisals indicate that the project site is within environmentally sensitive areas, protected areas.

- Cause adverse socio-economic impacts.

- Significant number of people, families will be displaced from site.

- Some of the predicted impacts will be long term, complicated, extensive.

- Appropriate mitigation measures for some predicted impacts are not well known in the area.

**Completion by Environmental District Officer**

<table>
<thead>
<tr>
<th>Is This Project Likely To Need An EIA</th>
<th>YES/NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>List A/B Paragraph Numbers</td>
<td></td>
</tr>
<tr>
<td>Date Exempted</td>
<td></td>
</tr>
<tr>
<td>Date Forwarded To DEA Head Office</td>
<td></td>
</tr>
<tr>
<td>Name &amp; Signature of EDO</td>
<td></td>
</tr>
</tbody>
</table>

**Completion by Director of Environmental Affairs**

<table>
<thead>
<tr>
<th>Date Received from District Assembly:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dated Reviewed:</td>
</tr>
<tr>
<td>Date of Submission of Project Brief</td>
</tr>
<tr>
<td>Date of Submission of EIA Reports</td>
</tr>
<tr>
<td>Date of Approval/Rejection</td>
</tr>
</tbody>
</table>

**NOTES:**

- Once the Environmental and Social Screening Form is completed it is analysed by experts from the District Environmental Sub-Committee who will classify it into the appropriate category based on a predetermined criteria and the information provided in the form.

- All projects’ proponents exempted from further impact assessment must be informed to proceed with other necessary procedures.

- All projects recommended for further impact assessment will have to follow procedures outlined in section 24 and 25 of the Environmental Management Act, and the Malawi Government’s Guidelines for Environmental Impact Assessment appendix C, page 32.
APPENDIX 2  FLOW CHART FOR THE ENVIRONMENTAL SCREENING PROCESS
**CATEGORY C**

DEO and AEC to:
- Review the recommendations in the screening form
- Review the proposed mitigation measures from checklists
- Conduct public consultation
- Make recommendations to DEC

**DEC, AEC & DESC**

Screening of Project activities and sites
(To be based on checklist and screening form)
- Desk appraisal of the construction and rehabilitation plans (DEC)
- Identification of Environmental and social impacts (AEC & DESC)
- Determination of significance of impacts

**DESC**

Assignment of appropriate environmental category, based on Environmental and Social screening forms and World Bank OP 4.01
- Proposal of mitigation measures
- Determination of the need for EIA
- Determination of the need for RAPS

**CATEGORIES A & B**

- EIA required
- RAP required based on RPF
  (Ref. List A of Malawi EIA Guidelines and World Bank OP 4.01)

**LEGEND**

DEC: District Executive Committee
AEC: Area Executive Committee
DESC: District Environmental Sub-Committee
EIA: Environmental Impact Assessment
RAP: Resettlement Action Plan
RPF: Resettlement Policy Framework
VDC: Village Development Committee
APPENDIX 3: PROCEDURES FOR THE CONSTRUCTION AND REHABILITATION OF IRRIGATION FACILITIES REQUIRING ENVIRONMENTAL IMPACT ASSESSMENT.

According to Malawi’s Guidelines for Environmental Impact Assessment (December 1997), there are two sequential types of formal EIA submissions which represent progress reports to meet the requirements of Malawi’s EIA process. These are Project Briefs and EIA Reports.

A Project Brief is a short report informing DEA that a prescribed activity is being considered. Its sole purpose is to provide sufficient information to allow DEA to determine the need for an EIA based on screening criteria outlined in Appendix of the guidelines. Thus, a Project Brief must contain the information needed by DEA to evaluate the report against the screening criteria. Section 24 of the EMA requires that a Project Brief should at least state:

- The nature of the project;
- The activities that shall be undertaken;
- The possible products and by-products anticipated;
- The number of people the project shall employ;
- The area of land, air or water that may be affected; and
- Any other matters as may be prescribed.

More generally, the Project Brief should also contain:

- A basic description of the project purpose, size, location and preliminary design, including any alternatives which are being considered (i.e. site, technology, construction and operation procedures, handling of waste).
- The stage of the project in the project cycle.
- A location map of the project site or site alternatives, and a site plan as it is currently known. Maps and plans should conform to the standards discussed in the section describing the requirements of an EIA report.
- A discussion of which aspects of the project are likely to cause environmental concerns, and of proposed environmental management measures.

The General Requirements of an EIA Report include: (i) quality standards; (ii) terms of reference; (iii) identification of the EIA team; (iv) discussion of EIA methods; (v) public consultation; and (vi) information and mapping standards.

Typical elements of an EIA report include: (i) an Executive Summary; (ii) an Introduction; (iii) a Project Description; (iv) a discussion of the Environmental Planning and Design; (v) Public consultation; (vi) description of the Environmental Setting; (vii) Assessment of Environmental Impacts; (viii) Environmental Management Plan; (ix) Resource Evaluation; (x) Summary and Recommendations; and (xi) Appendices.

For details on the preparation of the above documents, please refer to Appendix C of the Guidelines for Environmental Impact Assessment (December 1997).

In this context, the ESMF not only complements Malawi’s procedures for meeting EIA requirements as outlined in Appendix C of the above guidelines, but it also meets the safeguard policy requirements of the World Bank.
APPENDIX 4: THE GENERAL EIA PROCESS IN MALAWI (ADAPTED FROM THE EIA GUIDELINES 1997, EAD)

PROPOSED PROJECT

SCREENING
Is the proposed project a prescribed activity? Is an EIA likely to be mandatory or may be required? Refer to Lists A and B of EIA

PROJECT EXEMPT
No EIA Required **

PREPARE PROJECT BRIEF

Review of Project Brief by the Director of Environmental Affairs

EIA Required?

* Based on ToRs approved by EAD.
** The licensing authority should submit to the Director a copy of the license with attached project brief for record purposes.
*** The Developer may appeal to the Environmental Appeals Tribunal if not satisfied by the decision.
APPENDIX 5: SUMMARY OF THE WORLD BANK’S SAFEGUARD POLICIES.

Relevant World Bank safeguard policies concerned in the proposed project are highlighted by a light shade. Attempts have been made to evaluate the issues of concern and position of the client.

<table>
<thead>
<tr>
<th>OP 4.01 Environmental Assessment</th>
<th>The objective of this policy is to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate analysis of actions and of their likely environmental impacts. This policy is triggered if a project is likely to have potential (adverse) environmental risks and impacts in its area of influence.</th>
<th>Depending on the project, and nature of impacts a range of instruments can be used: EIA, environmental audit, hazard or risk assessment and environmental management plan (EMP). When a project is likely to have sectoral or regional impacts, sectoral or regional EA is required. The Borrower is responsible for carrying out the EA. Under IRLADP, the Borrower has prepared an Environmental and Social Management Framework (ESMF) to assess the impacts of future construction and rehabilitation activities where the exact location is not known at the time of project preparation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP 4.36 Forests</td>
<td>This policy focuses on the management, conservation, and sustainable development of forest ecosystems and their associated resources. It applies to projects that may/may not have impacts on (a) health and quality of forests; (b) affect the rights and welfare of people and their level of dependence upon or interaction with forests and projects that aim to bring about changes in the management, protection, or utilization of natural forests or plantations, whether they are publicly, privately or communally owned. The Bank does not support the significant conversion or degradation of critical forest areas or related critical natural habitats.</td>
<td>This policy is triggered by forest sector activities and other Bank sponsored interventions which have the potential to impact significantly upon forested areas. Under IRLADP, construction and rehabilitation activities that are likely to affect populations and forests as described in OP 4.36 will not be funded.</td>
</tr>
<tr>
<td>OP 4.09 Pest Management</td>
<td>The objective of this policy is to promote the use of biological or environmental control methods and reduce reliance on synthetic chemical pesticides. In Bank-financed agricultural operations, pest populations are normally controlled through Integrated Pest Management (IPM) approaches. In Bank-financed public health projects, the Bank supports controlling pests primarily through environmental methods. The policy further ensures that health and environmental hazards associated with pesticides are minimized. The procurement of pesticides in a Bank-financed project is contingent on an assessment of the nature and degree of associated risk, taking into account the proposed use and the intended user.</td>
<td>The policy is triggered if procurement of pesticides is envisaged (either directly through the project or indirectly through on-lending); if the project may affect pest management in a way that harm could be done, even though the project is not envisaged to procure pesticides. This includes projects that may lead to substantially increased pesticide use and subsequent increase in health and environmental risks; and projects that may maintain or expand current pest management practices that are unsustainable. Under IRLADP, activities requiring the use of pesticides will not be funded.</td>
</tr>
<tr>
<td>OP 4.11 Cultural Property</td>
<td>This policy aims at assisting in the preservation of cultural property (sites that have archaeological (prehistoric), paleontological, historical, religious, and unique natural values – this includes remains left by previous human inhabitants (such as shrines, and battlegrounds) and unique environmental features such as canyons and waterfalls), as well as in the protection and enhancement of cultural properties encountered in Bank-financed projects.</td>
<td>This policy is triggered by projects which, prima facie, entail the risk of damaging cultural property (i.e. any project that includes large scale excavations, movement of earth, environmental changes or demolition). Under IRLADP, construction and rehabilitation activities that might have negative impacts on cultural property will not be funded.</td>
</tr>
<tr>
<td>OD 4.20 Indigenous Peoples</td>
<td>This policy aims at ensuring that the development process fosters full respect for the dignity, human rights and cultural uniqueness of indigenous peoples; that they do not suffer adverse effects during the development process; and that indigenous peoples receive culturally compatible social and economic benefits.</td>
<td>This policy is triggered if there are indigenous peoples in the project area; when potential adverse impacts on indigenous peoples are anticipated; and if indigenous peoples are among the intended beneficiaries. Under IRLADP, construction and rehabilitation activities that might have negative impacts on indigenous peoples will not be funded.</td>
</tr>
<tr>
<td>OP 4.12 Involuntary Resettlement</td>
<td>The objective of this policy is to avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs. Furthermore, it intends to assist displaced persons in improving their former living standards; it encourages community participation in planning and implementing resettlement; and to provide assistance to affected people, regardless of the legality of title of land.</td>
<td>This policy is triggered not only if physical relocation occurs, but also by any loss of land resulting in: relocation or loss of shelter; loss of assets or access to assets; loss of income sources or means of livelihood, whether or not the affected people must move to another location. Under IRLADP, a Resettlement Policy Framework (RPF) has been prepared which will serve as guidance for the preparation of a RAP should land acquisition be required.</td>
</tr>
<tr>
<td>OP 4.37 Safety of Dams</td>
<td>This policy focuses on new and existing dams. In the case of new dams, the policy aims at ensuring that experienced and competent professionals design and supervise construction; the Borrower adopts and implements dam safety measures for the dam and associated works. In the case of existing dams, the policy ensures that any dam upon which the performance of the project relies is identified, a dam safety assessment is carried out, and necessary additional dam safety measures and remedial work are implemented. The policy also recommends the preparation of a generic dam safety analysis for small dams.</td>
<td>This policy is triggered if the project involves the construction of a large dam (15 m or higher) or a high hazard dam; if a project is dependent on an existing dam, or a dam under construction. For small dams, generic dam safety measures designed by qualified engineers are usually adequate.</td>
</tr>
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</table>
LIST OF THE PEOPLE CONSULTED IN THE COURSE OF THE STUDY AND PREPARATION OF THE ENVIRONMENTAL MANAGEMENT AND SOCIAL FRAMEWORK.

<table>
<thead>
<tr>
<th>NAME OF PERSON</th>
<th>POSITION</th>
<th>ORGANIZATION</th>
<th>DATE OF CONSULTATION</th>
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<tbody>
<tr>
<td>Dr Andrew Daudi</td>
<td>Principal Secretary</td>
<td>Ministry of Agriculture</td>
<td></td>
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<tr>
<td>Mr Victor Lungu</td>
<td>Deputy Director For Planning</td>
<td>Ministry of Agriculture</td>
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</tr>
<tr>
<td>Mr Maweru</td>
<td>Director for Irrigation</td>
<td>Department of Irrigation</td>
<td></td>
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<tr>
<td>District Agricultural Development Officer</td>
<td></td>
<td>Zomba Agric. Office</td>
<td>October 20, 2004</td>
</tr>
<tr>
<td>Assistant Land Resources officer</td>
<td></td>
<td>Zomba Agric. Office</td>
<td>October 20, 2004</td>
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<td>District Irrigation Officer</td>
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<tr>
<td>Scheme Manager</td>
<td></td>
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<td>October 20, 2004</td>
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<td>Assistant Land Resources officer</td>
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<tr>
<td>Mr.C.Piyo</td>
<td>Block Chairman</td>
<td>Nkhate Irrig. scheme</td>
<td>November 25, 2004</td>
</tr>
<tr>
<td>Mr.L.Simati</td>
<td>Block Chairman</td>
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<td>November 25, 2004</td>
</tr>
<tr>
<td>Mr.G.Makise</td>
<td>Chairman of scheme management committee</td>
<td>Nkhate Irrig. scheme</td>
<td>November 25, 2004</td>
</tr>
<tr>
<td>Mr.E.Sidzu</td>
<td>Secretary of Scheme management Committee</td>
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<td>November 25, 2004</td>
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<tr>
<td>Mr.F.Magomero</td>
<td>Chairman of Fin. Committee</td>
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<tr>
<td>Mr.L.Kachala</td>
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<td>Mr.B.Misomali</td>
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<tr>
<td>Name</td>
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<td>Scheme</td>
<td>Date</td>
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<tr>
<td>Mr. F. Paliyani</td>
<td>Chairman of SMC</td>
<td>Muona Irrig. scheme</td>
<td>26 October 2004</td>
</tr>
<tr>
<td>Mr. F. Kadzinje</td>
<td>Vice-Secretary</td>
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<tr>
<td>Mr. E. Mwava</td>
<td>Vice Irrigation Chairman</td>
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<tr>
<td>Mr. D. Frank</td>
<td>Chairman for Block C</td>
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<tr>
<td>Mr. S. J. Kajasalire</td>
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<tr>
<td>Mr. M. Malimoso</td>
<td>Committee Member of Scheme Management Committee</td>
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<tr>
<td>Mrs. S. Nsona</td>
<td>Vice Treasurer</td>
<td>Muona Irrig. scheme</td>
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<tr>
<td>Mr. B. Fungulani</td>
<td>Chairman of Afforestation Committee</td>
<td>Muona Irrig. scheme</td>
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<tr>
<td>Mr. S. Zuze</td>
<td>Treasurer of Committee</td>
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<tr>
<td>Mr. R. Chambote</td>
<td>Secretary of Scheme management Committee</td>
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<tr>
<td>Mr. D. Mnnowa</td>
<td>Chairman of Irrigation Committee</td>
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<tr>
<td>Mr. A. Josiah</td>
<td>Veterinary Officer</td>
<td>Livunzu Irrig. scheme</td>
<td>14 November 2004</td>
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<tr>
<td>Mr. J. Mkupanyila</td>
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<tr>
<td>Mrs. L. Kandyado</td>
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<tr>
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<td>Mr. D. Dauya</td>
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<tr>
<td>Mr. Phiri</td>
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<tr>
<td>Mr. L. Kanyenda</td>
<td>Chairman of Marketing Committee</td>
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<tr>
<td>Mr. E. Ngwale</td>
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<tr>
<td>Mr. L. Mdala</td>
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<tr>
<td>Mr. S. M. L. Banda</td>
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<td>Mr. L. Malifula</td>
<td>Farmer</td>
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<td>Mr. J. Ziqhambo</td>
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<td>Mrs. E. Nakamela</td>
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<td>Mr. M. Mshani</td>
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<td>Mr. P. B. Mwase</td>
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<td>Mr. C. H. Kayira</td>
<td>Irrigation Officer, Karonga</td>
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<td>Mr. W. P. Kalua</td>
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</table>
Appendix 7: REFERENCES

* Government of Malawi (1996), Department of Environmental Affairs, Environmental Management Act, Number 23.