RWIMI Small Hydro Power Project, Kassese, Uganda

Environmental & Social Management Plan (ESMP)

Eco Power Holdings Ltd

Rwimi Small Hydro Power Project is proposed to be built and operated by Eco Power Holdings Ltd., in order to generate 6.6 MW of hydro power generation using the waters of Rwimi River, when it meanders through Kitswamba Sub County. This Environmental and Social Management Plan (ESMP) flows from the Environmental and Social Impact Assessment (ESIA), the Resettlement Action Plan (RAP) and all other statutory permits and licenses issued by Ugandan Authorities for the same as well as any other international regulations or standards (IFC). The ESMP is intended to be used during the full project life cycle to ensure that the project is compliant to all the regulatory and similar requirements which are aimed at mitigating environmental and social risks and impacts. Major responsibility of implementing the ESMP lies with the Developer (EPHL) and the civil contractors (during the construction phase).
Rwimi Small Hydro Power Project, Kassese,
Environmental and
Social Management Plan (ESMP)

Developer: Eco Power Holdings Ltd
Financier: KfW
Independent E&S Consultant to the Developer: L P D Dayananda
(Partner SBSG)
Date of ESMP preparation 15.04.2013
Date Revised 6.11.13
Abbreviations

DB       Decibels
DEO      District Environmental Officer
DFID     Department for International Development (UK)
DWD      Directorate of Water Development
dBA      decibel
E&S Risks Environmental and Social Risks
EIA      Environmental Impact Assessment
EP       Eco Power Holdings Ltd.
ERA      Electricity Regulatory Authority
ESMP     Environment & Social Management Plan
ESMC     Environmental and Social Management Consultant
ESMS     Environment & Social Management System
GOU      Government of Uganda
GHG      Green House Gases
GWh      Gigawatt hour
IFC PS   International Finance Corporation, Performance Standards
ILO      International Labor Organization
Km       Kilometers
LC       Local Council
LIF      Livelihood Improvement Framework
NEMA     National Environment Management Authority
O&M      Operation & Maintenance (Phase)
P&C      Planning & construction (Phase)
PAI      Project’s Areas of Influence
PAP      Project Affected Persons
PPE      Personal Protective Equipment
RAP      Resettlement Action Plan
SCWO     Site Community and Welfare Officer
SHPP     Small Hydro Power Project
TSS      Total Suspended Solids
UETCL    Uganda Electricity Transmission Company Ltd
UGX      Ugandan Shilling
WMP      Waste Management Plan
M3/s     cubic meters per second
### Widely used Terms and Definition

<table>
<thead>
<tr>
<th>TERM</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Line Status</td>
<td>A description of the biophysical and socio-economic state of the environment at a given time, prior to development of a particular project.</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>The variety of life on earth.</td>
</tr>
<tr>
<td>Contamination</td>
<td>Pollution.</td>
</tr>
<tr>
<td>Environment</td>
<td>The combination of elements whose complex interrelationships make up the settings, surroundings and conditions of life of the individual and society as they are or are felt.</td>
</tr>
<tr>
<td>Environmental audit</td>
<td>An environmental management tool consisting of a periodic and objective evaluation of an organization and installations to assess Compliance with regulatory and other requirements, as defined by audit criteria.</td>
</tr>
<tr>
<td>Environmental impact assessment</td>
<td>A critical evaluation of the likely effects of a project on the environment, including the prescription of mitigation and management actions.</td>
</tr>
<tr>
<td>Environmental and social management plan</td>
<td>A comprehensive plan for the implementation of mitigation measures prescribed in the environmental and social impact assessment.</td>
</tr>
<tr>
<td>Fauna</td>
<td>The total animal population in a given area.</td>
</tr>
<tr>
<td>Flora</td>
<td>The total vegetation assemblage in a given area.</td>
</tr>
<tr>
<td>Groundwater</td>
<td>Water found beneath the Earth’s surface.</td>
</tr>
<tr>
<td>Habitat</td>
<td>The home of a plant or animal.</td>
</tr>
<tr>
<td>Impact</td>
<td>The consequence of an action or activity on the human or natural environment. Impacts may be positive, negative or neutral.</td>
</tr>
<tr>
<td>Magnitude</td>
<td>The size or degree of a predicted impact</td>
</tr>
<tr>
<td>Mitigation</td>
<td>Prescribed actions taken to prevent, avoid, reduce or minimize the impacts, or potential adverse effects, of a project.</td>
</tr>
<tr>
<td>Monitoring</td>
<td>A combination of observation and measurement to assess the environmental and social performance of a project and its compliance with the EIA/EMP, or other approval and regulatory conditions.</td>
</tr>
<tr>
<td>Reservoir</td>
<td>An artificial water body created and used for water storage for irrigation, flood control, flow regulation or power generation purposes.</td>
</tr>
<tr>
<td>Risk</td>
<td>The likelihood of occurrence of an adverse project effect.</td>
</tr>
<tr>
<td>Runoff</td>
<td>Precipitation falling on the ground that is not absorbed and eventually reaches rivers, lakes or other water bodies.</td>
</tr>
<tr>
<td>Water quality</td>
<td>A measurement of the purity of water, or drinking water.</td>
</tr>
</tbody>
</table>
EXECUTIVE SUMMERY

This Environmental and Social Management Plan (ESMP) for the Rwimi Small Hydro Power Project, Uganda describes measures to be taken to mitigate social and environmental impacts arising from the different phases of the project’s lifecycle. The measures in the ESMP are based on the recommendations made in the Environmental and Social Impact Assessment (SEIA) and Resettlement Action Plan (RAP) and other statutory permits, licenses issued by Ugandan Authorities. The ESMP has been prepared in keeping with the National Environmental Act which describes the Environmental Impact Assessment Procedures of Uganda, and in accordance with international social and environmental safeguard policies, specially the IFC Performance Standards. The plan is intended to be used by the developer, the contractors and other stakeholders.

The SEIA as well as the Resettlement Action Plan (RAP) has recommended various measures in order to mitigate the social and environmental (adverse) impacts. These measures have further been reinforced by NEMA through the issuance of a set of terms and condition when approving both the SEIA report and the Resettlement Action Plan. The project’s environmental and social management plan is based on these documents. However, since the project falls in high risk category according to international standards, there is a need to ensure that the project impact mitigation measures comply with international social and environmental safeguard polices and guidelines, whilst compliance to host country laws and regulations is considered compulsory.

The environmental and social management plan is therefore prepared taking into consideration the IFC performance Standards. It is expected that any E&S impacts will be comprehensively addressed in keeping with more stringent performance requirements which are explained either under national laws or other international obligations such as IFC PS. This ESMP constitute among others specific mitigation actions supported by supplemental management plans which will guide the developer as well as the civil contractors to address Environmental and social issues arising from the project’s construction phase as well as O&M phase.

Proposed Project

The proposed Rwimi Small Hydro-Power Project has an installed capacity of 6MW and the expected annual energy output is 24.8GWh. This is a run-of-the-river scheme exploiting a gross head 89.7m by harnessing the hydropower potential of the Rwimi River at a location approximately 4km upstream from the point where the river crosses the Kassese - Fort Portal main road. All the civil structures and access roads are located within (4) villages namely Kihoko, Nyaseke, Nyakabale and Upper Rugendabara in Kitswambe Sub County, in Kassese District.

The project will be built and operated by Eco Power Holdings Limited (EPHL) which has obtained necessary permits and licenses from the relevant Ugandan Authorities to undertake preliminary studies, design, construct and operate the plant and to sell all energy generated by the plant to UETCL. The project has been classified under the category of “major infrastructure development projects” which are listed in the Third Schedule of the National Environmental Act, Cap. 153. In terms of the magnitude of the environmental and social risks attached to similar projects, based in the risk categorization, this project is considered high risk thus making the project under...
category ‘B+’ requiring the project to comply with International environmental and social safeguard policies, specially the IFC Performance Standards.

**Impacts**

The social and environmental impacts of the project have been carefully appraised in the SEIA as well as in the RAP. All the negative impacts are considered reversible with adequate measures taken to mitigate them. Most of the construction activities will take place in sloping lands and therefore there is a high potential for soil erosion taking place during the construction phase of the project. The project will require a total of 8.75ha belonging to 94 families and the resultant economic displacement is considered a significant. The land intake affects the agricultural activities of the project affected community members. The most significant negative impact of the project will be that there could be inconveniences experienced by the people in the project influence area due to the reduced quantity and quality of river water during construction and the reduced river flow between the dam and the powerhouse after the construction. This is considered significant because of the fact that River Rwimi has been a potable water source for the people in and around the project area. This impact is likely to be felt by a large number of people who uses the river water for bathing, washing and drinking purposes, especially during dry seasons. The project’s overall positive impacts can override the negative impacts in view of the dire need to generate more power (especially clean energy) to meet the ever increasing demand in the sector. The project has the potential to enhance the livelihoods of those people in the area, by way of improving small scale businesses with the use of electricity, roads etc., as there had not been any significant investment in the recent past to support agricultural base.

**Impact Mitigation/Enhancement**

The social and environmental impacts likely to arise from the different phases of the project are reversible. The Developer as well as the Civil Contractors has the major responsibility to take adequate measures during the project’s construction phase in order to minimise or to eliminate the level of impacts arising from the land clearance, excavation and other construction activities. The ESMP has provided a separate section which spells out the likely E&S issues arising from the different project activities, (as identified under area of its occurrence) and the proposed mitigation actions which have been proposed in the SEIA, the RAP, and other documents (Licences/permits) issued by NEMA, DWD and ERA. References have been made to specific Guidelines (Public Disclosure, Environmental Health and Safety Guidelines etc.) that will be required to be adopted by the project developer as well as the civil contractors in keeping with the IFC performance Standards. At the time the ESMP is prepared, the Developer had already implemented some of the recommendations made in the Resettlement Action Plan. Under this compensation had already been paid to the project affected persons whose land will be affected by the project, in keeping with the both the host country legislation and international social safeguard policies which are relevant to IFC PS under PS (5). The ESMP provides several relevant supplemental management plans, which the Civil Contractors will have to refer to when addressing some of the specific social and environmental impacts.
Management Structure to implement the ESMP

Key to the successful implementation of the ESMP is the institutional arrangement that will be in effect both at site and at the main office when the project’s planning and construction phases commence. Management structure recommended in the ESMP aligns with what has been recommended in the SEIA Report and encompass the engagement of the Site Project Manager, Civil Contractor/s as well as the sub-contractors to work in concert to design, implement and monitor required E&S risk and impacts arising out specially during project’s construction phase. The developer in this case, has consented to engage necessary staff, technical experts (especially environmental consultant) and allocate resources in order to implement the ESMP in close collaboration with the Civil Contractors.

The management structure supported by this ESMP is intended to proactively take appropriate compliance measures to minimize environmental and social risks and impacts while addressing community grievances and improving welfare and safety aspects of both the workers and the community in general. Although there is an attempt to cover the ESMP for the overall project life cycle, there will be a need to revisit the ESMP when the project commences its O&M Phase in order to revise the staff requirements.

Capacity building and training

Institutional capacity development will be necessary in order to efficiently implement the ESMP. The Site Project Manager, Civil Contractor/s as well as the sub-contractors should have a fair amount of knowledge of the ESMP, its compliance requirement and the reporting needs. Main civil contractors and sub-contractors should be provided with necessary induction, resources and guidelines. Orientation and re-orientations will be necessary for the main civil contractor, the sub-contractor and their workers to appreciate the critical environmental and social issues and their compliances. These orientation programmes should be conducted before the commencement of the construction activities and need to be repeated on a regular basis in order to target the newly recruited employees and sub-contractors. Important aspect of the capacity building will be to ensure that the Civil Contractors are contractually bound to carry out the impact mitigation measures according to the ESMP and its supplemental management plans.
## Contents

### 1. Introduction

1.1 Source documents ................................................................. 11
1.2 IFC Performance Standards .................................................. 11
1.3 Structure of the ESMP ............................................................. 14

### 2. Brief description of the project

2.1 Main Structures in brief .......................................................... 16
2.2 Land Requirement ................................................................. 17
2.3 Project’s life cycle (Time frame) .............................................. 17

### 3. Project impacts:

3.1 Project’s positive impacts ....................................................... 19
3.2 Project’s reversible negative impacts (during construction phase) .............................................. 20
3.3 Project’s Reversible Negative Impacts (O&M) Phase ...................................................... 23
3.4 Guidelines and strategies to mitigate impacts ...................................................... 24

### 4. Management Structure

4.1 Purpose ..................................................................................... 26
4.2 Specific roles and responsibilities ............................................. 28
4.2.1 The Developer ..................................................................... 28
4.2.2 Civil Contractor/s and Electro Mechanical Contractor ............................................. 30
4.3 Institutional and capacity development requirements ............................................. 31
4.4 Worker awareness .................................................................... 32
4.5 Public Disclosure ..................................................................... 33

### 5. Environmental & Social Impact Mitigation Action Plan

5.1 Environmental and Social Impact Mitigation Action Plan ............................................. 34
6.2 Impact Mitigation Action Plan for Operational & Maintenance Phase ............................................. 35

### 6. Compliance Monitoring and Reporting Requirements

6.1 Purpose ..................................................................................... 70
6.2 Monitoring Responsibilities ...................................................... 71
6.3 Reporting Requirements .......................................................... 71
6.4 Management of Corrective Actions .......................................... 72
6.5 Quality Control (Audits Supervision and inspections) ............................................. 73
6.6 Environmental and Social Impact Mitigation Monitoring Plan .............................................. 74
6.6 Environmental and Social Impact Mitigation Monitoring Plan .............................................. 76

PART - 4 ........................................................................................................................................... 86

7. Supplemental Management Plans / Guidelines ........................................................................... 86
   7.1 Public Consultation and Disclosure Plan ............................................................................... 87
   7.2 Employment Policy and Administration Procedures ............................................................. 104
   7.3 Occupational Health and Safety Management Plan .............................................................. 115
   7.5 Public Safety Guidelines ....................................................................................................... 143
   7.6 Traffic Management Plan ...................................................................................................... 148
   7.7 Explosive Handling and Blasting Procedure ........................................................................... 157
   7.8 Slope protection, Erosion Control and Soil Conservation Guidelines .................................. 169
   7.9 Chance Find Procedure & Guidelines .................................................................................. 180
   7.10 Livelihood Improvement Programme .................................................................................. 183
   7.11 Special Studies for Rwimi SHPP (Water Audit & Aquatic Species Study) ......................... 200

8. ANNEXURES : ............................................................................................................................... 214
   1.2. CONDITIONS OF APPROVAL (RESETTLEMENT AND COMPENSATION ACTION PLAN) ...... 218
   1.3. CONDITIONS LAID DOWN BY DWD FOR SURFACE WATER ABSTRACTION ................. 220
1. Introduction

Environmental and Social Management Plan is a comprehensive plan for the implementation of mitigation measures prescribed in the environmental and social impact assessment and other related documentation. Therefore this Environmental and Social Management/Monitoring Plan (ESMP) flows from the Environmental and Social Impact Assessment (ESIA), the Resettlement Action Plan (RAP) and all other permits, licenses issued by Ugandan authorities for Rwimi Small Hydro Power Project (RSHPP). This identifies the overall principles, approaches, procedures and methods stated in the above documents to mitigate the environmental and social impacts of the project.

The preparation of the ESMP is guided by the IFC Performance Standards. The Performance Standards (PS) on Social and Environmental Sustainability, 2007 and the revision therein to date, adopted by the International Finance Corporation (IFC) mandates the need for compliance monitoring and reporting of environmental and social impact mitigation of the development projects which are categorized as causing environmental and social impacts, through institutionalizing a set of procedures and organizational structures.

The ESMP is intended to be used during the full project life cycle to ensure that the project is compliant to all the regulatory and similar requirements. The ESMP (together with all its supplemental plans / guidelines) will enable the developer (as well as the civil contractors) to identify in advance and plan to mitigate any adverse social and environmental risks and impacts that may arise, during the whole project cycle. ESMP is also intended to ensure that any positive project impacts can be further harnessed to ensuring long term sustainability of the project. Eco Power Holdings Ltd. (UPHL) being the developer, through the civil contractor/s, will have the overall responsibility in implementing the management plan ensuring adequate compliance to the SEIA conditions of approval. Therefore commitments stated in the ESMP should be implemented.

The ESMP will also serve as a ready reference to the developer, the key stakeholders namely contractors, sub-contractors, external consultants and other statutory agencies in order to ensure that the project adopts a strategic approach to mitigate environmental, health and safety impacts of the project according to accepted guidelines and best practices. This revised ESMP has taken note of the due diligence process carried out by the project Financiers and revisions have been incorporated based on the subsequent clarifications sought by the E & S Consultants. Therefore ESMP also serves as the document in which negotiations are recorded between the developer and the Project E&S consultants.

Implementation of the ESMP is therefore essential as a measure to be accountable to the requirements identified by those lead agencies. Success of the ESMP lies in the willingness to take action by the contractor/s and the sub-contractor/s as well as the staff engaged in all the phases of the project’s life cycle. The ESMP can be revised, amended after reviewing the periodical progress, in case any further improvements will be required.
Regular monitoring and reporting is also essential enabling the lead agencies to be aware that action to arrest the likely adverse impacts has been taken by the project contractors and the developer.

1.1 Source documents

There are several documents, permits and guidelines which have been referred to in developing the ESMP. The primary source document has been the Project Feasibility Study, Social and Environmental Impact Assessment (EIA), the Resettlement Action Plan (RAP) and the NEMA’s conditions of approval of the EIA and RAP.

The likely environmental and social implications of the project have been appraised well in the SEIA report which was produced to the National Environmental Management Authority (NEMA) by the developer well ahead, during the project’s planning stage. During the SEIA, additional studies were undertaken to appraise the biodiversity, geology and hydrology and their respective impacts to the environment together with social and economic environment.

The Resettlement Action Plan also had addressed issues with regard to acquisition of land for the project and stipulates the procedure to make full compensation to the project affected persons. It had sufficiently addressed issues arising from the economic and physical displacement of the PAPs. Physical displacements are found to be very minimal with only one household having been affected due to the land intake for the access road (to the Dam) who has been paid compensation to relocate the same outside the project area. This ESMP has taken note of the procedures recommended by the RAP in order to mitigate any other likely social issues that the project affected persons (PAPs) would encounter during the project’s construction phase.

Pursuant to the issuance of the conditions of approval for the SEIA as well as the RAP, NEMA now requires that the project should have a management, monitoring and reporting arrangement to ensure proper compliance to the prescribed mitigation actions/recommendations made in the conditions of approval as well as any other similar recommendations made in the SEIA report and its constituent technical reports.

Documents such as the Construction Permit, the Water Abstraction Permit issued by the Directorate of Water Development (DWD), the guidelines provided by the Electricity Regulatory Authority (ERA), the conditions of approval of the Resettlement Action Plan (RAP), were also referred to in preparing the ESMP.

1.2 IFC Performance Standards

IFC PS is also considered important source document based on which the ESMP has been prepared. The ESMP has been prepared in keeping with the IFC performance Standards and the relevant guidelines which have been issued by the Bank, in the year 2012. A brief introduction of same is provided below:

Performance Standard 1 underscores the importance of managing environmental and social performance throughout the life of a project. An effective Environmental and Social Management System (ESMS) is a dynamic and continuous process initiated and supported by
management, and involves engagement between the clients, its workers, local communities directly affected by the project (the Affected Communities) and, where appropriate, other stakeholders.

Specific objectives of the ESMP as per IFC PS (1) are as follows:

1. To identify and evaluate environmental and social risks and impacts of the project.
2. To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize, and, where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment.
3. To promote improved environmental and social performance of clients through the effective use of management systems.
4. To ensure that grievances from Affected Communities and external communications from other stakeholders are responded to and managed appropriately.
5. To promote and provide means for adequate engagement with Affected Communities throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated.

Performance Standard (2) recognizes that the pursuit of economic growth through employment creation and income generation should be accompanied by protection of the fundamental rights of workers. Specific objectives are:

1. To promote the fair treatment, non-discrimination, and equal opportunity of workers.
2. To establish, maintain, and improve the worker-management relationship.
3. To promote compliance with national employment and labour laws.
4. To protect workers, including vulnerable categories of workers such as children, migrant workers, workers engaged by third parties, and workers in the client’s supply chain.
5. To promote safe and healthy working conditions, and the health of workers.
6. To avoid the use of forced labour.

Performance Standard (3) recognizes that increased economic activity and urbanization often generate increased levels of pollution to air, water, and land, and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global levels. Specific objectives are:

1. To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities.
2. To promote more sustainable use of resources, including energy and water.
3. To reduce project-related GHG emissions.

Performance Standard (4) recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. Specific objectives are:

1. To anticipate and avoid adverse impacts on the health and safety of the Affected Community during the project life from both routine and non-routine circumstances.
2. To ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the Affected Communities.

Performance Standard (5) recognizes that project related land acquisition and restrictions on land use can have adverse impacts on communities and persons that use this land. Specific objectives are:

1. To avoid, and when avoidance is not possible, minimize displacement by exploring alternative project designs.
2. To avoid forced eviction.
3. To anticipate and avoid, or where avoidance is not possible, minimize adverse social and economic impacts from land acquisition or restrictions on land use by
   a. providing compensation for loss of assets at replacement cost and
   b. Ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected.
4. To improve, or restore, the livelihoods and standards of living of displaced persons.
5. To improve living conditions among physically displaced persons through the provision of adequate housing with security of tenure at resettlement sites.

Performance Standard (6) recognizes that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development. Specific Objectives are:

1. To protect and conserve biodiversity.
2. To maintain the benefits from ecosystem services.
3. To promote the sustainable management of living natural resources through the adoption of practices that integrates conservation needs and development priorities

IFC Performance Standard (7) on indigenous people which deals with avoidance of adverse impacts, information disclosure, consultation and informed participation, impacts on traditional or customary lands under use, relocation of indigenous people from traditional or customary lands and cultural resources

IFC Performance Standard (8) on Cultural Heritage deals with Graves and other objects of cultural significance.

Of the above, it has been observed that PS (1-6 & 8) and the respective guidelines are more relevant to the project than that of PS (7) which has little relevance in terms of social impacts to any indigenous communities, since the project does not infringe on the rights of any of the indigenous people in the project’s area of influence. Relevant supplemental management plans to cover the performance standards (based on the guidelines provided) have been prepared in the ESMP under section (4).
Table (1.1) Source Documents

<table>
<thead>
<tr>
<th>No</th>
<th>Source Documents</th>
<th>Agency</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Project Feasibility Study</td>
<td>UPEL</td>
<td>2011</td>
</tr>
<tr>
<td>2.</td>
<td>ESIA (Submission to NEMA)</td>
<td>UPEL</td>
<td>Jan 2012</td>
</tr>
<tr>
<td>3.</td>
<td>Conditions of Approval</td>
<td>NEMA</td>
<td>03.04.2012</td>
</tr>
<tr>
<td>5.</td>
<td>Construction Permit</td>
<td>DWD</td>
<td>04.02.2013</td>
</tr>
<tr>
<td>7.</td>
<td>Permit to carry out a regulated activity in a wetland / River Bank / Lakeshore</td>
<td>NEMA</td>
<td>12.10.2012</td>
</tr>
</tbody>
</table>

1.3 Structure of the ESMP

The ESMP is structured in four (4) parts namely:

1. Part (1) consisting of an introduction to the project, impacts, the organizational structure required for the management of the ESMP together with detailed description of the roles and responsibilities of the respective parties.

2. Part (2) provides the Action Plans. The action plan attempts to integrate all the compliance conditions and recommendations made in the SEIA and other documents & reports under key impact areas and presents as a coherent plan with a timeframe to translate same into action under each of the IFC Performance Standard.

3. Part (3) provides the basis for monitoring and the reporting; providing guidelines and formats which will be used to report on mitigation actions as required by various lead agencies. In view of the nature of reporting to various lead agencies, the reporting will be mainly in the form of:
   - Periodical compliance reporting to NEMA (Quarterly) based on the EIA condition of approval and the RAP,
   - Reporting to ERA (Quarterly) based on the newly stipulated requirement by ERA using the prescribed format by ERA and
   - Compliance reporting based on the implementation of the ESAP for internal purposes (to be circulated to the developer, the financier and the other key stakeholders).
4. Part (4) provides supplemental management plans prepared in keeping with additional requirements stipulated by the IFC PS in order to manage any other risks and impacts, which have not been addressed in detail by NEMA in its conditions of approval.

The supplemental management plans will include:

a. Public Consultation and Disclosure Strategy/Plan (PS1)
b. Employment Policy (PS 2)
c. Explosive Handling and Blasting Procedure (PS2)
d. Slope Protection and Soil Conservation and Erosion Control Plan (PS 3)
e. Construction Waste/Spoils Disposal Management Plan (PS3)
f. Hazardous Materials Management Plan (PS3)
g. Occupational Health and Safety Management Plan (PS 4)
h. Community (Public) Safety Management Plan (PS4)
i. Traffic Management Plan including (PS 4)
j. Chance Find Procedure to deal with the unearthing of unexpected graves or sites of heritage significance (PS8)

The section under ‘Annexures’ will provide the reference materials, and specimen contractual document.

2. Brief description of the project

The proposed Rwimi Small Hydro Power project is a run of the river hydro power scheme which shall harness the hydro power potential of the Rwimi River at a location approximately 4KM upstream from the point where the River crosses Kassese-Fort-portal main road. The Project will have an installed capacity of 6MW and the expected annual energy output is 24.8GWh.

The project involves the construction of the following key structural elements:

- A flow diversion dam, 14.5 m high, will be constructed about 4 km up-stream from the Road Bridge over Kassese - Port Portal main highway.
- The intake will be located at the right abutment of the weir.
- The water conveyance works comprise with a 1800m long low-pressure pipeline, a surge tank coupled with a spill way, and a 1200m long penstock.
- The powerhouse will be configured to accommodate two 3MW generating units along with the associated electro-mechanical equipment (two Francis turbines).

In addition there will be access roads, staff quarters and temporary project office within the construction site and a vehicle parking area both at the weir site and the Power House location. The project will be located in the middle reaches of river Rwimi in Kitswamba Sub County, Busongara County in Kassese District. The project area of influence (PAI) is defined as the area enclosing 4 villages of Kihoko, Nayakabale, Nyasake and Rugendabara in Kitswamba Parish in Kitswamba Sub-County in Busangara Country in Kassese District in Uganda.

All the civil structures and access roads are located within (4) villages namely Kihoko, Nyaseke, Nyakabale and Upper Rugendabara in Kitswambe Sub County, in Kassese District. The dam site is earmarked to be located at the village ‘Kihoko’ and can be reached along the gravel (Murram)
road leading to Rugendabara, located at the right side of the trade center which is the first to come across on the A109 road from Fort Portal to Kassese passing bridge over river Rwimi. Around 02 km traveling along the Murram road is the village “Kihoko” which lies to the right side and can be accessed through an existing community access road which leads up to the Dam site.

The Dam will be about 14.5 m high and will connect to either side of the gorge of the Rwimi River. The low pressure pipes, surge tank and penstock will be located in the villages Nyaseke and Nyakabale and can be accessed along an existing community access road to the right along Upper Rugendabara Road. The powerhouse will be located in the village Upper Rugendabara; and can be reached through an existing foot path part of which falls along the river bank. The length of the entire stretch from the Dam site to the power house is about 3km and will meander through undulated terrain which at times runs very close to the river and at times far interior to the villages.

2.1 Main Structures in brief

**Dam, Intake and Ponding Area:** A dam will be located at a location in village Kihoko and will have a length of 42m along its crest at 1,159.84m MSL and with a maximum height of 14.5m across the river to divert stream flow into the low pressure pipe. A side intake is proposed as this will minimize silt and trash entry into the low pressure pipe especially during high flows. Diameter of the low pressure pipe connected to the dam is 2m. The spillway section of the dam is 37m in length. The ponding area extending up to about 400m upstream and maximum area of inundation would be 8,205m2.

**Low Pressure Pipes:** The total length of the water conveyance from the diversion structure to surge tank will be 1,800m. Steel or GRP pipe is proposed for this purpose. The inner dimensions of the pipe will be 2.2m, 2.0m and 1.8m. The pipes on the ground will be located on cut sections and piers will be used to cross low elevations of ground. The SEIA indicates that over 50% of the path will be passing through cultivated lands.

**Surge tank:** Surge tank is designed about 1,800m from the dam location which connect low pressure pipe and the penstock. Aim of the surge tank is to maintain the floods at the Dam and to accommodate any surge due to water back flash without spill. However any water spill shall be collected and diverted back to the river through an open channel. The spill section consists of a man-made section and the section of the existing natural ridge.

**Penstock:** The penstocks will be laid along the ground on concrete supports from the intake to the power house and be 1,200m in length. The penstock will be fabricated from commercial lengths of spiral welded mild steel or GRP pipes with three sizes of outer diameter of 1.8m, 1.7m and 1.2m which can fit one inside the other which have thicknesses of 25mm. These penstocks are to be rested on reinforced concrete foundations and piers. Bifurcation will be included just before the penstock enters the power house to accommodate the two turbines to be installed.

The low pressure pipe, surge tank and penstock will be located in the villages of Nyaseke, and Nyakabale
Powerhouse: The powerhouse which will be located in the village of Upper Rugendabara will be a single story having approximately 250m² in floor area. Basic dimensions of the powerhouse will be; length – 28.98m; width – 8.57m; height – 6.45m. and will accommodate two Francis turbines, generators, governors, electrical switch gear and panels, an area for repairs and lifting arrangements for the machinery, storage space for spares and equipment for maintenance of the civil works. It is designed to be located above the high flood level of the river which is estimated as 1068.13m MSL.

Access Roads

There will be three permanent access roads of the project. One will access the Dam site another access road will be branched off to access the Forebay (Surge Tank) and the penstock path and the third will access the powerhouse. Sections of the access roads have been demarcated along the existing foot paths needing their grading and stabilising whereas other section need complete construction to acceptable standards.

Power Evacuation

The power generated at will be stepped up to 33kV by unit step up transformers and will be connected to the National Grid through a 750m long 33k transmission line. A 0.75 km long 33kV transmission line will be constructed to convey the power generated to the existing 33kV line which runs parallel to the Kassese Fort portal main road. The line trace is along the access road to the powerhouse which partly falls along the bank of the river and the rest is on the acquired portion of land through which the access road will be built.

2.2 Land Requirement

The project will be extended over a land area of about 21.646 acres (including the proposed access roads), which was acquired by the developer after paying due compensation. Ninety Four (94) project affected persons (PAPs) received direct compensation. Only one house was partially affected by the project which fell along the access road to the Dam area. This house was compensated.

2.3 Project’s life cycle (Time frame)

- The planning phase of the project including land acquisition (nearly 18 months)
- The Construction Phase (which is around two years from the time of initiating construction work)
- The post construction de-commissioning Phase (which is overlapping with the period of operating the project and completing the construction work, during which, time will be devoted for restoring and rehabilitating.(about three (03) months)
- The operational and management Phase (which is a longer time duration in which the project will start generating energy after the commissioning and will be based on the generation permit issued time to time by Ugandan Authorities)

Project’s construction and de-mobilization phases are considered critical since adverse social and environmental risks and impacts could be caused during those stages. The implementation of the terms and conditions of approval of the SEIA will go beyond those stages but the ESMS attempts to ensure that in all the project life cycle, including the O&M stage too, the project will
comply with the impacts and risk mitigation strategies. This ESMS and the supplemental management plans have been prepared based on the recommendation made in the feasibility reports and the engineering survey maps as well as the documents such as the RAP and the SEIA.

**Project Location Map:** Figure 1

![Project Location Map](image1)

Fig (2) Project Lay out

![Project Lay out](image2)
3. Project impacts:

The project has been classified under the category of “major infrastructure development projects” which are listed in the Third Schedule of the National Environmental Act, Cap. 153. In accordance with Part V, Section 20 of this Act, the developer is obliged to undertake Environmental Impact Assessment (EIA) for the projects that have been determined as requiring Environmental Impact Assessment. Section 4(a), (b) and 10 (a) lists storage dams/reservoirs, river diversions and generation stations as those requiring an EIA before implementation of such projects.

In terms of the magnitude of the environmental and social risks attached to similar projects, based on the risk categorization by international lending institutions (IFC), this project is considered high risk thus making the project under category ‘B+’ for purpose of lending. In categorizing the project based on E&S Risks, the international lending institutions take into consideration the size, type, sector and nature of the project both environmental and social context.

The project will have reversible impacts on:

- Land-use, topography, soil (By way of increased erosion, sedimentation)
- Water resources and quality - hydrology, hydro-geology and surface & groundwater quality;
- Ambient air quality; Ambient noise quality and ground vibrations;
- Health and sanitation; community health, safety and security
- Safety including road safety due to project traffic;
- Socio-economic: Land acquisition, compensation, resettlement, rehabilitation and livelihood; Agriculture;
- Ecology - forests, terrestrial wildlife, aquatic ecology and fisheries;

3.1 Project’s positive impacts

Project’s positive impacts have well been articulated in the SEIA. Whilst the project will contribute to the increased volume of Grid Electricity, the project has the potential to revive the poor and backward agricultural based economy of the project influence area. Lack of investment either by the private or the state sector, lack of or poor infrastructure facilities, inadequate natural resource management and utilization, lack of alternative sources of employment other than subsistence agriculture are the socio economic constraints widely prevalent in most part of Uganda, and is similar in ‘Kitswamba’ Sub County.

The social survey carried out as part of the SEIA as well as the opinions expressed by the key informants and the local councillors has revealed that the communities in an around the project area has expectations that the proposed project will have strong positive contribution to development for the area. They perceive that the project can contribute to the poor agricultural based economy of the area either through direct influence of the project or through indirect means (spin off effect of the project) which will have other positive outcomes such as infrastructure development and development of access roads, health centres and other public utilities.
Although the expectation of the people is that the project developer will be able to provide electricity to the local communities as a result of the project, such an outcome will be possible only if the local political leadership will pursue this request through ERA and other decision makers. However, in case the political authority decides that the project area should have the benefit of receiving grid electricity; it will be certainly a boom to the local industry. The spin off effects of the project resulting from improvements of existing foot paths into motorable access roads itself will be a contribution towards accruing positive benefits to the people whose main livelihood is agricultural. The project will have positive contribution to the local economy when there will be additional purchasing power among the local communities when employment opportunities will be availed especially during the construction stage of the project. Generation of additional power supply to the national grid, possibility that some amount of grid electricity be provided to the project area, transfer of technology, can be considered as factors of positive impacts of the project.

3.2 Project’s reversible negative impacts (during construction phase)

The SEIA had identified several project induced environmental and social impacts which can be considered negative but reversible. A brief description of same is given below:

**Land-use, topography, soil (erosion/sedimentation)**

- The scale of the construction work of RSHPP is considered to be reasonably heavy and will involve large amount of earthworks (excavation, transport of spoils, cut and filling, removal of boulders etc.) causing a significant landscape transformation.
- Most of the stretch of the pipe line is to be excavated on gentle slope and few sections are to be excavated on steep slopes on the right bank of the river exposing to slope failures.
- Land areas occupied by the project associated structures can bisect the agricultural lands, existing community foot paths obstructing accessibility.
- Soil erosion is likely to occur due to loosening of soils from excavations and from vegetation clearances along the moderate to steep slopes along which the project structures will be built.
- Dam area is in steep slopes and the excavation and rock blasting can result in increased erosion and sedimentation. The blasting of rocks and excavation of spoils can obstruct and cause increased level of sedimentation of river waters.
- Excavation for burying low pressure pipe along the right bank up to the surge tank area, involves significant volume of soil and rock excavation.
- The total quantity of earth (cut material) is estimated to be about 37,500m3 and will require careful management.
- Occupational health of the workers can be affected due to increased dust, noise and risks involved in working in steep areas.

**Water resources and quality - hydrology, hydro-geology and surface & groundwater quality**
- Reduced volume of water between dam and power house can affect the stretch of about three (03) kilometers where there are more than 08 water abstraction points used by the communities living either side of the river.
- Water abstraction points along the stretch at the bridge at Fort-portal Kassese main road, is a source for water being distributed to various other parts of the area through boozers. Abstraction of water can be temporarily affected due to contamination on days during the construction work.
- The increased turbidity due to cutting of slopes, use of coffer dam materials and resultant sediments will affect temporarily the quality of water.
- Weathered rock will be blasted and the use of explosives may contaminate water. Dewatering processes can cause spillage of fuels, lubricants and other toxic materials though the equipment being used for such purposes which can cause water contamination.
- Discharge of silt laden run off from sites, and the disposal of wastes (including human waste) and wastewater from work sites can impact on the quality of water and general landscape.
- The upstream sections of low pressure pipes will traverse through a very steep section of hillside. Several aqueduct structures have been proposed. Temporary blockage of natural surface water drainage paths and seasonal streams can be envisaged which may exacerbate the levels of erosion and lead to water pollution.
- The river bank of a section close to the power house will have to be improved in order to use the same as a part of the access road. The filling of this area can lead to contamination of river waters on temporary basis.

Ecology - forests, terrestrial wildlife, aquatic ecology and fisheries:
- The river harbors dominant macro invertebrates members of the orders;
  - Ephemeroptera (may flies),
  - Plecoptera (stone flies), and
  - Coleoptera (water beetles).

  Any human activity that would cause changes in the current water conditions i.e. water volume and flow rates will affect the diversity and abundance of the sensitive organisms.
- Diversion of all the water into the canal will result into loss of these aquatic species including fish and invertebrates, algal and other sensitive organisms.
- The high relative abundance for the sites below the Dam is an indication that fish breeding grounds are downstream and adult fish only migrate upstream. This means that during the construction and operation of the project there should be a minimum volume of water be allowed to be left in the river to reduce any impact on the aquatic life and fish population in the river.
- Diversion of water to the channel may reduce the water that sustains the aquatic plants along the stretch of the river up to the tailrace.
- A patch of existing plantation forest very close to the power house need to be cleared.
- The clearing of the bush vegetation close to the Dam and along the riverine vegetation can impact on the rodents and small animals whose habitat will be lost during clearance.
- Loss of vegetation due to the project will not have a significant impact on biodiversity of the area.
- Nevertheless, wildlife can be impacted due to noise and vibration, whereas the riparian vegetation can be impacted due to less water along the stretch between the Dam and the Tailrace.
- The SEIA Report had not considered the impact on fisheries as a significant aspect. However a subsequent study carried out on aquatic species and it was revealed that the river stretch between the point of where the flow diversion weir will be constructed to the point of the tailrace, the volume of water in the river will remain to be low (only will be fed with environmental flow) during the dry seasons of the year, affecting the fish (Varicorhinus Ruwenzori) which is environmentally threatened. In order to allow the fish altitude migration for breeding purposes, the need for having a fish pass has been agreed upon.

**Land acquisition, compensation, resettlement, rehabilitation and livelihood:**
- The total area impacted directly by construction activities is about 8.75ha (21.199 acres) and more than 80% of this land is cultivated lands, home gardens or grass lands. Resultant economic displacement is significant in terms of social impacts.
- Land acquisition is critical and affects nearly 94 families. With a view to providing long term livelihood security for those whose agricultural lands will be taken over by the project, the necessity to comply with Livelihood Improvement Framework (LIF) has been agreed.
- During construction, spoils can be slipped into adjacent agricultural lands causing crop damage.
- Graves can be affected during excavation.
- Compensation given will not be used prudently by the PAPs.
- During the inundation of the flow diversion weir as well as during the commissioning of the hydropower project there will be a possibility that agricultural land of three households mentioned below which are located on the left side of the Dam can be affected (They fall within the villages in Kaborale District).
  - Zakalia Muhindo,
  - Aminadab Mukirania Kitibitwa and
  - George Maate through daming.

(At the time the ESMP is prepared, compensation was paid to the project affected persons)

**Community health, safety and security**

- Excavation along the dam area, pressure pipes and the area covered by the penstock could require blasting of areas consisting of boulders which can produce noise and dust pollution.
Public safety will be impacted due to the use of explosives (damage to houses as well as the agricultural lands below the slopes can be expected).

The project structures including the access roads will bisect most of the agricultural lands which are now in single plots.

The possibility that the project associated structures could de-route the community movements (as the foot paths can be obstructed). The foot bridge located very close to the Dam can be affected.

Prevalence of HIV/AIDS, the presence of migratory workers may attribute to aggravating the situation.

Spill-way and the open channel section can cause risks to the children in the area if not protected properly.

Area above the Dam (reservoir) is lying below a steep slope along which community is engaged in agricultural activities on the left side of the river. There will be risks of accidents.

**Safety including road safety due to project traffic**

Transport of construction materials will cause such impacts as increased noise, dust, and vehicle emissions along transportation routes.

Construction work involves handling heavy machinery (Dam site, power house area and areas where penstock is installed) and the risk of children gathering in such areas will be high.

Construction work will involve rock blasting (especially at the Dam Site), transport of blasting materials which may pose a safety threat to the communities working along the agricultural lands.

Major access roads of the project that will access the Dam, the fore-bay and the power house area are earmarked along the murram roads which are already characterised by heavy traffic. Construction related traffic can risk the presence of a large number of pedestrians.

When the access roads are widened and improved, some of the houses will be exposed to the road frontage. The children living on these houses will be at risk.

There are primary schools as well as agricultural land on either these roads.

During the transport of materials such as cement and spoils, speeding, lack of driver awareness and aggressive driving will endanger road safety.

3.3 Project’s Reversible Negative Impacts (O&M) Phase
Due to flow diversion, the volume of water to be used by the community members will be lesser after the construction. During the construction, river water can be polluted due to construction debris. This will cause inconveniences as well as shortage of water to the general public.

Disturbance to the riverine eco system due to diversion of water to the power generation and the disturbance to the riparian vegetation when the power generation is on-going.

Sediment transportation can be impacted along the stretch of the river due to the dam and the decreased volume of flow.

The reservoir area is deep with either side having land used for agricultural activities. Erosion and gradual earth slips over the years due to seepage can occur.

Reservoir area if exposed with no protection around can endanger the lives of those farmers who work on the slopes above (on either side of the inundation area).

Access roads may need continuous rehabilitation especially during rainy seasons.

Open channels (to use as spill way) can cause public safety concerns. The small streams, foot paths and community access roads can be obstructed due to the existence of the associated structures.

The release of tail race waters also will have social impacts if unnoticed releases could occur, during power generation.

The waste accumulation, security threats to the project assets, demand for occupational health, against injuries, noise that emanates from the power generation units, traffic related incidents are some of the other impact.

3.4 Guidelines and strategies to mitigate impacts

In order to minimize the project’s likely negative impacts arising from the different phases of the project, broad environmental policy objectives, strategies and intervention have been provided in a number of documents issued by the lead agencies.

- The Environmental and Social Impact Assessment (SEIA) approved by NEMA has been the main source document which outlines strategies to mitigate the likely environmental and social impacts.
- Management interventions and strategies have also been stipulated in Certificates of Approval issued by NEMA.
- In addition the Department of Water Directorate (DWD) too provides guidelines and condition for compliance mainly dealing with river water abstraction. The DWD require the developer to ensure environmental flow release. Necessary pipes to be installed at the Flow diversion weir.
- Water quality monitoring will be useful interventions. Baseline water quality should be checked through water quality tests during critical construction phases on a regular basis, regular training and awareness to both the community members and the workers.
on matters of public safety will be essential strategies to mitigate the E&S risks and impacts.

- Supplemental management plans have been drawn in keeping with the IFC performance standards on environment and social sustainability. Compliance to these is also a requirement. A list of the supplemental management plans prepared in keeping with the lead agencies and the IFC performance standards is listed in section (4) for easy reference.

- On the advice of the Financier’s E&S consultant’s additional studies was carried out on the aquatic species and also to ascertain the volume of water used by the community along the river stretch between the Dam and the power House in the form of a water audit. Specific recommendations have been made in order to protect aquatic species. Number of strategies have been agreed upon to conserve water for community usage and to provide uninterrupted, quality water to the community, during the construction period.

- Recommendation made in the RAP to uplift the livelihoods of those affected by the project should be implemented. One of the recommendations is that the project would employ those whose lands were affected by the project.

- A plan to support reviving the livelihoods of those critically affected by the land acquisition process (economic displacement) will be included in the community action plan. A livelihood improvement framework (LIF) was already prepared taking into consideration the PAPs, whose agricultural lands have been acquired and compensated. (The LIF targets specifically at least 19 PAPs who were already compensated. They have been targeted for additional support on the grounds that the extent of land that had been acquired from each of them could significantly impact on the livelihood income of those families. The LIF provides clear criteria for their inclusion into the LIF and give details such as the names of those who will be targeted in the LIF and the type of interventions that will be implemented to support gaining resilience. The LIF also details the monitoring indicators and the approach the developer will be taking in order to ensure proper implementation of the same.

- Collect baseline information of the PAPs who will be entitled to assistance through LIF. Employ a Ugandan national who will work as developer’s site Community and Welfare Officer to liaise with this category of PAPs. Recruit suitable candidate will be before commencing project construction work.

- There is a need to implement a comprehensive community development action plan to ensure uninterrupted supply of clean water to the public through alternative sources especially during the construction stage when the water sources will be polluted due to sedimentation. (Water Audit). Sensitization of water users is one of the primary tasks from the time from the commencement of construction work assisting the community members to access to water through a gravity flow water scheme etc have been identified in the CDP.

- Formation of water pools along the river areas which will be affected due to diversion of river flow needs to be undertaken to ensure people have traditional water abstraction unobstructed. In addition there are some deep wells that are not functional which force the community members to access to water from the river itself. A plan will be implemented to restore those bore wells.
• With a view to providing unobstructed passage for the Fish *Varicorhinus Ruwenzorii*, a fish pass has been agreed upon. A technical design for the fish pass (Fish Ladder) will be incorporated into the construction work and will be communicated to the civil contractors once the design is finalized.

• Incorporation of the risk mitigation action into the construction schedule and to treat the E&S risk mitigation actions as part of the civil construction work is important. Demarcation of safe working area zones; compliance to the provision in the traffic management plan will be a necessity.

• Contractors, sub-contractors and the raw material suppliers should be regularly briefed about the safety needs and breach of the compliances should be made tantamount to penalties.

• Proper blasting practices will have to be adopted by the contractors. Site specific construction plans incorporating safety measures should be designed and implemented by the contractor.

• Implementation of a traffic management plan and the waste management plan will be necessary to curb these impacts.

• Implement the Occupation Health and Safety Management plan to ensure proper working conditions to the employees.

• Appropriate planning and designing of overpasses and underpasses will be necessary and shifting of the existing bridges to safe areas will be required.

• Regular quality checks to be undertaken by external evaluators, compliance monitoring and reporting as per the monitoring framework will be essential.

• Implement a Rehabilitation and Restoration Plan during the project’ decommissioning phase of construction work.

• Grievance redress mechanism should be implemented and the Grievance Committee should be institutionalized as per the Community Engagement Plan.

• A plan to support the community to undertake tree planting, hedge planting will be important to compensate the loss of tree and vegetation cover.

4. Management Structure

4.1 Purpose

Management structure proposed here is intended mostly to address the impact issues arising from the construction phase. A slightly different management structure will be evolved during the O&M phase to ensure that compliance pertaining to environmental, health and safety mitigation actions as part of the O & M phase. During the operation, maintenance (O&M) phase, the responsibility of the developer (EPHL) may vary depending on the types of Environmental, Health and Social issues that will be managed within the ESMP.

Management structure here is based on the requirement that adequate site level management capacities will be placed to deal with the management of social and environmental risks arising out of the land clearing and construction work. The management structure should support joint decision making to minimize environmental and social risks and impacts while addressing community grievances and improving welfare and safety aspects of both the workers and the
community in general. During the project’s construction phase, the project site will have a management structure that will consist of the staff engaged by the Developer, the Contractor and Sub-Contractors. This management structure will be temporary to only cater to the construction management for a period not more that 24-30 months (or perhaps less than that).

Section 9.3.1 of the SEIA recommends positions such as a Project Manager, Site Welfare and Environmental Officer, and a Social and Environmental Management Consultant (SEMC) to have an overall supervision of environmental and social compliance.

The Developer to obtain technical backstop on environmental and social risk and impact mitigation during the life cycle of the project. One of the functions of the SEMC will be to appraise the nature of construction and the critical environmental and social impacts and to advise the site management of the appropriate mitigation action, monitor their implementation and to provide documentation on a regular basis.

The SEIA also recommends the deployment of an E&S Manager (whose functions will be discharged by the Site Project Manager) and a Community cum Welfare Officer, who will have the overall responsibility to provide public safety, grievance redress and environmental mitigation actions during the different stages of the project’s construction. The Site Project Manager will liaise with the District Environmental Officer on a constant basis in ensuring that the site specific mitigation action comply with NEMA stipulated requirements. The role of DEO has been recognized as pivotal in the overall management structure.

Civil contractors, the sub-contractors and electro mechanical contractor will nevertheless play a key role, side by side the developer (and the staff engaged by the developer), to deal with all the likely E&S issues. The role of civil contractor/s is essential in the overall implementation of the ESMP. The primary responsibility to ensure compliance with social and environmental impact mitigation during the project’s construction phase is vested with the Civil Contractors. Therefore civil contractors should be able to discharge this function through appropriate measures such as engaging knowledgeable staff, continuous worker awareness and on site due diligence.

The civil contractor’s head contract should provide for provisions to compliance management and to defray costs that need to be incurred for the implementation of mitigation actions during the construction phase. (A draft compliance management contract is provided separately as part of an annexure to the ESMP).

The contractors should be closely monitored to ensure that all technical (and where possible non – technical) measures are taken by the contractors during the construction phase to minimize any likely ecological, geological, social and physical impacts arising from the project’s construction work. This can be done in consultation with the ESMP Consultant, the District Environmental Officer and the Project Community and Welfare Officer.

The management structure proposed for the implementation of the ESMP is provided in the following flow chart in Fig (3):
4.2 Specific roles and responsibilities

The roles and responsibilities of the Developer and the Civil Contractor/s have been explained in detail in the subsequent sections.

4.2.1 The Developer

Eco Power Holdings Ltd., (EPHL) is the developer. EPHL has the overall responsibility to comply with the environmental and social standards and to mitigate and compensate the negative social
and environmental risks and impacts. However during the construction period the civil contractors will have the equal responsibility to address construction related social and environmental impacts. Nevertheless the responsibility of the developer will extend throughout the entire life cycle of the project. (Planning, Construction, de-commissioning and Operational & Maintenance).

During the construction phase the Developer has the following responsibilities:

1. Overall implementation of the ESMP and to establish a functional environmental/social unit within the site to carry out the functions stipulated in the ESMP;
2. Obtain / renew on-time, necessary statutory permits and approvals and to comply with the same during the subsequent phases. Display them as per the disclose procedure;
3. Engage required experts & site specific management and supervisory personnel including Social and Environmental Management Consultant to provide necessary guidelines for the contractors to comply with risk mitigation actions and reporting on the same (Mr LPD Dayananda, who had already served in Mpinga Small Hydro Power – Uganda project for over three years as E&S Consultant, has been identified to serve as the S&E Management Consultant who will provide overall E&S supervision and compliance reporting on the ESMP implementation. In addition, he will also provide initial orientation to the civil contractors and the site staff on the compliance requirements. )
4. Provide them with all the necessary resources, training and orientation to ensure proper implementation of the ESMP. (A budget has already been worked out which is in excess of US $ 460,000/=) for E&S Mitigation action. This is in addition to the compensation already paid to the PAPs.
5. Collect necessary baseline information (specially Water Quality reports) and regular conduct of audits and monitoring programmes;
6. Incorporate necessary contractual obligations into the contracts of the main Construction Contractor/s as well as the sub-contractors during the construction stage to comply with the implementation of the ESMP;
7. Ensure that the contracts that are entered into with civil contractors and sub-contractors to reflect environmental, health and social risks mitigation actions, the level of monitoring and reporting and any remedies in case of non-compliances;
8. Ensure incorporating the risk mitigation measures into project engineering design documents and construction contracts;
9. Ensure that the civil contractors through their construction schedules incorporate all required measure (both engineering and otherwise) to ensure that appropriate action is taken at the site to implement all the impact mitigation actions.
10. Ensure that training and resources is allocated to the contractors to carry out such actions as per the organization structure agreed for ESMP implementation;
11. Ensure that training and awareness on the environmental, health and social mitigation actions among the construction contractors is provided before the construction phase begins;
12. Attend to all the community grievances in regard to payment of compensation and proper implementation of the Recommendations of Resettlement Action Plan;
13. Work with the Contractors to implement the Community Action Plan (Key recommendations, are the supply of alternative water sources for the PAPs during construction stage and to provide adequate public safety)

14. Liaise with Uganda regulatory agencies and representatives of the financiers and effect all necessary compliance requirements including progress monitoring, quality checks and reporting;

15. Ensure that compliance is communicated to all key stakeholders on a regular basis;

16. Contribute to enhance the positive impacts of the project by encouraging the contractor to recruit local community members for the appropriate employment positions (Reference SEIA);

**4.2.2 Civil Contractor/s and Electro Mechanical Contractor**

It is expected that there could be two or more main contractors be engaged for different aspects of construction namely the construction of access roads and earth work, the construction of main structures and the installation of electrical and mechanical operations. E&S Risks are identified in all such work and the Contractors as well as sub-contractors should be made well aware of the compliance requirement with environmental and social management plan (ESMP).

The civil-contractor will be made liable to implement all the mitigation actions during the projects construction phase, (where necessary in consultation with the Developer and independent consultants engaged by the financier) as prescribed by the statutory permits and approvals as well as in conformity to the IFC performance standards, through proper compliance monitoring contract (in addition to the head contract). Construction contract forms a significant part of the E&S risk management.

**Roles and responsibilities of the main contractors and sub-contractors:**

1. Liaise with Project Manager and Social and Environmental Management Consultant to identify environmental and social issues prior to commencement of work in areas which can cause critical environmental impacts.

2. Abide by compliance requirements stipulated in all the permits/licenses and other project related planning documents including the ESMP and the supplement management plans such as erosion control and slope protection management plan, and ensures sufficient resources are allocated to effect mitigation actions through engineering and non-engineering techniques.

3. Ensure that technical designs in respect of the slope cuts, terracing and benching designs, toe reinforcements and retaining structures, the access road grading etc., are designed and incorporated into construction design well in advance.

4. Incorporate site specific environmental, health and safety management interventions into the project’s construction schedule, without them being left as standalone activities.

5. Engagement of necessary staff (in keeping with the human resources needs identified in the ESMP as per the organization structure) to oversee the implementation of the ESMP, providing them the necessary technical guidance, orientation and outsourcing any additional expertise to advise the contractors.
6. Ensure that the work zones are properly planned to minimise disruption to the public as per the Public Safety Guidelines.

7. Ensure that all the site specific staff including the supervisory staff of the contractors ‘should understand the content of the contract agreements where the impact mitigation action are emphasized,

8. Ensure that high quality machinery and equipment is deployed for day to day work to accomplish relevant environmental standards (noise/dust emission level)

9. Ensuring the provision of necessary &timely resources for the implementation of mitigation actions

10. Ensuring that employees engaged by the contractor and sub-contractors and suppliers adhere to the broader objective of accomplishing environmental, health and safety compliances during all stages of project implementation.

11. Ensure that all site specific rehabilitation and restoration work is completed after the construction stage is over, in accordance with the Site Restoration and Rehabilitation plan.

The scope of duties of the persons engaged for overseeing the implementation of ESAP is provided in the annexure (3-5).

4.3 Institutional and capacity development requirements

Institutional capacity development will be necessary in order to efficiently implement the ESMP. The Site Project Manager, Civil Contractor/s as well as the sub-contractors should have a fair amount of knowledge of the ESMP, its compliance requirement and the reporting needs. Main civil contractors and sub-contractors should be provided with necessary induction, resources and guidelines.

Orientation and re-orientations will be necessary for the main civil contractor, the sub-contractor and their workers to appreciate the critical environmental and social issues and their compliances. These orientation programmes should be conducted before the commencement of the construction activities and need to be repeated on a regular basis in order to target the newly recruited employees and sub-contractors.

The induction can be undertaken by the Site Project Manager or the ESMC through simple power point presentations or/and class room discussions.

Exposure to following aspects will be essential:

1. Principles and procedures for regulatory environment pertaining to Impact assessment and compliances;

2. Methods of compliance assessment, monitoring and reporting requirements;

3. Exposure to ESMP and the supplemental management plans (listed in this document). This will include waste and hazardous waste management, erosion control and public safety;

4. The capacity of the sub-contractors and the main contractor to integrate technical interventions into the construction schedules to ensure that they reflect all the EHS interventions planned during the time
5. Strengthen the capacity of the community officers engaged by the Civil Contractor to deal with conflict resolution, institutionalizing a grievance redress mechanism etc... (These will be explained in detail in the respective supplemental plans.)

4.4 Worker awareness

Worker awareness aspects such as on environmental conservation, social safeguard policies and occupational health and safety are important. The contractors should provide conducive and safe working environment to their employees by providing constant awareness and knowledge on such aspects in order to implement better the ESMP.

Sanitation facilities need to be provided to all workers during their stay in temporary camps and while they are engaged in site specific activities. Temporary camps should be provided with adequate facilities for bed and linen. Drinking water, space and ventilation provided in the temporary camps should be in accordance with labor laws of Uganda.

In case of emergency, the contractors should ensure providing instant health care to the workers. If there is a hospital or a health center in the close proximity to the project area which has basic health care facilities to attend to any emergencies, it is feasible to establish formal relationship with such health care center through a memorandum of understanding (MOU). Alternatively the site can have its own better equipped medical center run by a qualified clinical officer or medical assistant.

Health staff to be engaged by the contractor to undertake periodical health awareness and awareness on HIV/AIDS among the workers as well as the community members will be a necessity. Providing community awareness on HIV/AIDs will need to be introduced hand in hand with the worker awareness. Different social groups should be targeted in such training and awareness programmes and need to be conducted under specialized trainers. Scope of work of the respective technical supervisors should be amended accordingly. Specific responsibilities are provided below:

- Civil Contractors are responsible for providing knowledge and awareness among the workers on the use of personnel protective equipment (PPE);
- Adequate resources should be made available by the contractors to provide for Personal Protective Equipment (PPE);
- Minimum PPE such as safety boots/shoes, hand gloves and helmets should be provided to all the workers and staff irrespective of the category of employment.
- Enforcement of their proper use needs to be closely monitored through the respective technical supervisors;
- Encourage the supervisory staff to conduct weekly meetings, lunch time (tool box) discussions targeting drivers, machine operators, equipment operators and the unskilled workers. During such meetings the issues arising out of occupational hazards from noise, dust, speed drivers, misconduct, traffic rules and regulations, driving ethics to be addressed.

Drivers and equipment operators are to be made aware of traffic regulation, traffic signs and road speed blocks. (Any newly recruited drivers be provided training before they be engaged in
actual work. The training will cover aspects such as the basic traffic laws, compliance to road traffic signs, causes for road accidents, their effects, how to avoid road accidents and the best practices in transportation of construction materials etc.)

4.5 Public Disclosure

In terms of IFC PS (1) disclosure of relevant project information helps Affected Communities and other stakeholders understand the risks, impacts and opportunities of the project. The developer will provide all project Affected Persons (PAPs) with access to relevant information on:

(i) the purpose, nature, and scale of the project;
(ii) the schedule and duration of proposed project activities;
(iii) any risks to and potential impacts on such communities and relevant mitigation measures;
(iv) the envisaged stakeholder engagement process; and
(v) The grievance mechanism.

Public disclosure will be important especially during construction stage, when there can be issues such as pollution of water sources. Prior communication of construction scheduling will be essential for the community members to be prepared for water storage if the construction activities can lead to possible river contamination on particular days depending on the type of operations. Such communication will enable the water users to collect water ahead of construction work, if they are notified beforehand.

Public disclosure of project related information constitutes a major responsibility on the part of the Developer as well as the Civil Contractors. Necessary guidelines with regard to public disclosure have been provided in the Public Disclosure and Community Engagement Plan which is appended to the ESMP as a supplemental plan. It is also essential that as per the provisions stipulated, that the developer exhibit all permits / Certificate the project site, and other selected/ appropriate location(s) for public to fulfill the above objectives.

The table below (Table 2) provides a summary of the responsibility of each of the project’s key stakeholder as against the main of the project, especially during the planning & construction phases.

Table (2) Matrix on responsibility of the Site Project Management

<table>
<thead>
<tr>
<th>Activity</th>
<th>Primary Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obtain Permits/Renewal/Approvals&amp; Public Disclosure</td>
<td>Yes</td>
</tr>
<tr>
<td>Institutionalize ESMP Management Structure</td>
<td>Yes</td>
</tr>
<tr>
<td>Overall implementation of ESMP</td>
<td>Yes</td>
</tr>
</tbody>
</table>
5. Environmental & Social Impact Mitigation Action Plan

The site specific E&S impact mitigation action plan (matrix below) will help fully to minimize and manage environmental and social impacts arising mainly from the project’s construction activities. It defines the specific issues and area of occurrence, overall strategies and specific actions required to mitigate the site specific impacts during the construction phase, roles and responsibilities of the concerned parties giving references to required guidelines and procedure.

In preparing the E&S Impact Mitigation Action Plan consideration was made to the SEIA and the Resettlement Action Plan which identified site specific environmental and social risks and impacts. The Action Plan is a reflection of all such strategies and specific actions recommendations to mitigate E&S risks and impacts in all such documentation. The IFC Performance Standards provides an appropriate environmental and social safeguard policy framework and extensive guidelines and procedure in adopting necessary mitigation actions.

| Provide Resources (Funds/expertise) | Yes |
| Baseline data collection | Yes |
| Monitoring and Reporting (Quarterly Reports & Audits) | Yes | Yes |
| Induction /Orientation to workers/employees | Yes | Yes | Yes |
| Design and Implement all environmental and social Impact Mitigation Actions | Yes | Yes | Yes |
| Incorporate method statements into construction Schedules | Yes | Yes |
| Implement OH&SMP | Yes | Yes |
| Implement Erosion Control , Soil Conservation &Slope Protection Management Plan | Yes | Yes |
| Implement Waste & Hazardous waste Management Plan | Yes | Yes |
| Training to Contract / Sub Contract Staff (tool Box) | Yes | Yes |
| Implement Grievance Procedure (Workers/Community) | Yes | Yes |
| Implement Traffic Management Plan | Yes |
| Implement Community Action Plan | Yes | Yes |
| Implement Rehabilitation and Restoration Plan | Yes |
| Implement RAP | Yes |
Application of the IFC PS standards and guidelines will enable the developer as well as the contractor to see that mitigating actions are compliant using more stringent standards (if the host country standards do not fulfill adequately the social and environmental safeguards as required by the international lending institutions) Therefore an attempt was made to structure the Impact Mitigation Action Plan to reflect IFC Performance Standards.

During construction work the project will have site-specific E&S Impacts and therefore the proper identification of the area of occurrence of such impacts will be very important. Most of the impacts can be minimized, if the area of occurrence can be identified well in advance and that method statements can incorporate measures (technical and non-technical) can be incorporated into the construction work envisaged. Therefore the action plan will also focus on mitigating environmental and social issues arising from the project’s areas of occurrence such as:

- **Project general construction areas including**
  - Dam, intake and impounding area,
  - Low Pressure Pipes, Surge Tank and Fore-bay,
  - Penstock, Power house and Tailrace area,
- **Access Roads (temporary and permanent) and bridges**,
- **Stores, project office and area for staff quarters**
- **Spoil dumping and waste disposal sites and finally;**
- **The stretch of the river between the dam and the tailrace**

There could be changes in the project locations and the methodologies which may have a bearing on the action plan, this will be revisited and risks and safety issues will be reassessed for purpose of updating same. The civil contractors are expected to prepare detailed method statements in respect of the mitigation actions as stated in the action plan and incorporate them into the project’s construction schedule in order to ensure their full compliance. The Developer is expected to provide all the necessary resources, planning support and additional human resources and training in order to implement the respective action plans during the construction phase.

5.1 Environmental and Social Impact Mitigation Action Plan
## 5.1 Environmental and Social Impact Mitigation Action Plan (Construction Phase)

### 5.1.1 Assessment and Management of Environmental and Social Risks and Impacts

<table>
<thead>
<tr>
<th>#</th>
<th>Issue / Area of occurrence</th>
<th>Recommended Mitigation measures/strategies</th>
<th>Specific Action</th>
<th>Lead Responsibility</th>
<th>Timeframe</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Category B project requiring SEIA to be carried out and ESMP be prepared. (As per IFC PS)</td>
<td>An environmental and social management program (ESMP) needs to be developed that contains all the procedures, sub-plans and recommendations from both the SEA and RAP, which assigns responsibility &amp; resources, deliverables.</td>
<td>Finalize ESMP and supplemental management plans based on the SEA and all other relevant standards.</td>
<td>The Developer (through an independent Consultant)</td>
<td>Before signing the contract agreements with Financier</td>
<td>Refer to SEIA, NEMA Conditions of approval</td>
</tr>
<tr>
<td></td>
<td>Ensure that separate environmental impact assessment (EIA) is carried out for any other component of this plant that is not a subject of the(S) Environmental Impact Assessment.</td>
<td>DEO to be consulted when the need arises.</td>
<td>EPHL (through an independent Consultant)</td>
<td>As the need arises</td>
<td>The SEIA Recommends that there is no necessity to operate a quarry.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Undertake a water audit and further studies on the status of aquatic species, incorporate the recommendations into the ESMP</td>
<td>Water Audit to be carried out. Study on aquatic species to be carried out to supplement the SEIA.</td>
<td>EPHL (Through an independent Consultant)</td>
<td>As the need arises</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Obtain all the necessary Permits from the Electricity Regulatory Authority, prior to the construction and operational phases of the Hydropower Plant;</td>
<td>Obtain: Water Abstraction Permit, Construction Permit; Permit to carry out activities under Wetland Regulations NEMA Certificate of approval for SEIA and RAP</td>
<td>EPHL</td>
<td>Before construction and renewal as per the regulations, during O&amp;M Phase.</td>
<td>(already obtained) Refer to the annexures:</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Implementation arrangements of the ESMP</td>
<td>Establish environmental unit in the project site under overall responsibility of the Site Project Manager</td>
<td>Engage environmental and social specialists to advise senior management on implementing ESMP</td>
<td>EPHL /Civil Contractor</td>
<td>Before the commencement of construction work</td>
<td>As per organization Chart;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recruit Community &amp; Welfare officer (Ugandan), Site Health Officer and Environmental Officer</td>
<td>EPHL /Civil Contractor</td>
<td>Before the commencement of construction work</td>
<td>As per organization Chart;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EPHL /Civil Contractor</td>
<td>Before the commencement of construction work</td>
<td>As per organization Chart;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Training &amp; Capacity Development</td>
<td>Capacity development of the Site Staff engaged by the Developer, contractors and sub-contractors by way of training and awareness on the ESMP and its implementation mechanisms.</td>
<td>Prepare and implement training and orientation schedules targeting different worker/staff groups and when appointing sub-contractors and Contractors</td>
<td>ESMS Consultant/ Developer/Contractors</td>
<td>Before and during construction</td>
<td>Stick to a training Plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inclusion of E&amp;S risk /impact management into construction contract management</td>
<td>Contracts with civil contractors to have clauses that bind implementing E&amp;S impact mitigation actions as per the ESMP.</td>
<td>Civil Contractor</td>
<td>Before the commencement of construction work</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Arrangement to review method statements/impact mitigation procedure prior to excavation and construction work for areas causing critical impacts, by environmental consultant.</td>
<td>Civil Contractor /Environmental Consultant (Site Manager)</td>
<td>Before the commencement of construction work</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Eco Power Holdings  Page 37
<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Provide all staff orientation to ESMP and the guidelines of the supplemental plans</th>
<th>Civil Contractor/s</th>
<th>Before the commencement of construction work</th>
<th>Stick to a training Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td><strong>Public Consultation and Disclosure</strong></td>
<td>Implement necessary provision of the Public consultation and Disclosure Strategy</td>
<td>Civil Contractor</td>
<td>During the construction phase</td>
<td>Refer to Public consultation and Disclosure strategy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Arrive to have a functional grievance management procedure at the site in keeping with the SEIA Recommendations</td>
<td>Civil Contractor</td>
<td>During the construction phase</td>
<td>Refer to Public consultation and Disclosure strategy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ensure that all permits / Certificate are displayed at the project site, and other selected/ appropriate location(s)</td>
<td>Civil Contractor</td>
<td>During the construction phase</td>
<td>Refer to the grievance procedure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Appoint liaison officer to interact with the project affected persons and to provide information to the community.</td>
<td>Civil Contractor</td>
<td>During the construction phase</td>
<td>Refer to the grievance procedure</td>
</tr>
<tr>
<td>5</td>
<td><strong>Monitoring and Reporting</strong></td>
<td>Implement a progress reporting system to enable all the stakeholders to be aware of the status of the E&amp;S mitigation based on the Project Monitoring Framework.</td>
<td>Civil Contractors / Environmental Consultant</td>
<td>During the construction phase</td>
<td>Refer to the Project ESMS Monitoring Plan.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conduct periodical site visits to assess the work in progress and to prepare reports and submit progress reports to the stakeholders;</td>
<td>Civil Contractors / Environmental Consultant</td>
<td>During the construction phase</td>
<td>Refer to the Project ESMS Monitoring Plan.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Communicate regularly with stakeholders progress on environmental and social mitigation actions taken</td>
<td>EPHL / Env. Consultant in consultation with Contractors</td>
<td>During the construction phase</td>
<td>AS per requirements stipulated by DEO, NEMA, ERA and Financiers.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conduct periodical water quality tests and conduct any other tests for Noise and Dust (pollution related)</td>
<td>Civil Contractor</td>
<td>During the construction phase</td>
<td>AS per requirements stipulated by DEO, NEMA, ERA and Financiers.</td>
</tr>
</tbody>
</table>
Prepare an Audit Plan in consultation with NEMA
Circulate progress reports to all concerned parties

<table>
<thead>
<tr>
<th>#2</th>
<th>Issue/Area of occurrence</th>
<th>Recommended Mitigation measures/strategies</th>
<th>Specific Action</th>
<th>Lead Responsibility</th>
<th>Timeframe</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Engagement of construction employees</td>
<td>Adopt human resources policy which underlines fair and reasonable work environment for national and other worker categories</td>
<td>All labor requirements should be met through registered labor suppliers. Necessary letters of contract of employment should be given. Adhere to regulations pertaining to child labor and other provisions.</td>
<td>Contractor/Sub Contractor</td>
<td>During the construction phase</td>
<td>Refer to the Administration and Employment policy IFC PS (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Minimum wages, Hours of work, Overtime payments, Statutory Leave, contributions to the National Social Security Fund (NSSF) other legally mandated employment terms should be ensured through worker engagement agreements.</td>
<td>Administration and Employment Policy to be adopted by the contractors/sub contractors</td>
<td>During the construction phase</td>
<td>Refer to country regulations pertaining to labor engagement and engagement of minors.</td>
</tr>
<tr>
<td>Occupational Health and Safety</td>
<td>Implement recommendation in the RAP which stipulates fair opportunities to be provided to the Project Affected Persons/families (PAPs)</td>
<td>Administration and Employment Policy to be adopted by the contractors/sub contractors</td>
<td>During the construction phase</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Works will be at risk when they will be exposed to excessive noise, dust, work related injuries, during excavation work, blasting work and other construction work.</td>
<td>Prepare and implement grievance redress mechanism for workers.</td>
<td>Civil contractor</td>
<td>During the construction phase</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civil Contractors to comply with Occupational Health and Safety Guidelines as per Uganda regulations and IFC Guidelines</td>
<td>EPUL/Through the independent Consultant</td>
<td>During the construction phase</td>
<td>Refer to the Section on Grievance Management Plan.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure compliance with the requirement to adopt Occupational Safety and Health procedures and guidelines, country specific regulations.</td>
<td></td>
<td>Contractor/Sub Contractors</td>
<td>Refer to Occupational Health and Safety Guidelines. For additional references, prefer H&amp;S guidelines of WHO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enforce requirements in the Health and Safety Guidelines which underlines the need to provide OHS orientation to the contractor and sub-contractors on regular basis as part of the site construction work.</td>
<td>carry out induction training and sensitization of the workforce, on the importance of adhering to site safety guidelines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide personal safety equipment such as safety helmets, heavy duty hand gloves, overalls, gumboots, dust masks, ear muffs, eye goggles, etc.; to all workers depending on the nature of work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contractor/Sub Contractors</td>
<td>Before the commencement of the construction work</td>
<td></td>
<td>Refer to Occupational Health and Safety Guidelines.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 3 Occupational hazards due to dust, noise and use of explosives

<table>
<thead>
<tr>
<th>Adequate first aid facilities should be made available at the plant site and construction sites for emergency treatment</th>
<th>Contractor</th>
<th>During the construction phase</th>
<th>Refer to Occupational Health and Safety Guidelines.</th>
</tr>
</thead>
<tbody>
<tr>
<td>All exposed work areas including access roads that can generate excessive dust to be watered down regularly by water sprinkler or other means.</td>
<td>Contractor</td>
<td>During the construction phase</td>
<td>Refer to Occupational Health and Safety Guidelines.</td>
</tr>
<tr>
<td>Adhering to the National Environment (Noise Standards and control) Regulations, 2003; Provide workers muffle gear against exposure to excessive noise in areas where excess noise pollution is inevitable,</td>
<td>Contractor</td>
<td>During the construction phase</td>
<td>Refer to the Administration and Employment policy</td>
</tr>
<tr>
<td>Follow procedure laid down by the GOU in storage of explosive materials (Use the police to store any explosives).</td>
<td>EPUL (through Independent Consultant)</td>
<td>during the construction phase</td>
<td>Refer to the Guidelines on Storage, Transport and Use of Explosives.</td>
</tr>
<tr>
<td>Awareness programs should be held. They should cover subjects such as Storage, Transport and Use of Explosives, and Blasting Procedures and Guidelines; hazardous Waste Management</td>
<td>All Contractors &amp; sub-contractors</td>
<td>during the construction phase</td>
<td>Refer to the guidelines for the Storage and Transport of Explosive Materials IFC PS (2)</td>
</tr>
<tr>
<td>Follow procedures to be adopted during blasting of rocks.</td>
<td>All Contractors &amp; sub-contractors</td>
<td>during the construction phase</td>
<td>Same as above</td>
</tr>
<tr>
<td></td>
<td><strong>Construction Camp General Safety</strong></td>
<td><strong>Comply with the requirements regarding construction site general safety as required in the Occupational, Health and Safety Guidelines and Employment Policy.</strong></td>
<td><strong>Make available fire extinguishing system, medical treatment facility and ambulance and adequate safety covers against injury or damage to the employees.</strong></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>4</td>
<td><strong>Labor camp sanitation facilities, worker transport and on site medical facilities</strong></td>
<td><strong>Temporary labour camps should be constructed using the guidelines available for similar work (proper illumination, adequate ventilation etc. and space for individual requirements)</strong>.</td>
<td><strong>Contractor/Sub Contractors</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Provide on-site medical care to the workers through appropriate engagement of clinical officer/referring to a nearby medical center/hospital</strong></td>
<td><strong>Control spread of HIV/AIDS by creating more Awareness on HIV/AIDS and public awareness measures</strong></td>
<td><strong>Conduct HIV/AIDS awareness programs regularly for the employees and for the general public.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Implement Security arrangements in consultation with Policeto ensure safety of the site/workers from theft from local areas</strong></td>
<td><strong>Security personnel should be provided with training and orientation of the company policies with regard to use of arms, apprehension of any wrong doers.</strong></td>
<td><strong>Contractor should arrange security for the sites with either through the local police or a private security firm.</strong></td>
</tr>
</tbody>
</table>
# 3 | Issue /Area of occurrence | Recommended Conditions Mitigation Measure/Strategies | Specific Action | Lead Responsibility | Timeframe | Comments |
--- | --- | --- | --- | --- | --- |
1 | Dam, Intake and Impounding Area<br>The area to be cleared for the Dam construction is very deep and there is thick vegetation. Dust can generate from vegetation clearance and excavation especially during windy seasons. | Comply with NEMA Conditions which stipulate that ‘Minimize fugitive dust within the construction sites as well as along access roads where the heavy-duty construction equipment will be used, through sprinkling of water on various dust source points’<br>Prevent dust emissions from spoils stockpiles | During the dry /windy periods wetting of the excavated areas through the use of water bowser to prevent dust emissions should be carried out.<br>All excavated spoils should be removed and stockpiled on the land areas above the slopes and covered until they are transported to spoil dump areas | Contractor | During the excavation work at the Dam | Refer NEMA Conditions of Approval |
<p>| Dust can be generated during rock blasting when excavating the ground to obtain the required depth of the Dam. | Prepare a method statement which will stipulate the methods for safe excavation methods to include pollution prevention methods. | Use blasting techniques/methods that will not cause excessive dust emission and contamination of water with explosive materials. | Civil Contractor | During the excavation work at the Dam | |
| River water quality can be affected due to deposit of dust, spoils use of explosives to blast rocks during excavation and construction work at the Dam Site. | Check water quality periodically to comply with water quality standards. | Conduct periodical water quality monitoring tests before and after the excavation work and compare with baseline standards. | Civil Contractor | During the excavation work at the Dam | Baseline standards are provided in the SEIA Report. |
| Noise resulting from blasting work at the Dam Site | Meet noise levels as prescribed in the NEMA Noise Standards | Use appropriate blasting technique to prevent excessive noise | Civil Contractor | During | Comply with NEMA Conditions of approval |</p>
<table>
<thead>
<tr>
<th>Environmental, Social Management &amp; Monitoring Plan RSHHP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>River water pollution risk could arise from sources such as cofferdam materials when the Dam construction is on going</strong></td>
</tr>
<tr>
<td>Methods statements should be prepared to explain how water diversion and construction will take place in the Dam</td>
</tr>
<tr>
<td>Civil Contractor</td>
</tr>
<tr>
<td><strong>Cofferdam materials should be free from any toxic materials and the debris should be salvaged and disposed at the appropriate places</strong></td>
</tr>
<tr>
<td>Civil Contractor</td>
</tr>
<tr>
<td><strong>Minimise tree debris and spoils falling in to the river while carrying out excavation and clearing of vegetation.</strong></td>
</tr>
<tr>
<td>Civil Contractor</td>
</tr>
<tr>
<td><strong>Identify areas for ponding for settlement of sediments and construct same</strong></td>
</tr>
<tr>
<td>Civil Contractor</td>
</tr>
<tr>
<td><strong>Facilitating a ponding area downstream to allow settling most part of sediments during the construction period.</strong></td>
</tr>
<tr>
<td>Civil Contractor</td>
</tr>
<tr>
<td><strong>Identify areas for ponding for settlement of sediments and construct same</strong></td>
</tr>
<tr>
<td>Civil Contractor</td>
</tr>
<tr>
<td><strong>Civil Contractor</strong></td>
</tr>
<tr>
<td><strong>During construction</strong></td>
</tr>
<tr>
<td><strong>SEIA has already identified at least 08 such points.</strong></td>
</tr>
<tr>
<td><strong>During dewatering and diversion of water for the construction of the Dam, there can be possibility that oil (from the compressors) and lubricants as well as dewatered muddy water may be drained back into the river causing pollution</strong></td>
</tr>
<tr>
<td>Method statement should explain how dewatering will be managed without causing environmental pollution.</td>
</tr>
<tr>
<td>Civil contractor</td>
</tr>
<tr>
<td><strong>In case of sudden spillage of oil or any contaminants, the contractor should stop construction activities and recover the pollutant before it reaches the water sources.</strong></td>
</tr>
<tr>
<td>Contractor</td>
</tr>
<tr>
<td><strong>Contractor should avoid washing construction equipment at the water pump or transfer station.</strong></td>
</tr>
<tr>
<td>Contractor</td>
</tr>
<tr>
<td><strong>No contaminated water to be drained back to the river without allowing same to filter through natural process or through a filtering process</strong></td>
</tr>
<tr>
<td>Contractor</td>
</tr>
<tr>
<td><strong>Contractor</strong></td>
</tr>
<tr>
<td><strong>During the excavation work at the Dam</strong></td>
</tr>
<tr>
<td><strong>During the dry periods wetting of Low Pressure Pipes, Surge Tank and Spillway</strong></td>
</tr>
<tr>
<td>Dispose of all excavated material in</td>
</tr>
<tr>
<td>Civil Contractor</td>
</tr>
<tr>
<td><strong>During the dry periods wetting of Low Pressure Pipes, Surge Tank and Spillway</strong></td>
</tr>
<tr>
<td>Civil Contractor</td>
</tr>
<tr>
<td><strong>During</strong></td>
</tr>
<tr>
<td>Dust due to excavation for burying low pressure pipe along the right bank up to the surge tank area affects the community and the pollution of river water, especially during windy conditions</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Dust can be generated during rock blasting along the areas to bury low pressure pipes between the Dam to the Fore bay area.</td>
</tr>
<tr>
<td>Siltation and/or deposition of sediments into the River due to excavation and clearing and any streams draining the project area, which may potentially carry construction spoils affect the water quality of River Rwimi</td>
</tr>
<tr>
<td>Penstock, Power house and Tailrace Considerable amount of rock blasting and excavation to undertake for penstock laying and power house construction and will cause dust and noise pollution</td>
</tr>
<tr>
<td>Controlled blasting can minimize the adverse impacts of falling rock in to the river channel</td>
</tr>
<tr>
<td>Wastes (solid, hazardous) generated such as concrete, metals, plastic bottles, cement bags, bio-degradable wastes</td>
</tr>
<tr>
<td>Waste which will include human waste, domestic waste like polythene papers, plastic bottles, torch batteries, industrial waste may be generated from the construction period, some of which will be hazardous</td>
</tr>
<tr>
<td>Waste Disposal</td>
</tr>
<tr>
<td>Proper sanitation facilities should be put in place at the all the work sites and appropriate septic and sewerage systems should designed and established onsite and its usage is strictly</td>
</tr>
<tr>
<td>Worker awareness on the use of the toilets should be enhanced and monitored</td>
</tr>
<tr>
<td>Vehicle emissions should be prevented by engaging new and well maintained vehicles/construction equipment and machinery</td>
</tr>
<tr>
<td>4 Stores, Project Office and Area for staff quarters Each of the construction sites will have materials stored on temporary basis. Spillage of fuels, lubricants and other toxic materials oil, diesel fuel, concrete additives, and solvent. Any spillage can lead to sudden fire, bursts and contamination of water sources and lead to workers health problems.</td>
</tr>
</tbody>
</table>
| Hazardous materials chemicals, gases etc. should be stored as per | Hazardous materials chemicals, gases etc. should be stored as per | Hazardous materials chemicals, gases etc. should be stored as per | Civil Contractor | During | Refer to the Waste,
| 5 | **Spoil dumping and Waste Disposal Sites**  
There will be a large amount of general wastes and spoils generated from the | Demarcate waste (spoil disposal sites) and where necessary approval should be sought from the Local Council or the District Environmental Officer and all | Ensure that all solid waste generated during the construction and operational phases of the plant, is disposed of in an environmentally sound manner | Civil Contractor | During construction phase | Refer NEMA Conditions of Approval. |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>the instructions provided by the manufacturers. Do not store compressed gases beside flammable material containers.</td>
<td></td>
<td>construction</td>
<td>Hazardous waste Management Plan</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oils and other petroleum product will be containerized so that they are not allowed to seep into the ground and into the water bodies</td>
<td>Civil Contractor</td>
<td>During construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff quarters, the wash bay, the main stores, plant yard, site offices and the parking area have been demarcated very close to the power house. There is the possibility that river water can be contaminated due to effluents from these sites.</td>
<td>The location/ siting and the layout for the staff quarters site and the wash bay should be approved by the Site Project Manager / Resident Engineer and should meet all effluent management requirements.</td>
<td>There should be adequate provisions for waste disposal and temporary storage facilities in the staff quarter’s site.</td>
<td>Civil Contractor</td>
<td>During construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Permanent toilets should be constructed away from the water course and should be equipped with soakage pit and septic tanks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Effluent will pass through treatment facilities such as sediment traps and/or settlement lagoons, as appropriate, before being discharged to water course</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>All project vehicles and plants should be serviced only at the wash bay equipped with proper drains, settlement tank and filters. No water should be allowed to be drained into the river.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access Roads (temporary and permanent) and bridges</td>
<td>Construction of the section of the access road close to the power house along the river bank require large scale filling which in the process can pollute river water. Section of this road is used for sand collection.</td>
<td>Significant amounts of dust may be produced as a result of construction machinery, rock blasting, foundation excavation, cement mixing, and road construction.</td>
<td>The steep slopes of the access road close to the Dam should be concreted and should be improved according to accepted grades to prevent bank and gully erosion</td>
<td>A method statement to explain excavation method of the section of the Access Road from the Vehicle parking area to the Dam site should be prepared for review.</td>
<td>A method statement to explain filling method of the section of the road from the power house along the river bank should be prepared for review</td>
<td>During the dry periods wetting of the excavated areas through the use of water bowser to prevent dust emissions should be carried out</td>
</tr>
</tbody>
</table>
7. **The stretch of the river between the dam and the tailrace**  
Impact of contaminants causing deterioration of the water quality of the River.

<table>
<thead>
<tr>
<th>Impact</th>
<th>Action</th>
<th>Responsible Party</th>
<th>Before/After Construction</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water quality monitoring at regular intervals at the Dam, and other points which can be contaminated due to construction activities</td>
<td>Undertake to conduct routine water quality monitoring at selected points along River</td>
<td>Contractor</td>
<td>Before Construction</td>
<td>Water quality should comply with national water quality standards. **</td>
</tr>
<tr>
<td>Depletion of water level constraining the traditional use of water by the consumers</td>
<td>Support the community members to initiate optional avenues to collect and store water</td>
<td>Developer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Maximum permissible noise levels applicable according to Uganda National Environment (Noise Standards and Control) Regulations, 2003 as follows;*

For general environment (environmental sites); Day: 45dB, Night: 35 dB For a Factory / workshop; 85dB; for a construction site; Day: 60dB, Night: 50dB; Time frame: Day: 6am – 10pm, Night: 10pm – 6 am**Comply with NEMA Conditions of approval

**The six GHGs of most concern to the United Nations Framework Convention on Climate Change are:

(i) Carbon dioxide (CO2); (ii) Methane (CH4); (iii) Nitrous oxide (N2O); (iv) Hydro fluorocarbons (HFCs); (v) Per fluorocarbons (PFCs) (vi) Sulphur hexafluoride (SF6)
### 5.4 Community Health, Safety and Security

<table>
<thead>
<tr>
<th>#4</th>
<th>Issue /Area of occurrence</th>
<th>Recommended Mitigation measure/strategies</th>
<th>Specific Action</th>
<th>Lead Responsibility</th>
<th>Timeframe</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dam, Intake and Impounding Area: Inundated area will pose a safety threat to the people engaged in agricultural activities in the area upstream on either side of the river</td>
<td>Comply with Public Safety Guidelines</td>
<td>Warning signs for the public should be installed at points along the inundated area.</td>
<td>Civil contractors &amp; sub-contractors</td>
<td>During Construction Phase</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The access paths (just above the proposed Dam Site) connecting people from either side of the river bank lying upstream of the Dam will be affected during construction.</td>
<td>Comply with Public safety Guidelines</td>
<td>Optional access should be provided enabling the community to cross from either side of the river between the villages during construction.</td>
<td>Civil contractors &amp; sub-contractors</td>
<td>During Construction Phase</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Separate access road has to be provided enabling the community since the present access road will be affected by the excavation work at the Dam.</td>
</tr>
<tr>
<td></td>
<td>Community bathing and water collecting points close to the Dam site (cha 0+039to 0+064) will be affected during construction of the Dam area</td>
<td>Undertake a water audit and ensure that sufficient water is released downstream during construction and commissioning</td>
<td>Community awareness should be increased on the type of construction and where possible community should be provide with alternative bating areas on temporary basis.</td>
<td>Civil contractors &amp; sub-contractors</td>
<td>During Construction Phase /</td>
<td>SEIA identified 06 bathing points along the affected stretch of the river</td>
</tr>
<tr>
<td>Water audit reveals that on average daily water use is in the range of 14 cubic meters</td>
<td>Environmental flow should exceed the minimum water required to the community needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construct water pools in areas below where the river flow is slow moving for the community to have adequate water during dry season.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implement all measures recommended in the water audit report.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Community health can be affected if river water sources could be polluted during construction through spillage of fuels, lubricants and other toxic materials.

| Comply with Waste and Hazardous Waste Management Plan | Use wash bay for washing of Equipment. Not to drain effluents to the river. Wash bay should have settlement tank. | Civil contractors & sub-contractors | During Construction Phase |
| Disclose river water quality to the general public on regular intervals | Increase community awareness of the construction activities to avoid their water use during times of possible water contamination. | Civil contractors & sub-contractors | During Construction Phase |
| Implement a good information dissemination scheme enabling the community to know well in advance the days that the water might get dirty/polluted. | | Civil contractors & sub-contractors | During Construction Phase |

2. **Low Pressure Pipes, Surge Tank and Fore-bay**

   Excavation for burying low pressure pipe along the right bank up to the surge tank area, involves significant volume of soil and rock excavation (up to Cha 1+747)

   Community mobility in this area is high since the area is full of agricultural lands. Safety methods should be adopted to inform the community mobility of the planned construction work.

   Community awareness of the planned construction work should be provided on a regular basis. Special attention has to be paid to the areas with houses and areas where mothers take their children.

<p>| Civil contractors &amp; sub-contractors | During Construction Phase |</p>
<table>
<thead>
<tr>
<th>Community</th>
<th>Awareness of the equipment operators should be increased on the importance of safe working environment.</th>
<th>Civil contractors &amp; sub-contractors</th>
<th>During Construction Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spill way will be constructed adjacent to the agricultural lands where the community members / children move about for various purposes</td>
<td>The section of the spill way before it enters the natural ridge should be protected (Cha 1+772)</td>
<td>Design suitable safety mechanism for the section of the man-made spill way. Preferably to enclosure the open area through fence or a wire mesh/ any opening should be covered with concretes slabs</td>
<td>Civil contractors &amp; sub-contractors</td>
</tr>
<tr>
<td>3 Penstock, Power house and Tailrace</td>
<td>Comply with Public Safety Guidelines when rock blasting takes place.</td>
<td>Implement a good information dissemination scheme enabling the community to know well in advance the schedule of rock blasting</td>
<td>Civil contractors &amp; sub-contractors</td>
</tr>
<tr>
<td>Improper disposal of rock debris and spoils can impact on the public safety, health of the community members</td>
<td>Safe disposal practices of spoils and rock debris to be adopted</td>
<td>Provide designated spoil dumping yards to stockpile all the excess spoil and rock debris. Use spoils and rock debris to fill areas along the power house access road.</td>
<td>Civil contractors &amp; sub-contractors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All disposal areas of spoil material should be compacted and graded after the operations</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spoils should be compacted as soon as they are disposed at the disposal sites to avoid any possibility of spreading vector diseases.</td>
<td></td>
</tr>
</tbody>
</table>

Total quantities of spoils to be generated is estimated to be around 37,000 m³
| 4 | **Stores, project office and area for staff quarters**  
Waste will be generated during the construction activities from the construction camps, stores, and other temporary structures where the people will be engaged for different construction related activities | Adopt accepted storage guidelines for storage of lubricants, oils and other materials such as paint, thinner. | Oils and other petroleum product to be containerized preventing possible seepage due to spills. | Civil contractors & sub-contractors | During Construction Phase |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Install wastewater treatment facilities to treat wastewater from construction facilities where applicable</td>
<td>Civil contractors &amp; sub-contractors</td>
<td>Civil contractors &amp; sub-contractors</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Implement a proper solid waste collection and disposal programme ensuring regular emptying of waste bins.</td>
<td>Civil contractors &amp; sub-contractors</td>
<td>Civil contractors &amp; sub-contractors</td>
<td></td>
</tr>
</tbody>
</table>
| 5 | **Access Roads (temporary and permanent) and bridges**  
Dust and vehicular fumes emitting from the vehicles transporting of soil and other supplies | Implement provisions in the Traffic Management Plan and relevant NEMA conditions | Maintain all construction machinery and vehicles to reduce vehicular fumes. | Civil contractors & sub-contractors | During Construction Phase |
<p>|  |  | Provide special safety programs targeting the school children | Create of humps along the access roads and enforcing speed limits (30km or less) among truck drivers. | Civil contractors &amp; sub-contractors | During Construction Phase |
|  |  | Restricting vehicle speed on loose surface roads, to 20 km/h during dry or dusty conditions | Civil contractors &amp; sub-contractors | During Construction Phase |
|  |  | Where there are primary schools along the road frontage, all such areas should be earmarked and safety practices (road Humps) | Civil contractors &amp; sub-contractors | During Construction Phase |</p>
<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>Responsible Parties</th>
<th>Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide safety assistance targeting the houses exposed to access road frontages</td>
<td>Provide assistance to the houses exposed to access road frontage to develop vegetation hedges</td>
<td>Civil contractors &amp; sub-contractors</td>
<td>During Construction Phase</td>
</tr>
<tr>
<td>Existing foot paths to water points will be affected during construction due to movements of construction equipment and due to construction of structures</td>
<td>Plan and design alternative foot path until the construction work is over. (\text{Cha} , 0+013, , 0+111, , 0+300, , 1+560)</td>
<td>Civil contractors &amp; sub-contractors</td>
<td>During Construction Phase</td>
</tr>
<tr>
<td>Project Associated Structures can bisect the single units of agricultural lands obstructing convenient access.</td>
<td>New foot paths should be made available on a temporary basis to replace existing access roads that lay crossing the critical excavation areas...</td>
<td>Civil contractors &amp; sub-contractors</td>
<td>During Construction Phase</td>
</tr>
<tr>
<td>Community Safety will be at risk when removing boulders which are located adjacent to several community access roads</td>
<td>Comply with public safety guidelines</td>
<td>Civil contractors &amp; sub-contractors</td>
<td>During Construction Phase</td>
</tr>
<tr>
<td></td>
<td>Use alarms, sirens to educate the public prior to blasts.</td>
<td>Civil contractors &amp; sub-contractors</td>
<td>During Construction Phase</td>
</tr>
<tr>
<td></td>
<td>Where possible all construction sites, should be protected from public access to keep specially children away from the working area.</td>
<td>Civil contractors &amp; sub-contractors</td>
<td>During Construction Phase</td>
</tr>
<tr>
<td></td>
<td>Engage linesmen (flag bearers) to provide signals</td>
<td>Civil contractors &amp; sub-contractors</td>
<td>During Construction Phase</td>
</tr>
<tr>
<td>6. <strong>The stretch of the river between the dam and the tailrace:</strong></td>
<td>Undertake to conduct routine water quality monitoring at selected points along River Rwimi, in order to detect any contaminants/pollutants</td>
<td>Blasting of rocks very close to the river and houses should be carefully managed with minimum noise impact and injuries to the house dwellers.</td>
<td>Civil contractors &amp; sub-contractors</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>Discharge of silt laden run off from sites, and the disposal of waste and wastewater from work sites can affect the downstream water users</td>
<td>Regular water quality testing and information disclosure about water quality during different constructions stages.</td>
<td>Civil contractors &amp; sub-contractors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coordinate with LC and the community to provide alternative facilities for water distribution (Bathing and drinking) supply of safe drinking water during construction</td>
<td>Civil contractors &amp; sub-contractors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Enforce waste collection and disposal and ensure work force related sanitation facilities to avoid any river water contamination.</td>
<td>Civil contractors &amp; sub-contractors</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Civil contractors &amp; sub-contractors</td>
</tr>
</tbody>
</table>
## 5.5 Land Acquisition and Involuntary Re-Settlement

<table>
<thead>
<tr>
<th>Issue /Area of occurrence</th>
<th>Recommended Mitigation measure/strategies</th>
<th>Specific Action</th>
<th>Lead Responsibility</th>
<th>Timeframe</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Land Acquisition:</td>
<td>About half of the land plots that are to be acquired are agricultural lands. Economic displacement will be significant and affects about 94 families.</td>
<td>Ensure comprehensive documentation of and full compensation of all persons/families affected by the proposed plant (including those whose agricultural fields/and or other existing properties will be forfeited due to implementation of plant activities) is undertaken, in a transparent and timely manner according to the agreed compensation terms and rates. Ensure that Full Replacement Value (FRV) is the basis for computation of compensation.</td>
<td>Conduct community consultation and stakeholder consultation and Prepare Resettlement Action Plan and to receive approval for same from NEMA and include all conditions of approval into ESMP for implementation. Effect all compensation payments to the PAPs in a Transparent manner and document the process. Prepare a list of those having already been compensated and update the list with new ones when compensated during the construction phase. Allow all the future community complaints to be resolved by Grievance Redress Committee. Appointment of a dedicated unit/officer to oversee and follow up the payment of compensation to the PAPs and their grievances. Implement all other recommendations in the RAP pertaining to livelihood improvement of the PAPs.</td>
<td>EPHL</td>
<td>Prior to the construction work and during construction work. As per RAP.</td>
</tr>
<tr>
<td>Temporary acquisition of land for construction related work.</td>
<td>Ensure that a proper Grievance Redressing Committee is in place</td>
<td>Make the Grievance Committee functional by providing them space for convening regular meetings and allowing them a seating allowance.</td>
<td>Contractor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There can be crop / house damage during the construction work by way of inundation, floods, traffic related to construction work</td>
<td>All crops or property if damaged during such unexpected incidents have to be compensated based on approved rates by the Government of Uganda</td>
<td>Evaluate the extent of loss of the crops (economic impact) as well as temporary impact on their shelter and allow for compensation (to include affected persons, HHs on both side of the river)</td>
<td>Contractor During Construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuous monitoring of the Catchment Protection Activities</td>
<td>Implement the recommendations made in the RAP and provide RAP Implementation compliance Audit</td>
<td>A programme encompassing activities such as Tree Planting, Water supply, Access Road improvements; health services; awareness Creation to be developed as per the recommendations in the RAP, resources to be allocated for implementation</td>
<td>Developer (EPHL) with assistance from Contractors As per the RAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation of the Community Development Plans</td>
<td>Water Audit, the public consultation meetings and the RAP have already identified keyt projects for CDAP. A Final proposal will be finalised by the E&amp;S</td>
<td>Setting up of health camps, Improvement of schools, Gravity Flow water Schemes, improvements to the existing bore halls, improvements to CBOs in this area will be engaged to implement</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Implementations

<table>
<thead>
<tr>
<th>Task</th>
<th>Action</th>
<th>Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Need to approach BIO and Norfund with a proposal seeking some grants to facilitate these activities as project viability cannot be compromised by undertaking)</td>
<td>Consultant immediate after the commence of the construction work.</td>
<td></td>
</tr>
<tr>
<td>the community roads are some of the suggestions that they have made which we have included into the RAP. Each activity will be budgeted and necessary proposals will be prepared for individual activities.</td>
<td>the CDAP provide a proposal will be accepted by the Norfund.</td>
<td></td>
</tr>
<tr>
<td>Implementation of the recommendations made in the Livelihood Improvement Framework (LIF)</td>
<td>to compensate the loss of livelihoods of the PAPs whose land in excess of 20% of the land owned is taken over by the project.</td>
<td>Contractor</td>
</tr>
<tr>
<td>(This requirement has now been addressed in the LIF)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support the PAPs numbering 20 + 3 for cultivation activities (Seedlings for 04 consecutive agricultural seasons).</td>
<td>Developer</td>
<td></td>
</tr>
<tr>
<td>Pay adequate compensation for the land of those three Families on the left side of the Dam whose agricultural land will be affected during Dam Construction and during the reservoir.</td>
<td>Developer</td>
<td></td>
</tr>
<tr>
<td>Once the inundated area is earmarked.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disturbance to graves during excavation work</td>
<td>Apply guidelines in the Chance Find procedure</td>
<td>Contractor</td>
</tr>
<tr>
<td>Prepare a Chance Find Procedure and improve operator awareness on the</td>
<td></td>
<td>During</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5.6 Bio-diversity Conservation and Sustainable Natural Resources Management

<table>
<thead>
<tr>
<th>Issue /Area of occurrence</th>
<th>Recommended Mitigation measure/strategies</th>
<th>Specific Action</th>
<th>Lead Responsibility</th>
<th>Timeframe</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dam, Intake and Impounding Area</td>
<td>Comply with the recommendations made in the ecological study.</td>
<td>Habitat for mammals to be protected through tree planting and selective clearance programmes.</td>
<td>Civil Contractor</td>
<td>During construction phase</td>
<td></td>
</tr>
<tr>
<td>Level of erosion can be heavy along the river bank when riparian forest is cleared for the Intake and Dam construction (A Ramsar wetland (Lake George) located downstream of the Powerhouse can be impacted due to excessive erosion.)</td>
<td>Implement the recommendation in the Wetlands Permits which recommends appropriate soil conservation measures to ensure the protection of the riverbanks of River Rwimi, from siltation and/or sedimentation, by means of for example planting suitable indigenous plant species in the protected zone, amongst other methods</td>
<td>Plant appropriate fast growing trees and use green technologies such as laying of biodegradable geotextiles.</td>
<td>Civil Contractor</td>
<td>During construction phase</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stabilize the slope along the Dam access area by adopting appropriate slope stability measures such as bench cut or rubble masonry retaining walls.</td>
<td>Civil Contractor</td>
<td>During construction phase</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adopt methods such as cut and fill. Prepare method statements for excavation work at Cha 0+340 to 0+420 with technical designs for erosion control.</td>
<td>Civil Contractor</td>
<td>During construction phase</td>
<td></td>
</tr>
</tbody>
</table>
| Section | Description | Responsible Party | Phase | Reference
|---------|-------------|-------------------|-------|------------
<p>| 1 | Establish a cover of vegetation as soon as possible after the creation of areas of bare soil on the riverbank close to the Dam. | Civil Contractor | | |
| 2 | Avoid the possibility of rock debris to slip into river by deploying suitable Blasting Practices. | Civil Contractor | During construction phase | Refer to Blasting Guidelines |
| 2 | <strong>Low Pressure Pipes, Surge Tank and Fore-bay.</strong> Most of the structures will be laid along the agricultural lands. Level of erosion will be high when there will be temporary obstructions to natural gullies at times of heavy rains. | Comply with Slope Protection, erosion Control and soil conservation Guidelines | | |
| 2 | Design appropriate engineering drawings to install gullies, aqueducts etc. to avoid flooding of the agricultural lands (Example most locations up to Cha 1+650) | Civil Contractor | During construction phase | |
| 2 | Where there will be obstruction to natural gullies due to excavation, alternative gullies and drainage paths to be designed and opened up enabling storm water to recede quickly | Civil Contractor | During construction phase | |
| 3 | Penstock, Power house and Tailrace. Level of erosion can be heavy along the river bank when riparian and shrub forest as well as rocks will be cleared and boulders are removed while clearing of a few sections on steep slopes on the right bank of Rwimi river. | Follow measures in the ‘Slope Protection, Erosion Control and Soil conservation Guidelines’ | | |
| 3 | Design slope protection measures at steep slopes such as area to be covered under Anchor Point 35, 38 etc. where rock overburden will be removed and incorporate into the construction plan. | Civil Contractor | During construction phase | |
| 3 | Restricting clearing to only the portion of the access road | Civil Contractor | During construction | |</p>
<table>
<thead>
<tr>
<th></th>
<th>Environmental, Social Management &amp; Monitoring Plan RSHHP</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>and re-vegetating the area after construction Design the lay out of the</td>
<td></td>
<td>phase</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Area along the Tail race should be designed and constructed to reflect all the erosion control techniques with boulders laid to stop breaching of the river bank</td>
<td>Civil Contractor</td>
<td>During construction phase</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Large trees (Eucalyptus) to be selectively felled for the construction of the Power House and associated structures, along a significant slope area, which can cause erosion.</td>
<td>Minimize the number of trees to be felled by marking them prior to clearance. Leave large trees as many as possible. and</td>
<td>Civil Contractor</td>
<td>During construction phase</td>
</tr>
<tr>
<td></td>
<td>Rehabilitate cleared areas with re-grassing, Turfs and tree planting where areas prone to soil erosion</td>
<td></td>
<td>Civil Contractor</td>
<td>During construction phase</td>
</tr>
<tr>
<td></td>
<td>Adopt proper slope protection (construction of Gabion walls to protect slopes close to the Anchor 49, and 50) where the bifurcation will be designed.</td>
<td></td>
<td>Civil Contractor</td>
<td>During construction phase</td>
</tr>
<tr>
<td>4</td>
<td><strong>Access Roads (temporary and permanent) and bridges</strong>&lt;br&gt;Substandard access roads construction can cause gully erosion, flood problems, pollution of water sources in the surrounding area</td>
<td>Prior design and approval of engineering drawings for the construction of access roads and to comply with same.</td>
<td>Proper drainage system is constructed along the access roads, to control water run-off.&lt;br&gt;(Existing access road from the main road to the surge tank area need complete rehabilitation with grading.</td>
<td>Civil Contractor</td>
</tr>
<tr>
<td></td>
<td>Environmental, Social Management &amp; Monitoring Plan RSHHP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>-------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td><strong>The stretch of the river between the dam and the tailrace</strong>&lt;br&gt;Illegal activities such as sand mining, quarrying in the river bed for construction work can degrade natural resources.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Diversion of water will result in low flows in the stretch of the river downstream of the dams.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Diversion of all the water into the canal will result into loss of the aquatic species including fish and invertebrates, algal and other sensitive organisms. (River is a habitat for <em>Varicorhinus ruwenzori</em>, an endemic fish species of the river.)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Obstructions to fish movements. It is observed that there are fish breeding grounds along downstream of the Dam and adult fish only migrate upstream.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Culverts of appropriate sizes to be installed at all recommended road location sites so as to minimize interference with drainage, control of floods or pollution of water sources in the plant area.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Civil Contractor</em></td>
<td>During construction phase</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Compactly compacting and drains.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ensure that no quarrying activity takes place in the river bed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contractor awareness and strict contract management with penalties imposed for breach of requirements.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Civil Contractor</td>
<td>During construction phase</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Comply with the requirements of the Water Abstraction permit.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Design and install environmental flow pipes to meet the environmental flow as defined NEMA/DWD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Civil Contractor</td>
<td>During construction phase</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Release environmental flow to sustain the aquatic fish and other species during construction and commissioning.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Environmental flow should ensure sufficient water during the dry season</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Developer /Civil Contractor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Necessary to integrate into the Dam design a fish ladder for fish movements from upstream to downstream.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fish pass may be necessary to link water in the dam to the river course below the weir to enable the altitudinal migration of the fish species past the weir</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Civil Contractor</td>
<td>During Construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Se the attached Fish pass design which will be improved further together</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some of the Marico invertebrates living in the river are indicators of good quality water. Any pollution can impact on the macro invertebrates</td>
<td>Necessary to enforce strict regulations not to pollute the river water</td>
<td>Carry out water quality monitoring and compare with baseline information on a regular basis</td>
<td>Civil Contractor</td>
<td>During Construction</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Any possibility that construction workers resort to hunting or killing wild animals during construction work</td>
<td>Increase the level of awareness among workers on the biodiversity values</td>
<td>Conduct meetings; Impose regulations and work ethics.</td>
<td>Civil Contractor</td>
<td>During construction phase</td>
</tr>
</tbody>
</table>
## Environmental and Social Impact Mitigation Action Plan (O&M Phase)

### 6.2 Impact Mitigation Action Plan for Operational & Maintenance Phase

(This to be revisited towards the end of the construction phase)

<table>
<thead>
<tr>
<th>Issue /Area of occurrence</th>
<th>Recommended Mitigation measure/strategies</th>
<th>Specific Action</th>
<th>Lead Responsibility</th>
<th>Timeframe</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Dam is significantly high and the impounding can cause gradual erosion of the land area although flooding will not take place.</td>
<td>Monitor erosion levels during high flood seasons and identify areas which can breach for continuous rehabilitation.</td>
<td>Strengthen the critical slopes with gabions/boulders along the and where possible continue tree planting to protect the area from erosion.</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
<td></td>
</tr>
<tr>
<td>2 Abundance of decomposing vegetation could potentially lead to increase in invasive plants</td>
<td>Regular cleaning of the water in the reservoir, collect through thrash tracks.</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Erosion Control in the project site where the steep slopes have been modified for project purposes</td>
<td>Continuous maintenance of project site.</td>
<td>Carry out surveillance during the aftermath of heavy rains and effect necessary rehabilitation work.</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
<td></td>
</tr>
<tr>
<td>4 Riparian forest will be cleared and there will be tree felling as part land clearance and excavation along the river bank (at the Dam site and at the power House) affecting river</td>
<td>Put in place a comprehensive joint management programme so as to ensure sustainable use of River Rwimi not only for electricity power</td>
<td>Adopt integrated water use approach, allowing undisturbed use of water by the community through CSR project such as water distribution.</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Adopt catchment protection measures (tree Planting) along the single perennial tributary and several seasonal tributaries which link up with the river between the dam and the tail race</td>
<td></td>
<td>During O&amp;M Phase</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Assist DEO /LC initiated conservation efforts through the CSR programme</td>
<td></td>
<td>During O&amp;M Phase</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>During Dry Seasons ensure that water is shared for the community by renovating the water pools along the stretch affected by water diversion.</td>
<td></td>
<td>During O&amp;M Phase</td>
</tr>
<tr>
<td>4</td>
<td>Diversion of water will result in low flows in the stretch of the river downstream of the dams.</td>
<td>Comply with the requirements of the Water Abstraction permit.</td>
<td>An environmental flow as defined by the Project Approving Agencies will be maintained at all times to meet the ecological demand of the stretches of the river affected by the project</td>
<td></td>
<td>During O&amp;M Phase</td>
</tr>
<tr>
<td>5</td>
<td>Daily Water abstraction for the operation of the Plant.</td>
<td>Meet all the technical requirements with regard to the control and regulation of water flows up-stream and down-stream of the River;</td>
<td>Install prescribed methods to monitor water abstraction on regular basis.</td>
<td></td>
<td>During O&amp;M Phase</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Install prescribed methods to monitor water abstraction on regular basis.</td>
<td></td>
<td>During O&amp;M Phase</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Record daily water abstraction level; submit information on a monthly basis as required by the DWD.</td>
<td></td>
<td>During O&amp;M Phase</td>
</tr>
<tr>
<td>6</td>
<td>Occupational Health Hazards such as Noise from Power House which can cause disturbances to the people around as well as workers engaged in the power house.</td>
<td>Comply with national environment, Noise, Standards and Control, Regulations</td>
<td>Ensure that the generators to be used during the implementation phase of are fitted with silencers, in order to reduce noise levels to permissible limits,</td>
<td></td>
<td>During O&amp;M Phase</td>
</tr>
<tr>
<td>7</td>
<td>Waste will be generated during the O&amp;M Phase from the staff accommodation, power house, trash tracks, main kitchen where the people will be engaged for different O&amp;M related activities</td>
<td>Comply with Occupational Health and Safety Plan</td>
<td>All the workers in the power house should be provided with muffle gear and other safety gear</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Carry out regular induction training and sensitization matters on Occupational health.</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ensure HIV/AIDS awareness and prevention programme is instituted to sensitize both the local community as well as the workers</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Waste will be generated during the O&amp;M Phase from the staff accommodation, power house, trash tracks, main kitchen where the people will be engaged for different O&amp;M related activities</td>
<td>Adopt accepted waste disposal practices (as per the Waste and hazardous Waste Management guidelines).</td>
<td>Oils and other petroleum product will be containerized so that they are not allowed to sip into the ground and into the water bodies. Instead they will be sold off or reused</td>
<td>EPHL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Provide proper sanitation facilities such as toilets (with proper septic tanks and Soakage Pits), running water etc. to all permanent employees.</td>
<td>EPHL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>All solid wastes should be collected and disposed as per the guidelines provided. (Vendors should be contacted to dispose all recyclable materials)</td>
<td>EPHL</td>
</tr>
<tr>
<td>8</td>
<td>Environmental impact mitigation work during O&amp;M Phase</td>
<td>Comply with NEMA requirement that Audits should be conducted</td>
<td>Conduct the first Annual Audit Report after 24 months of the commencement of the operations</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>All the permits and licenses which require renewing after expiry of</td>
<td>EPHL</td>
</tr>
<tr>
<td>No.</td>
<td>Public Safety and Accessibility to Resources (Agricultural lands above the inundated area)</td>
<td>Implement recommendation made in the Public Safety Management Plan/Guidelines</td>
<td>Create of humps along the access roads and enforcing speed limits (30km or less) among truck drivers.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>----------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Implement recommendation made in the Public Safety Management Plan/Guidelines</td>
<td>Create of humps along the access roads and enforcing speed limits (30km or less) among truck drivers.</td>
<td>EPHL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Safety of the people engaged in agricultural activities in the area upstream on either side of the river upstream of the Dam should be ensured through awareness and possibly fencing the areas with critical slopes.</td>
<td></td>
<td>EPHL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provide special traffic sign boards at the areas very close to Schools and areas occupied by houses.</td>
<td></td>
<td>EPHL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alternative access roads should be provided enabling the Community members to have easy access to other side of the village and when the existing routes will be closed for general mobility (power house area and the Dam area).</td>
<td></td>
<td>EPHL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Display clearly visible sign boards to indicate the new access roads.</td>
<td></td>
<td>EPHL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Foot paths and existing bridges (specially bridge just above the proposed Dam Site connecting people from either side of the river bank lying upstream of the Dam) will be affected when the project is up and running.</td>
<td>Clearly display sign boards along the river to indicate any possible hazards due to Tail race water release.</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Comply with public safety guidelines</td>
<td>Dam should be designed with safe railings enabling the community to cross from either side of the river between the villages.</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>All affected Community Foot Paths should be realigned in consultation with the community to provide access through project site (with limited public access)</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Compliance to emergency situations such as such as coping the event of equipment failure/malfunction,</td>
<td>Put in place an emergency response system to initiate repairs immediate in order to promptly minimize the impacts.</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ensure that trained and adequate personnel are on stand-by, to immediately respond to such emergencies</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Fire risks/hazards could be possible during the operational phase of the plant</td>
<td>Put in place a comprehensive emergency and monitoring plan including installing appropriate fire-fighting equipment at the plant premises</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Educate the workers about the Emergency plan and ensure that all staff are trained in the techniques of fire-fighting and emergency procedure</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Risk of possible flooding of crop field and/or neighboring residencies, floods, earth slips during rains, winds etc.) And while operating the plant.</td>
<td>Institute a mechanism to address community grievances during O&amp;M Phase</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ensure that any complaints from local communities regarding the operation of the Hydropower Plant and its associated infrastructure are addressed through the grievance management committee</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Make sure that public access is undisturbed on either side of their agricultural areas if the structures fall in between, by installing and continuously maintaining necessary over passes /</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
<td></td>
</tr>
<tr>
<td></td>
<td>underpasses.</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>--------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Implementation of the livelihood Improvement Framework that supports the PAPs significantly affected by Land Acquisition.</td>
<td>Continue the implementation of the LIF until the HH income of the PAPs is adequately restored.</td>
<td>EPHL</td>
<td>During O&amp;M Phase</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Continue some aspects (Monitoring) of LIF beyond construction Phase</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6. Compliance Monitoring and Reporting Requirements

NEMA stipulates that the Developer should implement the Environmental and Social Impact Mitigation Action Plan and Environmental Monitoring Plan contained in the ESIA Report and ensure record keeping as required under Section 77 of the National Environment Act, Cap. 153, and transmit records to this Authority as required under Section 78 of the National Environment Act, Cap.153.

Below provides a system of monitoring and reporting framework and audit of the ESMP commitments. By and large, the essence of ESMP lies in its ability to implement the measures that can mitigate the risks and impacts and the level of monitoring carried out thereto enabling the key stakeholders to take remedial action on time.

6.1 Purpose

Monitoring of the implementation of the action plan of the ESMP will help to ascertain whether the concerned parties have dealt with required level of compliance at the appropriate time to deal with the issues arising from the respective project related activity. This is a requirement as stipulated by the lead agencies such as NEMA, DWD and ERA as well as the project funding agency as well as the developer. IFC performance standard (1) also emphasise the need for monitoring and reporting as one of the key requirement of the implementation of the ESMP.

Monitoring is a continuous process. In the process, progress of the implementation of the action can be monitored (progress monitoring) and the effectiveness of such action can also be monitored (Impact monitoring). Very often both these methods should run parallel to each other (especially during the construction phase) as they are interdependent.

Systematic observation of the compliance status of construction related activities namely construction related noise levels, dust emissions, soil erosion and water pollution, public safety and general safety and working conditions of the workers, handling of community grievances are essential.

Mitigation measures taken in respect of protecting erosion and ensuring slope stability, spoil disposal methods, blasting techniques, waste management measures etc. to be adopted by the civil contractors need to be monitored at site level, to ensure that they attribute to risk reduction, safety and pollution abatement.

Collection of baseline information will be useful in certain monitoring parameters to ascertain the level of compliance, but it is not the case in all the parameters in construction related other activities. Where possible it is essential that baseline information is collected or rely on the baseline information that was collected during the SEIA. Water Quality monitoring, monitoring of ambient air, sound have already been referred to in the SEIA Report. It is appropriate to measure water quality as against the baseline information prior to commencement of construction work. National standards have been provided in the relevant regulations for water quality, noise and ambient air quality. The SEIA has already given the baseline information and it is the duty of the contractors and the developer to carry out relevant tests on a regular basis and
to compare same with the baseline and to effect any remedial action if the standards appear to have been lowered.

There are a few regulatory requirements such as the release of environmental flow, erosion control, spill prevention, control of sediments in the river etc. which should be monitored through physical observations and through reviewing of designs and related planning documents.

The important aspects of social impacts also should be given similar priority. The prevalence of any diseases should be monitored, the occupational health and safety needs of the employees have to be monitored, and the payment of compensation, the livelihood improvements, the accessibility to unobstructed foot paths, and water collection by the community should be monitored during the construction phase.

Progress monitoring as well as the impact monitoring needs data and information. The information should be collected through regular field visits, referring to literature maintained by the project site (labour attendance sheet, accident reports, health reports, NSSF returns), referring to technical drawings and comparing them in-situ (slope protection and erosion control designs) and discussion with the workers / community members (on matters of working conditions/ community conflicts) and through laboratory tests (Water quality reports) etc.

6.2 Monitoring Responsibilities

Monitoring of the implementation of the ESMP is a collective responsibility of the key stakeholders of the project. Key responsibilities lie with the developer as well as the Contractors and the sub-contractors. Nevertheless, the funding agencies, the statutory bodies such as NEMA, DWD, and ERA are keen to have regular reports based on close monitoring of the implementation of the ESMP.

In order to ensure accuracy of the information furnished in the monitoring reports, it has been the practice that the independent monitors have been entrusted with the task of undertaking regular monitoring inspection and to submit reports to the key stakeholders. This is done independent of the contractor’s arrangement to carry out regular monitoring and submission of reports thereto.

The work shall be supervised by EPUL and/or the appointed SEMC. During the operations phase, the responsibility of regular monitoring directly lies with the Developer. During de-commissioning phase the responsibility lies on the contractors and appointed SEMC.

6.3 Reporting Requirements

Monitoring should be followed by a comprehensive reporting mechanism acceptable to the lead agencies who are interested in knowing the progress of the implementation of the ESMP. The lead agencies particularly interested in the monitoring reports are:

- NEMA; ERA and DWD who have stipulated the specific formats and regularity for reporting purposes. NEMA through the District Environmental officer is expected to undertake monthly monitoring missions and will have its own independent monitoring
which may be copied to the contractor and the developer. In case NEMA fails to undertake the monthly monitoring, it is the responsibility of the Site Social and Environmental Compliance Manager to complete the monthly monitoring and to submit reports to NEMA/ERA.

- NEMA is required by Ugandan legislation to undertake external monitoring of the project at both the national and at the district level. PB consultants agree that NEMA and the District Environmental Office are expected to undertake basic supervision on the impact of the project on PAPs and the progress of income restoration, as well as the PAPs degree of satisfaction with the resettlement and compensation process on an annual basis.

- The funding agency may also will require quarterly reports. Depending on the arrangements, the lenders may appoint independent consultant to periodically monitor the overall project on a quarterly basis. The EHS Consultant (on behalf of the Developer) will carry out regular independent monitoring inspections and will submit reports to lead agencies as per the statutory and procedural requirements.

- During the construction phase contractor is largely responsible for carrying out the mitigation measures as prescribed in the ESMP and the contractual documents. The contractor, through its site technical personnel should attend to regular monitoring and report should be submitted to the developer. The progress reports should also detail the environmental and social works that are scheduled or expected to be performed in the next quarterly period.

- The RAP identifies the monitoring required to ensure the resettlement plan and compensation measures will be implemented and performance of the management program. A monitoring schedule should also be provided so that compliance can be easily assessed.

Each of the lead agency/ interested party will provide regular (monthly or quarterly) reports on the actions taken in the previous quarter to fulfill the ESMP. The contractor as well as the Developer and the representatives at site will be able to draw on the reports it receives from the consultants and the lead agencies (DEO) etc., to revise the construction schedules and site specific environmental and social impact mitigation activities.

What is most important in the reporting is the ability to circulate among the concerned parties to ensure that the observations made in such reports are duly conveyed to the contractor on time for quick follow up action.

**6.4 Management of Corrective Actions**

If a violation is detected during a site visit, the site manager will be notified of the same and suggest means of rectification. This notification should be given both verbally and in writing. Any failure of the carrying out appropriate mitigation action will result in contractor receiving letters demanding explanation for such failures and a deadline for rectifying the breach of the ESMP. This will be followed by nonconformance notices or improvement notices. Corrective action is
compulsory and the failing to undertake mitigation actions and or corrective action as per the ESMP will result in breach of contract which tantamount to penalties.

6.5 Quality Control (Audits Supervision and inspections)

The management structure has provided due consideration to ensure that necessary roles and responsibilities are introduced to deal with quality control. The Conditions of approval provided by NEMA on the basis of the SEIA, very clearly stipulate that the Developer should carry out annual environmental audits and to submit reports to NEMA. The Electricity Regulatory Authority and the Directorate of Water Development in their permits further emphasis the need for audit supervision and inspections. It is expected that the District Environmental officer (DEO) will undertake periodical audit inspections through have regular site field visits. The ERA also will send regular inspection teams to carry out investigations as to the physical progress of the project. Construction Quality Control will be further inspected through the regular visits by PB Consultants, who have noted the need to make such visits in close intervals in view of the significance of health and safety risks of the project. The project coordinator, the site manager to represent the main contractor will be required to obtain advance notice of such visits and to assist in the site inspections and to comply with the observations in subsequent phases.

The site Environmental Health and Safety Manager will have key responsibility of ensuring adequate environmental quality control during the all phases of the project.

Below provides the monitoring framework. It outlines the basis for essential parameters for compliance monitoring and the indicators, which can be monitored by both internal and external monitors during the construction period. This table will complement with what has been suggested in the SEIA Report.
6.6 Environmental and Social Impact Mitigation Monitoring Plan

1. ENVIRONMENT/SOCIAL Impact Monitoring

- ESMP deals with the monitoring plan of the Environmental and Social Management Plan. In addition a Livelihood Improvement Framework had already been prepared. One of the key objectives of the LIF is that it would not exclude assistance to those 20 PAPS whose livelihood income has been significantly impacted due to land acquisition. There are several outcome indicators which can be used to monitor the performances in respect of implementation of LIF. The monitoring plan should include both the ESMP and LIF together when monitoring the progress.

- One of the key objectives of the Livelihood Improvement Framework (LIF) is that it would include assistance to those 19 / 20 PAPS whose livelihood income has been significantly impacted due to land acquisition. There are several outcome indicators which can be used to monitor the performances in respect of implementation of LIF. The monitoring plan should include both the ESMP and LIF together when monitoring the progress.

- Actions items to be implemented during the construction phase are provided under section 5.1 to 5.6 of the ESMP. (Any revisions made into ESMP for additional mitigation actions agreed between the Statutory agencies, the project Financiers and the Developer to be documented soon in the form of revisions to the ESMP and to be conveyed to the civil contractors).

- Both the implementation of the action items and the performance monitoring of the same are considered important aspects of managing social and environmental impacts of the project.

- For the implementation of the action items, EPUL has prepared a suitable implementation mechanism which is explained under section (4) of the ESMP, which deals with management structure. Under this, roles and responsibilities of the EPUL, being the Developer as well as that of the Civil Contractor have been clearly identified. EPUL will ensure allocation of adequate human and financial resources for the implementation of all the mitigation actions and the monitoring of the same.

- EPUL will make the civil contractor/s binding to the respective roles and responsibilities through the contractual agreements that require the Civil Contractor/s to implement the relevant actions in the ESMP, the non-compliance of which will result in penalties and any other deterrent actions.
The monitoring of the ESMP actions as per the monitoring plan will be the responsibility of the Site Environmental Manager and the Site Construction Manager. They will be assisted by a Site Environmental and Safety Officer as well as a site Community Welfare Officer. They will be recruited before the commencement of the project’s construction activities.

The Civil Contractor and the site work force will be given awareness of the actions under each of the performance standards well in advance as per the ESMP and their monitoring requirements. They will also be made aware of the requirements as laid down in the various permits, licenses issued by NEMA as well as ERA & DWD etc.

They will also be made aware of the contents in the supplemental management plans. Water quality will be tested every six months and reports will be made available to NEMA, ERA and the project Financiers on a regular basis. The Site Environmental Manager will prepare and circulate the quarterly progress reports based on the action items stipulated in the ESMP.

In addition the District Environmental Officer will be involved in the regular monitoring of the environmental mitigation actions taken by the Civil Contractors. Where necessary additional expertise will be outsourced to address any issues that require expert opinion (such as water, air quality monitoring).

The Grievance Committee will be made functional before the construction phase commences and meetings will be facilitated by EPUL. All matters taken up by the GC will be considered very seriously by the Developer and prompt action will be taken to support the decision taken by the GC in respect of the Grievances of the PAPs. One of the binding tasks of the Grievance Committee will be to ensure that those who are entitled for livelihood assistance as per the LIF receive relevant assistance and benefits on time.
### 6.6 Environmental and Social Impact Mitigation Monitoring Plan

<table>
<thead>
<tr>
<th>Specific Actions</th>
<th>Indicator</th>
<th>Method</th>
<th>Location</th>
<th>Frequency</th>
<th>responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation of ESMS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Completion of the ESMP & other Management Plans and Updating same | • Availability of reports for perusal by the Developer; Contractor and other relevant agencies  
• # of Site visits made by the consultants  
• Availability of Contract Management Agreements incorporating ESMP | Completion reports of specific tasks  
Observations and comments made during the process of finalization.  
Review training (PPT) modules  
Verify the contract management agreements and the ESMP | Office | As per contractual agreements | ESMP Consultant |
| Implementation of ESMP | • Availability of a Functional Unit dedicated for implementation and monitoring of the compliance status, at the site  
• Necessary staff with their clear job descriptions recruited and engaged | Observations and comments made  
Review Staff training plans  
Review Staff Contracts and Resources allocation for staff recruitment | Site Office | As per contractual agreements | Site Project Manager/Civil Contractors |
| Compliance with requirements stipulated in Public Disclosure and Community Engagement Plan | • Functional Grievance Committee  
• Functional Grievance redress mechanism  
• Physical presence of the office space and the required facilities for the community members to lodge complaints  
• Number of issues raised and | Discussion with members of the Grievance committee  
Review any minutes at the office pertaining to the sittings of the GC.  
Physical observations of notice boards  
Discussion minutes with Site Project Management on the | Site Office Site Project Manager/Civil Contractors | As per the Community Engagement and the Public Disclosure Strategy | Site Project Manager, Site |
### Specific Actions

<table>
<thead>
<tr>
<th>Specific Actions</th>
<th>Indicator</th>
<th>Method</th>
<th>Location</th>
<th>Frequency</th>
<th>responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orientation /Training for the contractors / sub-contractors</td>
<td>Availability of training/worker orientation plan /modules</td>
<td>Physical verification</td>
<td>Site Office</td>
<td>First Six months from commencement of construction</td>
<td>Site Project Manager/Civil Contractors</td>
</tr>
<tr>
<td></td>
<td>No’s attended</td>
<td></td>
<td></td>
<td></td>
<td>Site Project Manager/Civil Contractors</td>
</tr>
<tr>
<td>Submission of Regular Monitoring /Progress Reports to Stakeholders</td>
<td>#of progress reports prepared &amp; circulated</td>
<td>Physical verification of the submission of quarterly progress reports to NEMA/ERA and Financiers</td>
<td>Site Office</td>
<td>Quarterly</td>
<td>Site Project Manager/ESMP Consultant</td>
</tr>
<tr>
<td></td>
<td>Actions pursued based on the comments of Progress Reports</td>
<td></td>
<td></td>
<td></td>
<td>Site Project Manager/ESMP Consultant</td>
</tr>
</tbody>
</table>

### Labor & Working Conditions

<table>
<thead>
<tr>
<th>Specific Actions</th>
<th>Indicator</th>
<th>Method</th>
<th>Location</th>
<th>Frequency</th>
<th>responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance to Staff administration policy / employee engagement and payment of statutory payments (NSSF) minimum salaries</td>
<td>Availability of the policy for perusal by the Contractor/Sub Contractor/Developer</td>
<td>Physical verification of the policy documents</td>
<td>Site office</td>
<td>Quarterly</td>
<td>Site Administration Manager</td>
</tr>
<tr>
<td></td>
<td>NSSF returns</td>
<td>Verify and collect information from NSSF Returns /Employee engagement contracts</td>
<td></td>
<td></td>
<td>Site Health and Welfare Officer</td>
</tr>
<tr>
<td></td>
<td>Numbers engaged and salaries paid (Daily wages)</td>
<td></td>
<td></td>
<td></td>
<td>Site Health and Welfare Officer</td>
</tr>
<tr>
<td></td>
<td>Complaints received from the workers</td>
<td></td>
<td></td>
<td></td>
<td>Site Health and Welfare Officer</td>
</tr>
<tr>
<td>Compliance with the requirement that Use of personnel protective equipment is mandatory by the workers</td>
<td>Nos. wearing at a given time</td>
<td>Field visits</td>
<td>Work sites</td>
<td>Quarterly</td>
<td>Site Health and Welfare Officer</td>
</tr>
<tr>
<td></td>
<td>Complaints made by workers</td>
<td>Discussions with workers</td>
<td></td>
<td></td>
<td>Site Health and Welfare Officer</td>
</tr>
<tr>
<td></td>
<td>Injuries sustained due to not having PPE</td>
<td>Health records</td>
<td></td>
<td></td>
<td>Site Health and Welfare Officer</td>
</tr>
<tr>
<td>Incidence of vector-borne diseases (Malaria) and</td>
<td># of workers affected by Malaria &amp; other vector borne</td>
<td>Physical verification of Health reports</td>
<td>Worker Accommoda</td>
<td>Quarterly</td>
<td>Site Health &amp; Welfare Officer</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Site Health &amp; Welfare Officer</td>
</tr>
<tr>
<td>Specific Actions</td>
<td>Indicator</td>
<td>Method</td>
<td>Location</td>
<td>Frequency</td>
<td>Responsibility</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>-------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Health status (of workforce)</td>
<td>Health status (of workforce)</td>
<td>Observation at the accommodation provided</td>
<td>Project influence area</td>
<td>Weekly</td>
<td>Site Health and Welfare Officer</td>
</tr>
<tr>
<td></td>
<td>2. Health awareness provided (training and awareness)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Preventive measures introduced</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Community complaints</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compliance with solid waste disposal</td>
<td>Compliance with solid waste disposal</td>
<td>Physical verification of the availability of management plans and evidence that contractor comply with same; Field Observations</td>
<td>Stores, Wash bay; Camps accommodation sites, specific work sites</td>
<td>Regularly (Weekly) and instant checks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Availability of Waste Management plan for perusal by the contractor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. System in practice to manage degradable waste including any contracts made with the LC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Community complaints over the inappropriate disposal of waste</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Cleanliness of the specific work sites</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management of hazardous and contaminating materials</td>
<td>Management of hazardous and contaminating materials</td>
<td>Inventory book</td>
<td>Site Stores</td>
<td>Site Safety officer</td>
<td>Stores manager</td>
</tr>
<tr>
<td></td>
<td>1. Hazardous waste management guidelines adopted by site Store Keeper/other staff</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Hazardous waste inventory and storage location available in the stores</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Plan for disposal of waste oils and any hazardous waste</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hygiene and sanitation at work sites</td>
<td>Hygiene and sanitation at work sites</td>
<td>Site physical observations</td>
<td>Site Safety officer</td>
<td>Daily basis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Availability of proper toilets for the use by workers at the specific sites</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Availability of drinking water facilities at the specific sites</td>
<td>Site physical observations</td>
<td>Site Safety officer</td>
<td>Daily basis</td>
<td></td>
</tr>
<tr>
<td>Specific Actions</td>
<td>Indicator</td>
<td>Method</td>
<td>Location</td>
<td>Frequency</td>
<td>Responsibility</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------</td>
<td>--------</td>
<td>----------</td>
<td>-----------</td>
<td>----------------</td>
</tr>
<tr>
<td>3. Community complaints over workers using in appropriate methods</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pollution prevention and abatement

(Surface water quality) Methods adopted to prevent sediment loading

1. Method statements prepared by the contractor before excavation/construction work at critical areas
2. Disposal methods used for coffer dam materials
3. Physical presence of objects, fly rocks etc. deposited along the river causing River flow/other stream flow hindrances;

| 1. Method statements prepared by the contractor before excavation/construction work at critical areas | Site Visits; Physical observations | At points where construction activities close to the river | Daily during excavation and blasting periods | Site Project Manager |
| 2. Disposal methods used for coffer dam materials | | | | |
| 3. Physical presence of objects, fly rocks etc. deposited along the river causing River flow/other stream flow hindrances; | | | | |

River Water quality (Temperature, Dissolved Oxygen and Turbidity)

1. Availability of water quality reports.
2. Water quality tested at predetermined points indicating no significant changes from the baseline status

| 1. Availability of water quality reports. | Physical verification Analyze water quality against baseline | As defined in the SEIA Report | Quarterly during construction | Site Project Manager |
| 2. Water quality tested at predetermined points indicating no significant changes from the baseline status | | | | |

Pollution prevention of surface water bodies

1. Settlement tanks introduced at key installations
2. Introducing of a Wash bay for cleaning of the equipment
3. Construction methods adopted to protect water streams

| 1. Settlement tanks introduced at key installations | Observe through site visits the physical presence of settlement tanks and other protective devices | As defined in the Hazardous waste / Solid waste disposal Plan | Quarterly during construction | Site Project Manager |
| 2. Introducing of a Wash bay for cleaning of the equipment | | | | |
| 3. Construction methods adopted to protect water streams | | | | |

1. Methods adopted to spill

| 1. Methods adopted to spill | Refer to the procedures | As defined in | Quarterly | Site Project |
### Specific Actions

<table>
<thead>
<tr>
<th>Prevention of Oil spills, hazardous waste during construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dispose oils from the wash bay</td>
</tr>
<tr>
<td>2. Methods in effect to dispose paint containers; burnt bulbs;</td>
</tr>
<tr>
<td>un used chemicals ;</td>
</tr>
<tr>
<td>Discuss with the staff</td>
</tr>
<tr>
<td>Physical verification of the disposal yard</td>
</tr>
<tr>
<td>the Hazardous waste / Solid waste disposal Plan</td>
</tr>
<tr>
<td>manager</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prevention of Dust /noise during construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Site specific Methods adopted for dust control</td>
</tr>
<tr>
<td>2. Excavation areas supported by water sprinkling during dry</td>
</tr>
<tr>
<td>periods</td>
</tr>
<tr>
<td>3. Spoil stockpiles covered and protected against possible</td>
</tr>
<tr>
<td>Dust</td>
</tr>
<tr>
<td>4. Site Specific Methods adopted for noise control</td>
</tr>
<tr>
<td>5. Community complaints</td>
</tr>
<tr>
<td>Verification of availability of dusk masks ,</td>
</tr>
<tr>
<td>Verify water boozers for sprinkling purposes at areas needing water sprinkling</td>
</tr>
<tr>
<td>Physical observations</td>
</tr>
<tr>
<td>As defined in the Hazardous waste / Solid waste disposal Plan</td>
</tr>
<tr>
<td>Quarterly during construction</td>
</tr>
<tr>
<td>Site Project Manager</td>
</tr>
</tbody>
</table>

## Community (Public) Health and Safety

<table>
<thead>
<tr>
<th>Health status (of the communities) due to construction related activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Number of HHs made complaints about noise / dust/water pollution due to construction work</td>
</tr>
<tr>
<td>2. Safeguard measures introduced by the contractor :</td>
</tr>
<tr>
<td>3. Health awareness provided (training and awareness)</td>
</tr>
<tr>
<td>4. Site specific safety plans introduced at the work sites</td>
</tr>
<tr>
<td>Physical verification of complaints register</td>
</tr>
<tr>
<td>Discussion with affected HHs</td>
</tr>
<tr>
<td>Physical verification of the site specific safety plans / construction schedule</td>
</tr>
<tr>
<td>No of awareness programmes carried out and the nos. attended</td>
</tr>
<tr>
<td>Quarterly during construction</td>
</tr>
<tr>
<td>Site Project Manager</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Traffic related road accidents, community</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Measures taken to ensure traffic related safety</td>
</tr>
<tr>
<td>Physical verification of the availability</td>
</tr>
<tr>
<td>Quarterly during</td>
</tr>
<tr>
<td>Site Project Manager</td>
</tr>
</tbody>
</table>
### Specific Actions

<table>
<thead>
<tr>
<th>Disturbances and potential hazards</th>
<th>Humps/road safety signs at strategic locations, alternative accesses provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Community awareness/driver awareness undertaken with traffic police</td>
<td></td>
</tr>
<tr>
<td>3. Complaints made by the community members/</td>
<td></td>
</tr>
</tbody>
</table>

#### Method

- Physical presence of the safety officer
- Observations and review of notes
- Observations made in the complaints registry / accident registry and minutes of the grievance committee

#### Frequency

construction

#### Responsibility

Site Project Manager/Site Safety Manager

### Safety measures adopted by the project for community safety

1. Availability of safety fences with safety signs (at critical points)
2. Availability of safety plans in effect during construction
3. # of community awareness meetings
4. Safety practices during the use of explosives and during Blasting
5. Level of cooperation received from the Police to carry out security details during construction

#### Method

- Physical verification of technical designs and drawings
- Documented safety plans which are in effect
- Discussion with the safety officers/police personnel
- Discussion with the community meetings
- Physical observations

#### Frequency

- Along access roads and along Low pressure pipe / penstock area where land bisects due to structures
- During construction / specific events (Blasting schedule)

#### Responsibility

Site Project Manager/Site Safety Manager

### Economic Displacement

1. No. of PAPs
2. Amount of compensation paid

#### Method

- Review of the updated list of compensates
- Review of the financial records

#### Frequency

Quarterly during construction

### Physical Displacement

3. No of PAPs. (Requiring involuntary Resettlement)

#### Method

- Review of the updated list of compensates

#### Frequency

Quarterly during construction

---
<table>
<thead>
<tr>
<th>Specific Actions</th>
<th>Indicator</th>
<th>Method</th>
<th>Location</th>
<th>Frequency</th>
<th>responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4. Amount paid as compensation</td>
<td>Review of the financial records</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community conflicts and complaints</td>
<td>5. No of complaints made in the Grievance Register</td>
<td>Refer to the complaint registry</td>
<td>Monthly during construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. No of complaints resolved through the Grievance Committee involvement</td>
<td>Refer to the documents minutes by the grievance committee</td>
<td>Monthly during construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. No of complaints referred to labor tribunals and courts</td>
<td></td>
<td>Monthly during construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation of Community Development Action Plan</td>
<td>8. No. of projects supported by the Developer /Contractor</td>
<td>Review physical progress</td>
<td>Quarterly during construction</td>
<td>Civil contractor/Site Project Manager</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9. Community Development Action Plan Designed with community participation.</td>
<td>Letters received by Project Manager in appreciation of new projects</td>
<td>Quarterly during construction</td>
<td>Civil contractor/Site Project Manager</td>
<td></td>
</tr>
<tr>
<td>Implementation of Livelihood Improvement Framework</td>
<td>10. # of households and individuals receiving direct assistance from the project in a given agricultural season</td>
<td>Review physical progress</td>
<td>Quarterly during construction</td>
<td>Civil contractor/Site Project Manager</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11. # of HHs and individuals receiving (Income generating Activity) IGA assistance</td>
<td>Letters received by Project Manager in appreciation of new projects</td>
<td>Quarterly during construction</td>
<td>Civil contractor/Site Project Manager</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12. # of HHs and individuals receiving compensation through the recommendations of the grievance Committee</td>
<td>Reports submitted by the site community welfare officer</td>
<td>Quarterly during construction</td>
<td>Civil contractor/Site Project Manager</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13. Amount of funds spend for the water supply purposes and the type of infrastructure developed for water supply</td>
<td></td>
<td>Quarterly during construction</td>
<td>Civil contractor/Site Project Manager</td>
<td></td>
</tr>
<tr>
<td>Specific Actions</td>
<td>Indicator</td>
<td>Method</td>
<td>Location</td>
<td>Frequency</td>
<td>responsibility</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------</td>
<td>--------</td>
<td>----------</td>
<td>-----------</td>
<td>----------------</td>
</tr>
<tr>
<td>14.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clean water for community consumption</td>
<td>15. Amount of funds availed for community water supply schemes during construction period</td>
<td>Cost estimates and verification of physical progress</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16. Level of effort / Community participation enhanced for implementing water projects</td>
<td>Number of water collection points availed during construction.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PS (6) Bio diversity Conservation and Natural Resources Management**

<table>
<thead>
<tr>
<th>Specific Actions</th>
<th>Indicator</th>
<th>Method</th>
<th>Location</th>
<th>Frequency</th>
<th>responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slope protection /erosion control measures taken</td>
<td>1. No. of acceptable erosion control measures introduced as against area excavated namely Rip raps or Gabions introduced</td>
<td>Observe: Construction schedules &amp; Technical drawings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Extent of access roads graded (with Muram or concrete supported by drainage and paved sections)</td>
<td>Undertake on site physical verification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Cut and filling areas</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Terraced areas (extent)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Habitat protection for mammals</td>
<td>Area protected/conserved for small mammals</td>
<td>Physical observations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tree planting programme</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Measure taken to protect Riparian vegetation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Observe: Construction schedules & Technical drawings
Undertake on site physical verification

As defined in the slope protection erosion control and soil conservation Plan
Regularly as per the construction schedule by

Civil contractor/Site Project Manager

Civil contractor/Site Project Manager
<table>
<thead>
<tr>
<th>Specific Actions</th>
<th>Indicator</th>
<th>Method</th>
<th>Location</th>
<th>Frequency</th>
<th>responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release of environmental flow</td>
<td>Technical designs</td>
<td>Physical observations</td>
<td>As defined in the SEIA</td>
<td>Regularly</td>
<td>Civil contractor/Site Project Manager</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Community Complaints</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water pools developed along the area affected by flow diversion</td>
<td>Technical designs</td>
<td>Physical observations</td>
<td>As defined in the SEIA</td>
<td>Regularly</td>
<td>Civil contractor/Site Project Manager</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Community Complaints</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Invasive aquatic species along the reservoir area</td>
<td>Number of species that are observable</td>
<td>Physical observations</td>
<td>During site visits after construction of the Dam</td>
<td>Consultant</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Measure taken to eradicate invasive species</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PART - 4

7. Supplemental Management Plans / Guidelines

In addition to the ESMP and any other technical guidelines and standards practiced by the contractor/sub-contractors, following guidelines are also availed for compliance to ensure that overall project meets with the IFC guidelines.

These supplemental guidelines have been provided on following subject matters which are attached to ESMP:

7.1 Public Consultation and Disclosure Strategy/Plan
7.2 Employment Policy & Administration Procedure
7.3 Occupational Health and Safety Management Plan
7.4 Public Safety Guidelines
7.6 Explosive Handling and Blasting Procedure
7.7 Traffic Management Plan including vehicle identification scheme
7.8 Slope Protection and Soil Conservation and Erosion Control Plan
7.9 Chance Find procedure (to deal with the unearthing of unexpected graves or sites of heritage significance)
7.10 The Livelihood Improvement Framework
7.11 Special Studies

8. Annexures
7.1 Public Consultation and Disclosure Plan

Purpose

The objective of this document is to guide the developer and the contractor to engage stakeholders during the full project life cycle and ways through which the stakeholders can be engaged. This also addresses the methods of dissemination of project related information when dealing with broader issues having common stake and the procedures to be followed for addressing grievances and resolving disputes.

Review of the legal context that mandates public consultation and disclosure

(Both in-country and international requirements);

Legal context related to public consultation and disclosure is documented and well explained in statutory instruments as well as international obligations. They have been reviewed during the social and environmental impact assessment process; during the process of preparing the Resettlement Action Plan and during the preparation of the Social Safe Guard Policy Framework. However a brief overview is furnished below:

The provisions of the Land Act address issues of land acquisition and the need for public consultation. The Act creates a series of land administration institutions consisting of Parish Land Committees, District Lands Boards and Uganda Land Commission (ULC). Each of these levels is by and large autonomous of one another and is entrusted with functions that range from the holding of lands not subject to private ownership, the management of land thus held, the processing of applications for various grants and certificates, the registration and transfer of interest in land (ss.47-74).

An equally decentralized system is created to process land disputes in the country (ss.75-90). The Act requires that Land Tribunals be established at all levels of local government and that all land disputes be first processed through them before any resort can be made to ordinary courts. No other organ, except informal traditional authority mediators (s.89) will henceforth have jurisdiction over land disputes (s.98). Thus the Act has opted for a process that is both localized and free from the formalities associated with judicial proceedings.

The Local Government Act, 1997 gives effect to the devolution of functions, powers, and services to all levels of Local Government to enhance good governance and democratic participation in and control of decision-making by the people. The law also provides revenue, political and administrative set up of Local Governments as well as the election of Local Councils.

The system of Local Government in Uganda is based on the District as a Unit under which there are lower Local Governments and Administrative Unit Councils. Elected Local Government Councils which are accountable to the people are made up of persons directly elected to represent electoral areas, persons with disabilities, the youth and women councilors forming one third of the council.

The Local Government Council is the highest political authority in its area of jurisdiction. The councils are corporate bodies having both legislative and executive powers. They have powers to
make local laws and enforce implementation. On the other hand Administrative Unit Councils serve as political units to advice on planning and implementation of services. They assist in the resolution of disputes, monitor the delivery of services and assist in the maintenance of law, order and security.

The powers which are assigned to the Local Governments include powers of making local policy and regulating the delivery of services; formulation of development plans based on locally determined priorities; receive, raise, manage and allocate revenue through approval and execution of own budgets; alter or create new boundaries; appoint statutory commissions, boards and committees for personnel, land, procurement and accountability; as well as establish or abolish offices in Public Service of a District or Urban Council.

Local councils are responsible for local policy matters, resolving local conflicts and providing orderly leadership and democratic practices at the grass roots level in their level and in their respective areas. The system has facilitated mass participation in government affairs and awakened the rural population to their rights of citizenship and obligations particularly regarding involvement in development programmes and projects in their areas.

Relevance to IFC Performance Standards

The IFC Performance Standards (1) mandates the developer to prepare a public consultation & Disclosure Strategy and implementation of adequate procedure for engagement with affected communities. The following provisions of the fifth Performance Standard (PS5) “Land Acquisition and Involuntary Resettlement” are identified as being of particular relevance:

(i) The Project is to “consult with and facilitate the informed participation of affected persons in decision-making processes related to resettlement. Consultation will continue during the implementation, monitoring, and evaluation”,

(ii) The Project is expected to “establish a grievance mechanism consistent with Performance Standards to receive and address specific concerns about compensation and relocation that are raised by displaced persons including a recourse mechanism designed to resolve disputes in an impartial manner”,

(iii) The Project is expected to “carry out a census with appropriate socio-economic baseline data to identify the persons who will be displaced by the project, to determine who will be eligible for compensation and assistance, and to discourage inflow of people who are ineligible for these benefits. In the absence of host government procedures, the client will establish a cut-off date for eligibility. Information regarding the cut-off date will be well documented and disseminated throughout the project area”.

Involuntary Resettlement Safeguard published by the Asian Development Bank (ADB) (2006) also explains the extent of Public Consultation. It says that “ADB promotes extensive consultation processes. This is desirable, but there is a need to appropriately distinguish among

(i) The authority of the government regarding investment decisions,

(ii) ADB’s own responsibility to decide on financing or not, and
(iii) The need for public consultation to make sure that adverse impacts are identified and mitigated, and improvements are made that enhance the impact for vulnerable groups. ADB needs to have greater clarity concerning the definition of broad community support among APs for project interventions.

**Identification and description of stakeholders in the Project**

The hydro power projects need engagement of the general public for extensive consultation before making decisions. This is due to the varying levels of stake that the public will have on such projects. The basis for calming stake very often arises when the projects are founded on the principles of the use of common property. There are a large number of stakeholders having primary stake as well as secondary stake to the project. Therefore in preparing the public consultation and disclosure plan for NSHPP, this aspect also needs careful consideration.

During the planning phase the local Community members (those who have been affected and to be affected as well as non-affected), the local councilors (LC 3 and LC 1) of the project area; Local NGOs dealing with HIV/AIDS awareness; the district officials namely the DEO, UWA authorities, District Land Board official, and the central government officials such as DWD, UETCL, NEMA will play a significant role as each of the party will have one or more than one stake into the NSHPP.

A brief description of the project’s primary stakeholders (for the purpose of PCDP) such as the community members living in project surrounding area is given below.

**Project affected persons (PAPs)**

Issues pertaining to these persons will have to be resolved when the actual project implementations commences. For instance the survey to widen and lengthen the access roads has not been finalized yet.

Physically displaced PAP are those who require involuntary resettlement due to physical displacement of their dwellings or part of their dwelling in view of the land acquisition.

Economically displaced people are defined here as people whose livelihoods are affected by the project land acquisition to such an extent that, even if they are not physically displaced, they will have to move to regain similar economic opportunities.

There are 20 PAPS specially targeted in the Livelihood Improvement Framework. These PAPs have been identified based on the criteria that they were significantly affected due to economic displacement in view of the extent of the land acquisition. They will be separately targeted in providing assistance to the PAPS.

**Indirect PAPS**

During construction, some areas may have to be temporarily occupied by the contractors in charge of construction. Owners and occupants will be compensated against the loss of crops if any, and will receive a rent from the contractors for temporary occupation. There will be no transfer of rights in this case. Damaged crops will be compensated for, as required.

The issues pertaining to the land and structures will be taken up during the process of RAP preparation. People whose crops and others structures will be impacted by the project will have
to be engaged in extensive discussions and it had been agreed that based on the valuation to be undertaken by the accepted valuer, compensation would be computed and that such compensation, once agreed upon, could be paid to individuals.

The necessity to use local languages, less written communication in English, communication via village leaders are more suitable strategies. The formal communication in English, structured meeting, circulation of the minutes of the meetings etc. are very much suited to when dealing with the stakeholders such as KML and the state organizations.

The local community members, NGOS and Local Societies

The project will have to liaise with various local institutions and the local community during the construction and operational phases of the project. The project affected persons (indirect or direct) may have their own grievances that need to be resolved by the project management. Other institutions, local community members or NGOs and local societies (sports) etc. will interact with the contractor or the developer of the project, for various other purposes (request for financial contribution for common activities, request for implementing the community development action plan; request for employment opportunities etc.).

The categories of such stakeholders (which are not in the primary stakeholder category) also need to be engaged through various acceptable means for the sensitive nature of the relationships. The matrix below summarizes the process of community engagement with different types of project stakeholders.

Public Consultations and Disclosure

Table (1) Consultation Matrix:

<table>
<thead>
<tr>
<th>Stakeholder (SH) to be consulted with</th>
<th>Level of relative importance</th>
<th>Type of communication</th>
<th>Critical periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project affected Persons as noted in the RAP report</td>
<td>High Priority/Primary SH due to land acquisition, disclosure and compensation payment; issue arising from the payment of compensation</td>
<td>Consultative meetings; household level decisions; property valuation; communication through the grievance committee</td>
<td>During Planning &amp; construction periods (Until and after the payment of compensation)</td>
</tr>
<tr>
<td>Other Vulnerable groups such as those who will be affected by project’s construction work and access road development</td>
<td>High Priority (Primary SH, they being directly affected by project’s construction phase)</td>
<td>Consultative meetings; household to communication; Announcements; Prior</td>
<td>During Planning &amp; construction periods (Until the payment of compensation)</td>
</tr>
<tr>
<td>Local communities</td>
<td>Priority (primary (SH) due to Awareness creation,</td>
<td></td>
<td>During Planning &amp;</td>
</tr>
</tbody>
</table>
(School children, pedestrians, vendors etc.) to being affected by construction of project’s associated structures, access roads, safety concerns for pedestrians/children along access roads, community discussions communication via media; traffic signs; construction periods (de-mobilisation phase)

| Government agencies such as NEMA, DWD & ERA, DEO, DLB, URDA etc. | Priority (Primary SH) due to being statutory agencies imposing on SEI compliances | Formal communication, Consultative meetings (submission of ESIA, RAP, En. Audit Inspection Reports, Progress Reports). Important to disclose financial information pertaining to the environmental, health and safety mitigation action as part of environmental reporting. | All stages of the project |
| Local councillors (LC1, 2, 3, 5) | Secondary SH being project needs certain approvals from them. LC (1) and LC3) are important institutions to deal with local level issues. LC (5) institution is important in view of its capability to harness political will for the project. | Consultative Meetings; information sharing | All stages of the project |
| General public | Tertiary SH, they being(potential workers, those who seek employment & job opportunities, other benefits such as , electricity | One to one discussions, paper advertisements; notices | Prior to construction activities and during O&M phase |

**Forms of consultation and disclosure during the initial stage of the NSHPP**

During the planning stage of NSHPP, the process of public consultations started during project scoping phase and during the impact assessment and RAP studies. The aim of public hearing was to provide an opportunity to the stakeholders to present any objections and to allow dialogue and to resolve such issues in an amicable manner by involving parties.
The constructive dialogue with the community will be an on-going activity during all phases of the project in view of the amount of their involvement (as a party to share the land lease, as a party to share water use, and as a party to share the risks involved in the project implementation. The management should be aware of the community needs and should provide opportunity training and empowerment for the representatives to attend such meetings and to implement decisions.

**Forms of consultation and disclosure during the SEIA**

SEIA is a process in which public consultation and disclosure is made an important part of the project’s planning stage. Since the time NEMA was consulted on the Terms of Reference for the carrying out of the Social and Environmental Impact Assessment during until its acceptance by NEMA there had been community consultation and public disclosure as part of the project planning.

Community consultation at an early stage of the Environmental Management Process can be adopted to inform stakeholders of the proposed facility and provide them with an opportunity to raise and incorporate potential concerns. Community consultations can be undertaken involving the main stakeholders and in particular, the community members in affected villages at which meetings project has to disclose the likely impacts and solicited their views in order to adopt required mitigation actions. Consultations during the SEIA process are mainly through consultative meetings through structured and through questionnaires.

The stakeholders consulted included district officials namely; District Planners, District Environmental Officer, District Community Development Officers, Sub County Chiefs, LC III Chairpersons, LC I Chairpersons of affected Villages, Chief administrative Officer of the District, All community members of the affected villages and the relevant stakeholders such as water users, road users, the NGOs etc. can be involved in consultation and the disclosure process. In terms of disclosure, copies of SEIA Report will be circulated among the key stakeholders in the District and solicited feedback and comments by NEMA, before preparing the conditions of approval.

The conditions of approval to be issued by NEMA require both the developer and the contractors to continue the process of consultation during the construction phase. Issues that may arise during the construction phase have been explained and the need for consultation for resolving such issues will be an on-going part of the project. The project will have to ensure that the Developer as well as the Contractor through the site level management empowers the staff to continue the consultation process with the community including the public officials, district official, in order to resolve the issues that may arise during construction.

**Forms of consultation and disclosure during implementation of RAP**

Consultation and disclosure will also an important element of planning during the process of preparing the Resettlement Action Plan (RAP). RAP will be prepared after careful consideration of the land survey and the amount of land that will be required by the project for its various project related activities. Project affected persons will be identified and their views will be obtained during the valuation process. The valuation process will entail valuing crops that exists.
in the homesteads which valued in the presence of those farmers and those whose kiosks structures and houses will be affected

RAP Recommendations are made after careful considerations of the views expressed by the affected persons with their consent. The valuation process took place several months back, a little over one year. Under existing law, a revaluation will be required in the case when the time for payment of compensation exceeds over 06 months from the time of valuation of the crops.

After the preparation of the RAP and when NEMA approved its implementation, disclosure of the amount received by each of the project affected persons was made in a public meeting. In order for all the PAPs to understand well the details of the compensation package, meetings will have to be conducted in local Languages.

Forms of consultation and disclosure in respect of following will be needed:

- Consultative meetings, Community discussions and discussions with PAPs will be required to implement RAP in respect of land acquisition. (Though this process has been partly completed RAP and the NMA conditions thereto entail a detailed process.)

- Public notices, formal communication and disclosure meetings for the disclosure of the compensation rates were already concluded, but consultation will be still needed in the form of final payment of the agreed amounts. This needs to be managed in transparent manners as required by Uganda law.

- The post payment stage should be monitored to ensure that PAPs use the money to improve their livelihoods. Engagement of PAPs in monitoring of the post payment events call for skills and management structure introduced by the contractor/Developer.

- Consultation with District Land Board / District Environmental Office / DWD through formal meetings to address issues arising from the enforcement of the sub lease agreement (land conveyance, implementation of the provisions pertaining to management of infrastructure which fall within the land conveyed to the developer, any issues or likely issues pertaining to water abstraction from the river (subject to levels of water abstraction may rise with the divesting of the mining operations) etc.

- In addition there are other issues that need continuous engagement of the stakeholders in order to resolve the issues in an amicable manner.

Most of the consultation has already been completed in respect of the planning phases of the Rwimi Small Hydro Power Project. Following is a summary of the forms of consultation and disclosure:
## Table (2) Summary of forms of consultation and disclosure:

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Issues (likely)</th>
<th>Forms of Engagement</th>
<th>Responsibility/Time frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>District Land Board</td>
<td>Signing of the lease agreement and related negotiations, issues arising from the implementation of the sub lease agreement. Sharing of project information (construction maps and schedules etc.) Subsequent meetings to report progress, any breach of the lease agreement.</td>
<td>Developer will need to continue the negotiations until the lease agreement will be signed.</td>
<td></td>
</tr>
<tr>
<td>Engagement with listed PAPs</td>
<td>Payment of compensation; to comply with requirements to be stipulated in RAP conditions of approval by NEMA.</td>
<td>Meetings to monitor whether the PAPs use the money for livelihood improvements. Spouses to be encouraged to consult with each other on how to use compensation money received.</td>
<td>Developer or any consultant who will represent the developer.</td>
</tr>
<tr>
<td>Engagement with PAPS entitled for Livelihood Improvement Framework (LIF)</td>
<td>Provide livelihood security assistance over a period of time until their forgone income levels is restored.</td>
<td>Through the Grievance Committee and through the regular monitoring of the indicators identified in the LIF.</td>
<td>Developer or any consultant who will represent the developer.</td>
</tr>
<tr>
<td>Engagement with non-listed PAPS (whose lands and roads will be affected due to access road widening and construction.)</td>
<td>Payment of compensation; to comply with requirements as stipulated in RAP conditions of approval by NEMA.</td>
<td>Mediate through the Grievance Committee to resolve any issues.</td>
<td>Developer and the contractor during construction work is on going.</td>
</tr>
<tr>
<td>Engagement of the three HHs</td>
<td>Payment of compensation after</td>
<td>Mediate through the Grievance Committee to resolve any issues.</td>
<td>Developer and the contractor during construction work is on going.</td>
</tr>
</tbody>
</table>
who live on the left side of the river (in Kaborole District) whose agricultural land will be impacted due to inundation of the weir area.

<table>
<thead>
<tr>
<th>Engagement LCs School teachers in creating awareness of the construction related risks pertaining to traffic, accidents etc.</th>
<th>Issue of Traffic, and construction related activities and how they will have an impact on the school children in the area</th>
<th>There are a few secondary and primary schools in the project’s periphery. It is best that children be educated together with their teachers</th>
<th>The EPC Contractor will be able to arrange the awareness meetings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engagement of women in creating health and safety awareness</td>
<td>Risks encountered by women and non-school going children while transporting water using access roads and HIV related issues</td>
<td>A large number of women will run the risk of meeting with accidents while they use the construction site area for accessing to water extraction points,</td>
<td>Same as above</td>
</tr>
<tr>
<td>Engagement of local community members for the development of Community Development Action Plan (CDAP)</td>
<td>Various community project concepts to be agreed upon. (Tree planting programmes Repairing the bridges, deep wells) Preparation of a realistic CDAP based on the resources made available for such purpose is now a necessity.</td>
<td>Developer to initiate consultative meetings with the local and district officials, local community and to priorities the actions for CADP. Disclosure of resources that will be made available for the implementation of CADP. Disclosure should be done in the LC Notice Boards Formal meeting to share of the final CDAP with the community</td>
<td>Developer or any consultant who will represent the developer</td>
</tr>
<tr>
<td>Engagement of Local Councilors, District officials, and the community members during the implementation of the Community Development Action Plan (CDAP)</td>
<td>Issues arising in the implementation of Community Development Action Plan (CDAP), namely resource contribution, community participation; post project maintenance</td>
<td>Disclosure of the schedule of the activities in the CDAP and the available resources. (Should be done in the LC Notice Boards) Mobilizing Community participation through Community discussions.</td>
<td>The community Development action Plan has to provide specific details as to how the meetings could be scheduled and the cost etc.</td>
</tr>
<tr>
<td>Engagement of Local Councilors, District officials, Official of NGOs and government officials such as officials from URDA, ERA and DWD, Police</td>
<td>Mediate through the Local Council for the resource utilization and post project infrastructure maintenance. (Signing of a MOU etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharing of river water resources; construction related issues such as road closures, road excavation, transmission line improvements etc.</td>
<td>Sharing of construction plans in advance; Meeting with Local councilors/ police to prepare joint traffic management programmes if the construction work disturbs traffic. (Disclosure should be done in the LC Notice Boards)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contractor with the assistance of the project staff engaged by the Developer (During the construction phase).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Institutional and capacity development needs of implementing the public consultation and disclosure strategy:

Continuously engaging the institutions (such as NEMA, DWD, the District official and the Local council) during the implementation of the SEIA recommendations now partly fall within the construction phase. It is essential to maintain a high level of transparency in the dealings with the institutions such as NEMA and ERA. It is also important to deal with the employees in a transparent manner. What is important when dealing with those stakeholders has been that there should be a mechanism to engage individual institutions depending on their importance to the work of the project and ensure that required information is disclose and discussed until issues will be amicably resolved. This can be achieved:

1. By internally agreeing on the amount of information that should be disclosed to the stakeholder (Policy with regard to information disclosure) Example is if a death is occurred of a worker while at work, or any injuries are sustained while at work, the amount of compensation to be paid to such a person or family members of such a peons should be agreed upon and should be disclosed rather than it been kept between individuals.

2. Regular meetings with the representatives of those institutions.

3. Arranging site visits for them

4. On time submission of progress monitoring reports

5. The disclosure of financial information can be assured by submission of information based on the reporting formats introduced specially by ERA.

6. By having a proper data collection method to collect information both financial and physical progress enabling the submission of information to these stakeholders.

7. By improving the capacity of the senior project management in communication with the stakeholders (Reply to written communication)

The developer and the contractor can share the construction schedules; survey maps; any site specific safety and emergency evacuation plans and traffic management plans etc., in addition to the reports that have already been shared with them (RAP, SEIA etc.).

Dealing with the PAPs and the local community members

The project will have to liaise with various local institutions and the local community during the construction and operational phases of the project. The project affected persons (indirect or direct) may have their own grievances that need to be resolved by the project management. Other institutions, local community members or NGOS and local societies (sports) etc. will interact with the Contractor or the developer of the project, for various other purposes (request for contribution, request for implementing the community development action plan; request for
jobs and employment opportunities). Letters may be received by the project management in such cases.

Although it appears that the project has no obligatory requirement to deal with such requests, it is appropriate for the project management to engage with those who make such requests for the development of healthy relationships. Following steps are recommended:

1. All receipts of request letters to be acknowledged
2. They should be kept in a file of records
3. Where possible action should be instituted to respond to the requests depending on the importance of the requests
4. The request for employment opportunities with the project can be used to prepare a waiting list enabling the contractor to advice the local labor suppliers to include the names from the waiting lists.
5. Any requests on matters of awareness creation on HIV/AIDS, malaria and other social issues should be prioritized and should be included into the project’s CSR activities.
6. Develop a portfolio of activities under the corporate social responsibility (CSR)
7. Make aware the people the actions taken by the developer/contractor wherever possible using data and information.
8. Display all the site maps, alternative roads and other service providing centers for the local community members to understand well so that queries based on such needs will be minimized. These could be displayed in the site community office (Public access space office) and LC (3) Chairman’s office in addition to stores and the project office.

Grievance Management

There will be a necessity to resolve community conflicts swiftly in order to expedite the project’s planning and construction phase and for the smooth eventual operational activities. Therefore a grievance redressing mechanism is essential for RSHPP. This procedure will address this need in detail. The objectives of the grievance process as explained in the subsequent chapter of these guidelines will be as follows:

(i) Provide affected people with avenues for making a complaint or resolving any dispute that may arise during the course of land and asset acquisition, including during the process of moving homes;
(ii) Ensure that appropriate and mutually acceptable corrective actions are identified and implemented to address complaints;
(iii) Verify that complaints are satisfied with outcomes of corrective actions;
(iv) Avoid the need to resort to judicial proceedings.
The procedure outlined in the PCDP for resolving community grievances will not replace the existing legal process in Uganda rather it seeks to resolve issues quickly so as to expedite receipt of entitlements and smooth resettlement without resorting to expensive and time-consuming legal action, as well as any other community issuers that may arise during the construction and even the operational phases of the project.

Grievance management is an important step in community engagement. There had been and will be community grievances throughout the project’s various development stages. It is expected that all such grievances be amicably resolved if the developer is to abide by the global and country specific Social Safeguard guidelines. In practice, in similar compensation and resettlement activities, many grievances arise from misunderstandings of the Project policy, or result from conflicts between neighbors, which can usually be solved through adequate mediation using customary rules or local administration at the lowest level. Most grievances can be settled with additional explanation efforts and some mediation using customary dispute settlement mechanisms.

The purpose of Grievance management shall be to provide opportunity for the aggrieved parties to resolve issues through arbitration and negotiation based on transparent and fair hearing. It will allow the parties in the dispute to arrive at a win–win solution. Final outcome thus be that the extra judicial systems will work smoothly and that number of disputes seeking interventions at the country judiciary will be made minimal. The functioning a proper grievance management mechanism is a requirement in view of the above.

The Livelihood Improvement Framework (Given below) requires that project to support those PAPS whose livelihoods have been significantly impacted due to acquisition of the agricultural land depriving them temporarily of income they others should have received. In this instance, The LIF has identified specific interventions which have been targeted to at least 20 PAPS. In managing grievances Grievance Management Committee will pay special attention to ensure that these PAPs will be specially targeted when LIF is implemented and they will not be excluded in the assistance programme over time.

Overall management of grievances is the responsibility of the developer or/and the contractor. The Project, thus, will put in place an amicable, extra-judicial mechanism for managing grievances and disputes based on explanation and mediation by third parties. Procedures relevant to this amicable mechanism are detailed below. It will include three different levels:

- Registration by project of the complaint, grievance or dispute;
- Processing by project of the grievance or dispute until closure is established based on evidence that acceptable action was taken; and
- In the event where the complainant is not satisfied with action taken by project as a result of the complaint, an amicable mediation can be triggered involving a mediation committee independent from the Project.
- Provide the status of LIF from time to time to the site project management and ensure that all the 20 PAPS will not be excluded from the targeted assistance programme as provided in the LIF.
Managing grievances needs a clear and transparent procedure well instituted within the management structure of the project. At minimum, such a procedure should consist of the following steps:

1. to receive the grievances,
2. to acknowledgement the receipt,
3. investigation and resolution,
4. Closeout and follow-up.

The need for a Grievance Register

There should be a Grievance Register which would record all grievances, complaints and issues the stakeholders would wish to bring to the attention of the Developer or the Contractor. It should be kept at a place where all will have easy access; preferably this should be placed at the office (allocated for the Grievance Committee).

It should contain the date of the entry, name and contact details of the complainant; nature of grievance, Signature (on one side of the Register) and actions taken to address or reasons the grievance was not acted on, the signature of the GC and Complainant as to how the grievance was closed and date (on the other side of the Register).

Recording of the complaints into the GR:

Following steps to be followed when the complaints will be received: Receipt of complaint (a verbal or in written) will be received by the Site Welfare Officer or any other officer (a member of the Grievance committee).

1. The complainant can obtain the assistance from a member of the grievance committee or the Site welfare officer to lodge such an entry in to the Grievance Register.
2. The Officer Responsible or the GC member, who is at present, will communicate with the complaint in a language acceptable to the complainant.
3. Since the site working is carried out in English Language, the Site welfare officer or the member of the Grievance committee may lodge the entry in English language
4. After lodging the complaint in the register, the officer recorded such complain shall read to the complaint what is recorded and sign the entry made into the Grievance Register

Formation of a Grievance Committee

In Uganda at the local level, the village leaders and the LC (1) play a key role in managing disputes over land. The Parish level committees formed for the management of land disputes is the lowest level of accepted forms of reconciliation board at which the complainants can have access to for justice if issues will not be resolved at the village level. However in order to strengthen the village level reconciliation of disputes specially over the issues arising from the project related matters, appointing of a Grievance Committee has been considered a viable option according to the accepted practices.
It is expected that grievances depending on the complexity and nature can be resolved either at the site level, at the grievance committee level or at the project developer’s top management level or at the judiciary level. It means that if a complainant is not satisfied with the site level solution offered by the site manager or the project’s administration manager, the matter can be taken up by the Grievance Committee (GC).

The constituency of the grievance committee and its role is explained in the following section. This GC is to be considered the vital body which prevents any grievances to be heard at higher levels. In parallel and where necessary, the GC holds meetings or other appropriate communication with the complainant, with the aim of reducing any tensions and preventing them from escalating. During closeout, the GC seeks to confirm that its actions have satisfied the complainant. During follow-up, the GC, with the assistance of the Site Construction Manager investigates the causes of grievances, where necessary, to ensure that the grievance does not recur.

The composition of Grievance Committee is depicted below.

**Members of Grievance Committee**

1. Representative from each Village (four)  
2. Representative of Women (three)  
3. Representative of the Division (Community Development Officer at division level) (one)  
4. Representative from the developer (one)  
5. Representative from the contractor (one)

The committee members for the GC were selected by vote given by all the project affected persons. Initially one member was nominated for each village.

- Kambala Daniel  
- Kisembo Mulebelo  
- Muhindo Jasson  
- Thembo James  
- Thomas Mughanda  
- Kanyoriyo Yowas  
- Kifanjiwa Mary  
- Easter Muttalla  
- Yowasi Nyamaithiba

The committee will be paid a seating allowance to be effective from first official sitting when the construction works commences. Members of the Grievance will be provided training on conflict resolution and given more exposure on procedures of managing grievances.
Performance Indicators in respect of the functioning of the Grievance Committee

Key Intervention:

1. Setting up of a Functional Grievance Committee (as per the Public Consultation & disclosure strategy under section 7.1)

Indicators:

   I. GC members convene their regular meetings as per the guidelines in the Public Consultation & disclosure Strategy

   Means of Verification:

   Minutes of the Grievance Committee Meeting

   Records indicating payment of seating allowance to the members of the GC

   II. GC members demonstrate a sound awareness and knowledge of the procedures laid down in the LIF (as well as the procedure to be adopted by the project management in public consultation and disclosure strategy)

   Means of verification:

   Minutes of the awareness meeting targeting the GC members of the key documents / procedures arranged by the developer

   III. Number of grievances recorded in the Grievance Register (which are brought to the attention of the GC by the LIF beneficiaries) resolved by the GC.

   Means of verification:

   Records in the Grievance Register

   Type of assistance received by the PAPs in the LIF

   Resolutions made by the GC in connection with the Grievances.

2. Support the PAPs numbering 20 (A list is attached) whose livelihoods have been affected due to land takeover in excess of 0.300 to 0.500 acres

   a. # of PAPs whose family members receive temporary job opportunities in the project (during construction phase)

   Means of verification:

   Labour engagement records indicating the relationship of the person engaged to the PAP households.
b. # of PAPs receiving direct assistance from the project in a given agricultural season and the type of assistance

Means of verification:

Records that indicate distribution of seeds/seedlings kept by the site welfare officer

3. Compensate the families on the left side of the Dam whose agricultural land will be affected during Dam Construction and during the impounding of the reservoir.

a. Amount of compensation and assistance earmarked from LIF to be received by the three families as per the recommendations of the grievance Committee;

Means of verification:

Records indicating the computation of payments,

GC resolutions and payment vouchers
7.2 Employment Policy and Administration Procedures

1. Purpose of the policy and procedures

Rwimi Small hydro Power project will require a sizable labor force (at least 100-125) depending on the nature of the work involved in a given day) and several employees on a permanent pay role (non worker employee category) to manage the routine administrative, supervisory and technical functions. In addition the developer (Eco Power Holdings Ltd) too will engage staff both Sri Lanka and Ugandan nationals (depending on the specialty and the services that will be needed) in order to carry out the administrative and supervisory functions. Drawing from the relevant statutory laws and regulation, this document outlines the basic principles that should be followed by the contractors and sub-contractor in developing and maintaining working relationship, working conditions and terms of employment, including the entitlements such as wages, any other benefits; hours of work, overtime arrangements, leave for illnesses of all the employees who are on a service contract with the contractor or the sub-contractors. It also outlines the minimum age of employment, the projects preference for employing local workers, contributions to the workers National Social Security Fund and compliance to Ugandan labor legislation.

2. Legal, Regulatory and Policy context

The constitution of Republic of Uganda recognizes the importance of good working environment of all workers and their rights. Article 34(4) constitution of Republic of Uganda (as amended) not only looks at the labor force but also children who are supposed to be protected from social or economic exploitation.

The article pronounces itself that children are not supposed to do work that is likely to be hazardous or interfere with their education, health physical mental spiritual or moral development. Article 39 gives workers a right to a clean and healthy environment while article 40(1) empowers Parliament to enact laws to provide for the rights of persons to work under satisfactory, safe and healthy conditions.

Statutory Acts and Ordinances such as the Employment Act of 2006 and Occupational Safety and Health Act 2006 and The Labor Disputes (Arbitration and Settlement) Law stipulate working conditions for the employment of Ugandan Nationals and provides for the procedure involved in resolving labor disputes.

Among the key labor laws in Uganda are, the Workers Compensation Act 2000, the Minimum Wages Act 2000, the Employment Act 2006, the Labor Union Arbitration and Settlement Act 2006 and the Occupational Safety Act 2006.

Minimum Wages Act 2000, though entrenched in law is however hardly enforced. The Employment Act 2006, outlines the conditions of employment including, contract of service, termination of contract, termination notices, and protection of wages, hours of work, rest and holidays, employment of women, employment of children and care of employees.
Likewise, the Workers Compensation Act 2000 entitles employees to automatic compensation for any personal injury from an accident arising out and in the course of his employment even if the injury results from the employee’s negligence. The Act further details that, for an injury that leads to death, the compensation should be equivalent to an employer’s monthly pay multiplied by 60 months.

**Relevance to IFC Performance Standards:**

In terms of international labor related policies, the Performance Standard (2) of the International Finance Corporation (IFC) stipulates the need for complying with proper labor and working conditions. It recognizes that pursuit of economic growth through employment creation and income generation there should be balanced protection for basic rights of workers. The section (3) of the requirements sets out that the client to adopt a human resources policy appropriate to its size and workforce and its approach to manage employees consistent with the requirements of this Performance Standard.

**3. Policy on Recruitment**

Recruitment of the staff is mainly for the exclusive purpose of carrying out the duties of the Rwimi Small Hydro Power Project. Depending on the man power needs of the project, the civil contractor/s shall take appropriate decisions in consultation with the site based Project Manager/s as to the level and type of recruitment, duration of the recruitment, level of remuneration and the mode of recruitment.

In recruiting the Ugandan nationals at the construction site, the contractor may seek (if necessary) the services of reputed vendors which shall supply such labor in keeping with the Ugandan labor regulations and the provision of the Employment Act of 2006.

Recruitment and engagement of expatriate (Non Ugandan Staff) employees will be in keeping with the accepted guidelines provided by the Government of Uganda and will comply with section (37), (38) and (39) of the Employment Act 2006.

The Resettlement Action Plan (RAP) provides for employment of members from the project affected persons (PAPs), wherever possible in order to support their disturbed livelihoods. This would provide a broad guiding principle in recruiting workers into the project.

**4. Non Discriminations and Equal Opportunity**

All the staff recruitment decisions will be based on the principles of equal opportunity and fair treatment. In keeping with same, opportunity is provided to the Ugandan Nationals (Especially those living in the neighborhood of the project area) subject to inherent requirements of particular jobs in terms of the skills to carry out such jobs. The company shall give due recognition to section (6) of the Employment Act, 2006 of Uganda which provides for Non-Discrimination in employment.

It is the policy of the company to recruit the workforce from the Ugandan nationals depending on their level of skills and their ability to contribute to the successful implementation of the projects various tasks and assignments.
All recruitments are competitive basis and should meet the minimum qualifications/experience relevant to the job type for which the incumbent person is engaged.

When recruitments are made of the citizens of Uganda, the Ugandan scheme of recruitments will be followed. In the absence of such a scheme, the recruitment will be made through employment contractors or vendors, who will provide required number of persons having the required skills to the respective jobs.

HR strategy of training of local employees and how Long term HR policy and strategy is to ensure that skills of the national staff be improved allowing them to occupy the management and technical positions in the respective countries. However Eco Power believes that national staff (in Uganda) right now needs more management exposure and in depth technical competence and hence they should be trained under the Sri Lankan engineers and Technicians for at least two to three years before they could be given responsibilities. As Eco Power is currently employing almost 30 plant operators and 25 assistants who will be initially released for plant operations on roll out basis as and when required. More power house operators are being trained in the 10 plants in Sri Lanka to avoid any bottle neck in overseas plant management in this manner during the first two to three years.

Eco Power will ensure that more number of Ugandans will serve as engineers and plant supervisors as in the case of Ishasha. Eco Power will work out training plans for the Ugandan Plant Managers when they will be ready to take up such training after initial exposure to the project operations after the commencement of its operations. Norway Funded hydro power training programme is targeted for such training for Uganda staff and will mutually work out how this can be implemented.

5. Policy of the Recruitment of Child Labor *

The term “child labor” is widely referred to in the Constitution, the Children’s Act, the Employment Act and the related Labor Unions Act and Labor Disputes Act, respectively as well as in the Employment Decree No. 4 of 1975 of Uganda

Under the Employment Decree, children under 18 years of age are prohibited from employment in dangerous and hazardous jobs. The decree sets out various wide-ranging and vague exceptions. For instance, children younger than 17 years are not supposed to work at night, while those below 16 years are not allowed to work underground. A child below 12 years may only be employed on light work prescribed by the Minister.

In general, indicators of child labor include the following:

- A child under 18 years;
- Having too much responsibility and maintaining a premature adult life;
- Working for long hours;
- Denying the right to rest, play and education;
- Exposure to risks at places of work causing harm to physical ability and mental development; and
- Working for low or no pay.

In summary, child labor in Uganda can be defined as a form of work which deprives a child access to education, rest and play, and affects his or her psychological, physical and mental
development. The Company will not employ children in a manner that is economically exploitative, or is likely to be hazardous or to interfere with Child’s Education or to be harmful to the child’s health or physical, mental spiritual, moral or social development.

Where Uganda National Law has provisions for the employment of minors, the company will follow those laws applicable. However children under the age of 18 years will not be employed in dangerous work

6. Policy on engagement of casual employees

Company shall, depending on the urgency of the work, engage labor for seasonal activities on casual basis, in addition to the normal labor force engaged subject to conditions laid down by the Ugandan labor laws and regulations.

Where labor is supplied on daily basis by a vendor, labor contractor/sub-contractor, a labor request form needs to be provided to the labor supplying contractor well in advance, (at least one day ahead) signed by the Site Project Manager or the Site Administration Manager based on the urgency and the number of casual employee to be engaged as forecast by the supervisory staff.

A muster of the labor is held and each supervising officer will detail the required number of labor to respective work site. Each supervising officer will provide the signed labor engagement sheet to the Site Administration Manager on the same day for purpose of calculation of wages and the contract fee.

7. Policy of wages and statutory contributions

The company shall pay the Ugandan Nationals, wages not less than the minimum wages as stipulated by the labor laws of Uganda and any other existing statutory requirements that stipulate labor wages depending on the specialty of the services rendered by the workers. This rate is considered reasonable if a daily paid unskilled employee receives daily wages to the tune of 4,000-5,000/= UGX.

In case of labor engaged on long term basis on a pay-role agreed upon between the employee and the vendor, the statutory contributions (the NSSF contributions) shall be paid by the contractor who engages the non-employee workers as per the relevant laws such as NSSF Act. The contractor shall also ensure that its sub-contractors comply with such requirements.

All Sri Lankan national to be paid salaries and wages as agreed upon with the individual worker.

8. Policy on Attendance at Work:

All employees (irrespective of they belong to non-employee worker category or casual employee category who are on pay role) are expected to be present at work on a regular basis. Excessive absenteeism from work will result in appropriate disciplinary action. Irrespective of the category, all employees are required to sign a daily attendance or roll call or a muster.

In case an employee wishes to keep away from work for legitimate purpose (sick, personal reason) the procedure that applies to be followed. The person concerned should inform verbally
or in writing to his supervisor. Failure to do so will result in him being treated as a person being on unauthorized leave and such days will be treated as no pay, in addition to any other disciplinary action taken for such lapses.

9. Policy on Working Hours

All employees (including casual –non employee workers) are required to work 08 hours per day in addition to 01 hour interval for lunch. Working Hours will be 0800 hrs. to 1700 hrs. with lunch break from 1300 hrs. to 1400hrs. Depending on the urgency of the work, the Site Project Manager has the authority to request workers to work beyond the working hours.

In such case, payment in lieu of additional time worked will computed on the basis of the accepted principles. (In most cases this will be at the rate of one and half hours in the working days and on Sundays it will be at the rate of two hours for each working hour)

10. Policy on Authorized Leave

All the employees holding a letter of contract issued by the contractor are entitled to a quota of annual leave (disaggregated for Sick Leave and Vacation Leave) as stipulated in the letter of contract.

The leave entitlements of all the non-employee workers will be treated according to the terms and conditions agreed upon between the vendor and the contractors /sub-contractor.

Those employees who are on regular payroll are entitled to 1 1/2 days of earned leave per month which in all will be 18 days per the year. Such leave can be obtained with prior approval of the respective supervisor.

However if the employee falls sick and require leave, upon submission of a duly certified medical certificate /upon recommendation of a native/western doctor he/she is entitled to have sick leave not more than 24 days of a year. Any leave beyond this will be treated as no pay.

Policy on Maternity Leave

In terms of section (56) of the Employment Act, in case of female employees, the company shall provide sixty working days of maternity leave on full wages, of which four weeks shall follow the childbirth or miscarriage.

Policy on Leave other than authorized leave

Ugandan nationals are entitled to statutory holidays proclaimed by the government of Uganda. In case Ugandan nationals require working on such days, it can be so if the employees are willing to work on that day/s. Those who are working on holidays shall be paid overtime.

Sick Leave upon sustaining work related injuries

- Any employee who sustains injuries while at work will be entitled to full pay sick leave until he recovers and reports back to work up to a period of one month.
- He/She will be entitled for additional three months of half pay on the recommendation of the Government Medical Practitioner, if he still is unable to attend work.
However in such case the company has the discretion to negotiate with the employee to lay off on payment of adequate compensation for the injuries sustained.

**Leave to attend funeral**

- When a death occurs in an employee’s immediate family, all regular full time employees may take up to three (3) days off with pay to attend the funeral or make funeral arrangements.
- The pay for time off will be prorated for a part-time employee if the funeral occurs on a scheduled work day.
- The Company may require verification of the need for the leave.
- (Immediate family members are defined as an employee’s spouse, parents, children, grandparent, father-in-law, mother-in-law)

**Policy on Medical Care**

The Company ensures that all employees required migrating to Uganda to have adequate precautionary preventive medical care prescribed by immigration authorities. In keeping with same, all employees should receive vaccination against yellow fever prior to their departure.

They should be provided all medical assistance against Malaria and any other diseases considered to be spreading.

The employees will also be made aware of socially transmitted Diseases specially the incidence of HIV enabling the employees to conduct responsible behavior.

Notwithstanding the preventive medical treatments, the employees are treated for injuries caused while at work through the medical center or through other means. The company will arrange adequate health care facility and emergency health care with the health authorities in a close by health center or any other reputed health care center in the closest town.

Health services to be availed to all employees irrespective of the nationality, the category of employment, so long that the employee in question is injured while at work.

Company will have an equitable policy in providing treatment to all the employees irrespective of whether they are employment workers or non-employment workers.

**Policy on Occupational Health and Safety**

In keeping with section 91 of the Uganda’s Occupational Safety and Health Act and in keeping with the Occupational Health, Safety and Public Safety Guidelines prepared by the Client, the Company shall provide Personal Protective Equipment (PPE) to all employees who are working at workplaces which are likely to cause bodily injury (irrespective of the type of their engagement) in order to prevent any work related accidents.

**In the event of an injury while at work**

Irrespective of nationality and the nature of engagement any employee if injured while at work, will receive immediate attention of a Clinical Officer. Treatment should be arranged under the medical care of the qualified person who can handle such situations (Site Health & Welfare Officer).
Rwimi site is in close proximity to several health care centres in Kassese main Town. Therefore there is no necessity to maintain a fully equipped medical Centre at the site. But the project will maintain a medical Centre with basic facilities to attend to patients with emergency health issues & minor injuries due to accidents while at work, under the supervision of a qualified nurse. Any workers seeking outpatient treatment will be referred to the health care centers at the Kassese Town.

In case of person sustained injuries that are beyond be treated at the closest medical center, such persons will be admitted to an appropriate health care center for treatment. Company will bear expenses in connection with transportation, hospitalization and any medicine/injection that has to be purchased based on the prescriptions of the health care center.

**In the case of a death while at work**

It is the policy of the company to have zero accidents while implementing the construction activities of the project. However due to unforeseen circumstances, if a death occurs due to falling of debris or any other exigencies, the company will act in accordance with the legal provisions, regulatory procedures and policies of the government of Uganda.

Immediately after such an incident is brought to the notice of the Site Project Management, a proper police entry (record) will be made and the police will be kept informed. The dead body of the deceased will be handed to the police for investigations. The company will bear any related expenses in this connection and will corporate with the agencies that are empowered to investigate such accidents as per the national laws and regulations. All funeral expenses to be borne by the Company. In addition the family of the deceased will be paid full compensation. When compensation is computed, existing labor regulations will be followed. However, if the community representatives and the Local Council officials will be consulted in order to avoid any doubts as to how the compensation is computed and paid.

Compensation is paid to the next of kin if already identified by the employee or in any other case to the family member as suggested by the community representatives. In case of a death of a person whose dependent are still minors, the compensation is paid to a party who is recommended by the community representative on an agreement signed in the presence of community representative and local council officials.

The amount of daily or monthly remuneration, the nature of engagement, the time of service at the organization will also be considered in the event of computing the compensation.

**Policy on Sanitation and Health**

It is also the policy of the Company to provide all the employees safe drinking water, sanitation facilities and medical assistance when needed. Follow Occupational Health, Safety and Public Safety Guidelines.

**Grievance Policy**

It is the policy of the Company to ensure that grievances of all the employees are attended to promptly in a transparent manner and fairness to aggrieved party. All efforts are made to settle the grievances amicably; nevertheless the employees have to seek redress through a labor officer as per Section (12) of the Employment Act 2006. (Refer to the Grievance Redress Mechanism)

**Status of NSSF contribution:**
NSSF contributions are required in terms of the NSSF ACT. 1985 (Ch 222). Section (11 & 12) of the Act stipulates respectively payment of standard contribution by the employer, which stands at 15% of the total wages earned by the employee during the month and the standard contribution by the employee which stand at 5%, an amount deductible from the total wages earned by the employee.

Compulsory registration of employers and eligible employees have been defined in the Act (Section 7) Those who can be exempted from NSSF deductions are also provided in the schedule attached to the ACT.

Section (2) Staff Administration

Pre-requisites:

Categories staff positions: Follow guidelines below if applicable

1st Category of employment
Positions from among (Expatriates) namely; Site Construction Manager, Assistant Engineers, Site Administrative Manager, Site Safety Officer, Site Welfare Officer, Store Keeper, etc.

For purpose of staff administration

Ensure that the Site Administration Manager has:
- The copy of the employment contract, filed for each individual staff member?
- A register of the staff indicating their next of kin, home address and telephone numbers, bank account number, % of the local salary remitted to the bank account?
- Other records such as work permit, passport details, driving permit, details of air travel (Ticket to be expired etc.) and other entitlements

2nd category of employment:
Direct employment provided to the local nationals by main contractor or engaged direct by the contractor and will be recruited from within Uganda (Locals). This category of local staff deployed by the contractor may be:

Project Coordinator Uganda, Finance Staff; Site Welfare and Safety Officer; Site Environmental Officer; any others as the case may be .They should be recruited according to the country specific rules and regulations and that their employment contracts are to be governed by country rules and regulations

- They should have a proper letter of employment
- They should be paid commensurate salary as per the requirements stipulated by the local laws;
- They should be entitled for benefits as stipulated by country labor laws;
- They should be treated equally together with other categories of staff;

For purpose of staff administration:
- Ensure that who should have the contract copy?
- How much of that is relevant for the Site Administration Manager;
- What sections of their job description are relevant for the AM

Eco Power Holdings
• Ensure that their contact numbers and any other personnel details are with the Administration Manager
• Ensure that their visits are recorded appropriately

3rd category of employment:
Sub-Contractors of the project

This is the category of employment engaged under the sub contracts directly engaged by the contractor/sub-contractor for the specific work in order to complete what has been identified in the Construction schedule (local laws and regulations governing employment of staff.).

Such sub-contractors should be outsourced from within the local labor market. Only under exceptional circumstances that the project should outsource any sub-contractors from outside the local market.

For purpose of staff administration:

• Ensure that the copy of the head contract is kept with the Site Administration Manager and understand the terms and conditions which require for day to day management (Accommodation, safety gear, Food, medical and transport etc.)
• Ensure that the number of labor engaged is regularly tracked through proper personnel records.

Non Employment Workers
As per the section 17 of the PS (2) the “non-employee workers” refer to workers who are (1) directly contracted by the client, or contracted through contractors or other intermediaries and (2) performing work directly related to core functions essential to client’s services/products for a substantial duration.

Contractors and or subcontractors have the option to outsource workers for day to day employment on payment of wages on daily work basis. This is the category of employment which the contractor or the sub-contractor secures through external employment agencies or through individuals.

No direct labor engagement contract will be necessary with the individual employees. Employees are coordinated through appointed a representative arranged by a registered or reputed employment agency.

Engagements of the semi-skilled workers and unskilled workers who will work only on demand (when the work is available only) fall into this category. The labor supplying agency or the individual is responsible for the salaries, any other benefits to be received.

For purpose of staff administration:

• Ensure that the copy of the head contract signed with the labor supplying officer is with the Site Administration Manager. He should understand the terms and conditions of the head contracts for day to day management.
• Ensure that PPE such as safety gear and safe drinking water is provided to them.
• Verify whether they are entitled to food, medical and transport etc. (Follow the Occupational Health and Safety Guidelines in respect of these category of staff.)
- Ensure that the number of labor engaged is regularly tracked through a proper system of Attendance records, and that their salaries are paid on time.
- If any of the workers will be entitled to the contributions to NSSF etc. (by being a regular worker as per the labor law) such sum of contribution be deducted by the employment agent and duly transferred to the relevant authority. Site Administration Manager should ensure that the payments in respect of the NSSF have being duly made by the labor supplier.
- Ensure that the name, addresses, local contacts and if necessary medical and health reports, police reports are obtained for each of the persons if the need arises.
- Ensure that they are legal residents of the area and have the right to work. Ensure that they are not minors who fall into child labor category.
- Make sure that they are paid minimum wages as per country law.

The Site Administration Manager should put in place a system to screen them to see that they are free from any convictions that they are in good character.

For administrative purpose following needs to be fulfilled:
- Maintain a register of authorized persons (Vendors) who can engage casual labor.
- Procedure of engagement including:
  - Authorization of engagement. (The person requesting the casual employee should make a prior request from the Admin Manager - a labor engagement form can be introduced)
  - How to engage (By word of mouth or any formal methods)
  - How to decide the payment and what is the minimum payment for day
  - How to certify the attendance
  - What are the other benefits
  - What about accommodation and food
  - What about the medical care.
  - Requirement to maintain record of personal details including national identity details
  - Is there a registration of such persons in the nearest police?

- Prepare personnel register of all under each of the above category
  - Name
  - Age
  - Identity No.
  - Referee
  - Nature of work
  - Report to whom
  - Whether direct/contract/sub-contract/casual
  - Address
  - Start when
  - Left when
  - Still working (Yes/No)

3rd Category of Staff:
This is the category of staff engaged by other institutions but working for the project such as Representatives from abroad/Consultants. For purpose of staff administration:
1. The Site Administration Officer should have details about the next of kin in case of emergency, home telephone, travel details, contact details of the employers etc.

4th Category: Visiting staff
They are mainly Consultants who will be visiting on a regular basis to the site

For purpose of staff Administration
• The Site Administration Manager to have register at the accommodation for the visitor?
  This is to indicate; Date of visit, purpose, and number of days spent, telephone numbers, signature etc.
7.3 Occupational Health and Safety Management Plan

1. Introduction

This set of guidelines supplement the measures that have been stipulated in those documents and will serve as a broad set of compliances in keeping with country safety guidelines as well as construction industry safety best practices.

2. Legal and Policy Relevance

Uganda’s 1995 Constitution stipulates for the rights of workers, namely, the right to join trade unions; collective bargaining and representation; withdrawal of labour; and maternity and post-natal protection by employers. The ‘Employment Act of Uganda’ has provided for the rights of workers such as the right to rest, the entitlement to annual and sick leave amongst others. The Occupational Safety and Health Act address the occupational safety and health related issues for all workers in Uganda.

A ‘worker’ is defined in the Act as any person who performs work, regularly or temporarily for an employer. It covers all working environments and workplaces including all places were workers are found as a consequence of their work. Occupational Health & Safety Act of 2006 is explicit in its guidelines to the employers for the provision of Safety and Health Measures as follows:

“An employer who has at least twenty workers at a workplace shall –

a. Prepare, and as often as may be appropriate, revise a written statement of policy with respect to the safety and health of employees while at work;

b. Make arrangements for carrying out the statement of policy;

c. Bring the statement of policy and any revision of it to the notice of all the employees and

d. It shall be the duty of every employer to consult a safety representative in the making and sustenance of arrangements, which enable the employer and the workers to co-operate effectively in promoting the development of measures to ensure the safety and health of employees.”

Relevance to IFC Performance Standards:

Performance Standard 2 recognizes that the pursuit of economic growth through employment creation and income generation should be accompanied by protection of the fundamental rights of workers. For any business, the workforce is a valuable asset, and a sound worker-management relationship is a key ingredient in the sustainability of a company. Failure to establish and foster a sound worker-management relationship can undermine worker commitment and retention, and can jeopardize a project. Conversely, through a constructive worker-management relationship, and by treating the workers fairly and providing them with safe and healthy working conditions, clients may create tangible benefits, such as enhancement of the efficiency and productivity of their operations. The requirements set out in this Performance Standard have been in part guided by a number of international conventions and
instruments, including those of the International Labour Organization (ILO) and the United Nations (UN)

3. The purpose

The purpose of the Occupational, Health & Safety & Public Safety Guidelines is three fold namely:

- to identify the potential hazards associated with work related construction activities and
- to identify possible on-site conditions that may be unsafe to the public while the construction will be on going and subsequent operational stages and
- To provide safety and health guidelines to address those situations and to assist all concerned in complying with applicable standards as identified in this document or during subsequent site inspections.

The guidelines will be structured to reflect the above mentioned purposes:

Proactive to creating a healthy working atmosphere where proper health and safety of the workers as well as the public safety is ensured, following pre-requisites may be necessary:

- Occupational Health and Safety Planning & administration (personnel, organization, job responsibilities),
- Sensitization (safety meetings, health awareness, driver awareness, community awareness, handling of explosives)
- Safety Equipment (Personal Protective Equipment)
- Safety and Health infrastructure (first aid, sanitation, water and transport to work sites)
- Public Safety

Occupational Health and Safety Planning & Administration:

The ESMP has provided a flow chart that depicts key personal responsible for the occupational health, safety and public safety and their roles and responsibilities. In accordance with that, the contractors as well as the developer should be able to put in place a proper organizational structure (appointment of key personnel) to manage project’s health and safety needs. In terms of planning & administration following aspects need to be considered:

I. Engagement of necessary staff at all levels to deal with safety and health issues arising from the construction activities. The staff requirement is explained in the ESMP (organizational chart). There will be minimum at the staff level:

- Social and Environmental Compliance Manager (Site Project Manager can serve as this position)
- Site OHS Safety Assistant (To be engaged by the contractor);
- Site Environmental Officer (SEO);
II. Allocation of sufficient resource (funds and man power)

This deals with the requirement to have resources availed for the use of safety and health management. Funds needed for the purchase of safety equipment, for the swift transport of persons in the event of injuries to nearby health centers; and the engagement and maintenance of the personnel should be incorporated into project budget and should be availed.

III. Strengthen the institutional support mechanism to meet health and safety challenges of the project by providing training and capacity building, awareness and improving access to emergency health services. This includes among others:

   I. Conduct regular training programmes, carry out continuous safety monitoring.
   II. Lay down procedure for health and safety management (such as introducing regular meetings (safety meetings),
   III. Introducing of reporting formats (such as for the reporting of accidents, health reports etc.)
   IV. Institutionalizing of Health and Safety Monitoring Committee,
   V. Monthly progress review meetings (to address health and safety records) Grievance Committee;
   VI. Developing institutional links with the peripheral health centers enabling the health officials to attend to the workers in the event of injury or illnesses, providing training and awareness to the staff and the community on matters of health and safety concerns on a regular basis.

IV. Reflect the safety and health management requirements in the main project management documents such as the contractor agreement and the construction schedules.

V. Incorporate all the safety measures in the technical designs before the relevant structures will be constructed.

VI. Introducing of systems to reward and or penalize the contractor for their health and safety performance.

4. Organizing

In order to manage occupational health, safety and public safety standards it is essential that relevant procedures, systems and personnel are put in place both by the Developer and the Contractor. This is explained in the ESMP. Engaging required number of personnel in the correct position to ensure that plans are implemented monitored and duly reported. This has to be done
according to the ESMP recommendations and is the responsibility of both the contractor and the developer.

5. Sensitization and Safety Training:

Sensitization and training on the aspects of health and safety and enforcement on the use of PPE is very important to ensure proper occupational health and safety of the workers. Sensitization will be important at every level. Managerial level, supervisory level and work site level among the workers are essential to make them aware of compliance with required levels of safety.

Areas that will be important are managerial level sensitization of overall safety compliances as per the country and site related safety standards and worker sensitization on site specific safety compliances. Managerial level technical staff (technical supervisors/ foremen engineering assistants) as well as the site workers should receive sensitization and orientation on following subject matters

- Safety systems and procedures for construction sites of both establishment and client including OHS policy and safety committee
- Responsibilities, authority and accountabilities
- Accident prevention and control
- Accident reporting systems
- Fire prevention & control
- Personal Protective Equipment
- Construction safety
- Electrical safety
- Chemical safety
- Safety while working at height
- Occupational health and hygiene
- First aid
- Emergency preparedness plan
- Rescue and Evacuation procedure

5.1 Worker Sensitization

As per the OHS&PS guidelines all employees who work at a particular job site or task will have to be provided with on the job training in handling job and associated hazards. Employees should be informed of the following:

I. Job description / possible related health & safety hazards
II. Applicable safety standards pertaining to their job
III. On-site chain of command
IV. Health, Safety and Environment notices used in the site covering:
Environmental, Social Management & Monitoring Plan RSHHP

a. Potential fire hazards
b. Potential electrical hazards
c. Potential tool hazards
d. Required use of Personal Protective Equipment (PPE) and maintain and quality upkeep of such PPE
e. Procedures to follow in the event of an emergency

V. Conduct Safety meetings for the purpose of training. This needs to be arranged as and when required or whenever new employees arrive on the job site.

5.2 Safety Meetings

A tool box meeting (spending not more than 10 minutes) is essential before the work starts. All the supervisors should be advised to conduct toll box meetings and to brief the workers entrusted under the supervision to follow safety guidelines. Any short supply of safety equipment should be noticed and immediate action should be taken to supply them before the day’s work.

In addition weekly or fortnight safety meeting shall be held with the Contractor and each Subcontractor prior to initiating the scheduled activities in any given location. The topics and content for the Safety Meeting shall be prepared in advance by the Site Welfare and safety Officer and with inputs from the Subcontractors. The safety meeting shall review elements in the site OHS&PS Plan and the procedures for working on-site, and address the impacts of changes to the site conditions. Topics to be addressed include:

- Line of authority and communication;
- Use and maintenance of Personal Protection Equipment (PPE);
- Any changes to the requirements of PPE;
- Evacuation routes;
- Warning signals;
- Rehearsal of scheduled activities;
- Locations of safety equipment;
- Previous violations of the safety plan and procedures or changes to the program to correct the violation;
- Anticipated hazards for the day’s work activities;
- The locations of work zones;
- General site conditions
- Confirm the regular safety factor, entry protection / first aid and availability of first aid / first respondent team
- Public safety and measures to be taken in case the day’s work involves working in public areas
- Nature of work and the types of essential safety measures
• Appropriate tools, scaffoldings and machinery to suit the work environment.
• Availability of water and sanitation facilities

The meetings should allow the workers to submit their suggestions and views and all in all the meeting should usually run around 15 – 20 minutes in length. It is preferred that the meetings should be held on the mornings of the first working day of the week. All safety meetings shall be documented in the site H&S logbook. Meeting participants shall sign an attendance sheet.

6. Use of personal protective equipment (PPE)

All PPE shall be provided, used, and maintained in a sanitary and reliable condition. All PPE shall be of construction, design, and material to protect employees against known or anticipated hazards. PPE shall be selected by a qualified personal and his recommendation should be recorded to ensure proper and appropriate fit to the employee. Unless in designated safe locations, all personnel shall have with them and/or wear the following PPE when entering the site:

I. Safety boots and/or Gum Boots
II. Safety glasses – when required
III. Hard hat (helmets) with bill facing forward
IV. Work gloves (either leather or cotton or metal braised) – when required
V. Hearing protection – for the reduction of noise and vibration caused by the equipment
VI. Goggles (during hot work such as welding)
VII. Respiratory protection – when required
VIII. Fall Protection - When working at heights

The above listed PPE ensemble shall be worn during all outdoor site activities and inside of construction buildings.

In case the workers are found not wearing PPE, the contractor should take immediate action to stop his/her work until the worker is equipped with relevant PPE. No worker should be allowed working without wearing proper PPE on grounds of injuries, inconveniences due to climatic conditions or for not having the type of PPE suitable to the worker.

In case the workers are found working without wearing PPE, the contractor is made liable and tantamount to disciplinary action.
7. **Safety while on elevated work areas and on scaffoldings**
   1. All employees required working on raised platforms/working at heights should be sent on awareness programs to be conducted by the Site Health and Safety Assistant.
   2. A Participants list could be maintained by the site Health & Safety Assistant. Only those whose name appears in the list can be engaged by the contractor to undertake activities that require working on raised platforms.
   3. Fall protection such as ropes, harnesses or retractable reels will be required for any person assigned to work at heights above 04 feet without the benefit of guardrails.
   4. All scaffoldings will be fixed in place with proper accessories and shall be checked for proper assembly before made to use by the qualified engineer who accepts responsibility for the scaffold work. The scaffolding should have bracing where required and platform/planks need to be secured with toe boards in place. Correctly positioned hand rails need to be present and access should be by secured ladders not by climbing the scaffold frame. Fall protection belts (safety belts should be used where possible

**Types of Commonly Used PPE**
Each Subcontractor shall provide training concerning the use of PPE, maintenance of the PPE with regard to its hygiene, quality of its effects and safety of the PPE and the compliance of the use of PPE to their personnel, as specified by this plan, to address the general PPE requirements and any specific requirements for PPE they may use, such as fall protection.

8. Safety when engaged in other construction work.

It is necessary to ensure worker safety with regard to the use of electrical equipment (tagging and testing of cables and equipment, the use of earth leakage detection systems the correct use of plugs and sockets, use of electrical equipment specifically designed to be used outdoors) . Electrical installation should not be done haphazardly. Providing temporary electrical connections to work related equipment (generators / compressors etc.) for purpose of worker accommodation should be done taking into account all the accepted safety methods.

8.1 Accidents:

Accidents may be threefold:

1. **Near Miss Incidents:** In this type there is a loss or damage to property however no human injury is involved.

2. **First Aid Injury:** In this type minor human injury is involved such as small cuts and wounds that are dressed and involve no man day loss as the injured comes back to work. Should it be determined that no threat to life is present, a co-worker will assist the injured person and contact the site Safety and Welfare Officer or any other responsible person as soon as possible. The Site Construction manager or the Site Welfare and Safety Officer or both shall be notified of the incident.

3. **Accidents:** In this type human injury with man days loss is involved. The following incidents are to be reported as dangerous occurrences

   1. Collapse or failure of lifting appliances (penstocks) or hoist or conveyors or other similar equipment for handling building or construction material or breakage or failure of rope, chain or loose gears, overturning of crane used in building or other construction work, falling of objects from height.

   2. Collapse or subsidence of soil, any wall, floor, gallery, roof or any other part of any structure, platform, staging, scaffolding or any means of access including formwork.

   3. Fire and explosion causing damage to any place on construction site where building workers are employed.

   4. Spillage or leakage of hazardous substances and damages to container.

   5. Collapse, capsizing, toppling or collision of transport equipment.

   6. Leakage or release of harmful toxic gases at the construction site.

If a life-threatening incident occurs, those persons recognizing the situation should if possible do whatever actions in their capabilities to reduce the threat, evacuate the area and then
immediately inform the Site safety & Welfare Officer who shall immediately notify the
Emergency Medical Services (EMS) and implement emergency action procedures to have
someone meet and guide EMS to the incident location. The Contractor shall be notified of the
incident as early as possible.

The Site Safety & Welfare Officer shall keep a record of all the work related injuries, their cause
and the extent of damage on a regular basis. He should conduct regular awareness and training
based on the information so collected. The SWSO shall provide emergency action guidance
consistent with the injury and shall relay the appropriate information to the site person meeting
the EMS.

8.2 First Aid

The supervisor accompanying the injured employee would need to know the difference between
medical treatment and first aid. The distinction between medical treatment and first aid
depends on the treatment provided and the severity of the injuries. First aid is limited to one
time treatment and subsequent observations and involves treatment of only minor injuries, not
emergency treatment of serious injuries. Following table (not comprehensive drawn from the
http://redcross.elearning.com) provides an indication of the work related injuries which may need
either first aid or medical treatments

<table>
<thead>
<tr>
<th>Table (1) typical injury/ Illness requiring first aid</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Typical injury/ Illness requiring first aid</strong></td>
</tr>
<tr>
<td><strong>Manual handling</strong></td>
</tr>
<tr>
<td>Overexertion/Repetitive Sprains, strains, fractures movement</td>
</tr>
<tr>
<td><strong>Falls</strong></td>
</tr>
<tr>
<td>Falls from heights, slips and Fractures, bruises, cuts, trips on uneven surfaces dislocations, concussion</td>
</tr>
<tr>
<td><strong>Electricity</strong></td>
</tr>
<tr>
<td>Contact with electrical current Shock, burns, loss of consciousness, cardiac arrest</td>
</tr>
<tr>
<td><strong>Plant</strong></td>
</tr>
<tr>
<td>Being hit by projectiles, striking Cuts, bruises, dislocations, objects, being caught in dermatitis, fractures, machinery overturning vehicles amputation, eye damage</td>
</tr>
<tr>
<td><strong>Hazardous substances</strong></td>
</tr>
<tr>
<td>Exposure to chemicals, Dizziness, vomiting, e.g. solvents, acids, respiratory problems, burns hydrocarbons to skin or eyes</td>
</tr>
<tr>
<td><strong>Temperature, UV radiation</strong></td>
</tr>
<tr>
<td>Effects of heat or cold from Sunburn, frostbite, heat weather or work environment stress, heat stroke, hypothermia</td>
</tr>
<tr>
<td><strong>Biological</strong></td>
</tr>
<tr>
<td>Allergens, needle stick, exposure Severe allergic reaction, to infectious agents injuries, skin rash, infection</td>
</tr>
<tr>
<td><strong>Occupational violence</strong></td>
</tr>
<tr>
<td>Intimidation, conflict, physical Nausea, shock, collapse, assault physical injuries</td>
</tr>
</tbody>
</table>

It is recommended that fully equipped first aid box be installed in all the project working sites
and stores. A complete first aid kit will be readily available on site with each safety officer. The
kit shall include written instructions on how to contact site management to report an incident
and to seek assistance. Following is the list of minimum contents in the first aid kit.

- Adhesive plastic dressing strips, sterile, packets of 50
• Adhesive dressing tape,
• Bags, plastic, for amputated parts:
• Dressing, non-adherent,
• Eye pads,
• Gauze bandages
• Gloves, disposable,
• Rescue blanket,
• Safety pins,
• Scissors, blunt/short-nosed,
• Splinter forceps
• Sterile eyewash solution,
• Swabs, pre-packed, antiseptic,
• Triangular bandages,
• Wound dressings, sterile, non-medicated,

8.3 Available emergency health care & medical assistance

Primary health care and medical assistance is available on site at the health center is located close to the Kassese and are open during all working hours of the site and during an emergency the hospital can be contacted through the wireless communication equipment. Kassese Town, which can be accessed within 25 kilometers from the project site, but there are health centers run by the private as well as government health authorities close to the project area. Therefore in terms of accessibility to health services in case of emergencies as well as under normal circumstances, there is adequate facilitate. A site medical assistant is placed in a central location to cater to the emergencies of the construction sites.

9. Investigation & Reporting

Immediately upon notification of an accident the Site Welfare and Safety Officer must complete the Accident Investigation Report (AIR) and provide it to the Site Construction Manager with copy to the developer. The Site Construction Manager and the Site Welfare and Safety Officer are responsible for directing response activities during an emergency. These responsibilities include:

1. Notifying the appropriate response teams of the specific actions to be taken
2. Allow authorize personnel only on to the accident site
3. Assessing the emergency situation and determining the required response measures
4. Determining and coordinating the on-site personnel actions for the emergency
5. Directing and gathering possible emergency help on site
6. Contacting and coordinating appropriate governmental authorities
7. Preventive methodology of further new accidents or new accidents due to panic
8. Completing the Supervisor Injury Report form immediately after an accidental injury has occurred.

9. Post incident analysis

10. Implementation of new preventive action and discuss such information via Safety Officer, Safety Teams and Safety Notices

Every accident, regardless of severity, will be thoroughly investigated to determine the actual causes, and to determine potential corrective actions to prevent recurrence. Every accident will be thoroughly understood as to why it occurred and lessons learned will be developed from every incident. In addition, documentation will be timely, accurate, and complete in order to mitigate against similar situations which lead to the accident causing another accident. The process that should follow includes:

- Determine all facts relating to the incident.
- Document the accident, including sketches and photographs of the scene, along with a thorough narrative describing the incident and its causes as well as the corrective actions taken to prevent reoccurrence.
- Review with project personnel at the next possible Toolbox Meeting to discuss the incident.
- Discuss the accident at the next weekly staff safety meeting.

**10. Effective housekeeping**

Effective Housekeeping can eliminate some workplace hazards and help get a job done safely and properly. Housekeeping is not just cleanliness. It includes keeping work areas neat and orderly; maintaining halls and floors free of slip and trip hazards; and removing of waste materials (e.g., paper, cardboard) and other fire hazards from work areas. It also requires paying attention to important details such as the layout of the whole workplace, aisle marking, the adequacy of storage facilities, and maintenance. Good housekeeping is also a basic part of accident and fire prevention.

Poor housekeeping can be a cause of accidents, such as: tripping over loose objects on floors, stairs and platforms:

- being hit by falling objects
- slipping on greasy, wet or dirty surfaces
- striking against projecting, poorly stacked items or misplaced material
- cutting, puncturing, or tearing the skin of hands or other parts of the body on projecting nails, wire or steel strapping

To avoid these hazards, a workplace must "maintain" order throughout a workday. Although this effort requires a great deal of management and planning, the benefits are many.
10.1 Waste disposal

Waste disposal has been addressed in a separate management plan. Nevertheless, regular collection, grading and sorting of scrap contribute to good housekeeping practices. It also makes it possible to separate materials that can be recycled from those going to waste disposal facilities. Placing scrap containers near where the waste is produced encourages orderly waste disposal and makes collection easier. All waste receptacles should be clearly labeled (e.g., recyclable glass, plastic, scrap metal, etc.).

10.2 Management of hazardous waste including explosives:

Storage of explosives should be in accordance with Uganda laws and that the guidelines provided in the document entitled “SAFEGUARDS ON STORAGE, TRANSPORT AND USE OF EXPLOSIVES” is expected to be followed by the contractor/sub-contractors, in addition to the contractor's own guidelines. It is expected that all containers containing hazardous substances are clearly labeled giving their relevant characteristics and instructions on their use.

10.3 Dust

Dust suppression methods will be employed by the Contractor throughout the construction project. The Contractor will implement necessary measures to control particulates. Adequate measures to be taken to prevent the formation of dust due vegetation clearance, excavation, construction (drilling rocks concreting work etc.) and transport of spoils, use of access roads and operating of any stone quarries. With regard to the operation of the stone quarry, it may be necessary that a separate EIA is carried out and that its recommendations are implemented if the contractor intends to start up a stone quarry.

a. During all breaking up of material such as concrete, an employee will be assigned to wet the surface while the activity is taking place.

b. All unpaved haul roads will be continuously watered by watering trucks or constant misting, so that surfaces remain damp at all times when in use during construction.

c. Gravel cover shall be applied to unpaved surfaces which are regularly traveled.

d. All stockpiled dry materials (e.g. aggregate) used in stone crushers will be water-misted; sprayed to minimize dust.

e. Covering all trucks carrying loose material such as debris, excavate or fill and verifying that covers on all such trucks have been properly sealed. Outgoing trucks will be inspected at the gate, and not allowed to exit if covers are not properly sealed.

f. Limiting on-site speed to 20 km per hour. Signs of the 20 km per hour limit will be posted at all site entrances and along routes within the sites.

g. Dust masks will be provided where it is necessary.
h. **10.4 Spill Prevention**

It is recommended that local service station and filling station be used for purpose of servicing and refueling the project vehicles in view of the close proximity to such facilities in the nearest town. This may prevent any management of spills such as oils which could occur during servicing of the vehicles. In case the project intends to have its own service bay suitable filtration systems shall be constructed to collect the drained oil from the vehicles without an impact to the personnel or to the environment all spills should be disposed in accordance with the guidelines provided in the waste management plan. Spillage should not occur that may pollute river water at any point of time.

It is very often observed that the plants such as compressors and thermal generators use for operational activities too spill oils and contaminate the water ways while they are used for construction activities. The best way to control spills is to stop them before they happen. Regularly cleaning and maintaining machines and equipment is one way. Another is to use drip pans and guards where possible spills might occur. When spills do occur, it is important to clean them up immediately. Absorbent materials are useful for wiping up greasy, oily or other liquid spills.

**10.5 Recovered Oil:** Managed as a recovered product, and not a waste, as it will be used/reused as raw material as part of processes in other industries.

Oily Sand/Dirt: Sand and/or dirt that are oiled will be placed in bins stored at the temporary waste storage area (if no bins area available, the sand/dirt can be stockpiled at the staging areas - lined and covered with suitable covers).

Floors: Poor floor conditions are a leading cause of accidents so cleaning up spilled oil and other liquids at once is important. Allowing chips, shavings and dust to accumulate can also cause accidents. Trapping chips, shavings and dust before they reach the floor or cleaning them up regularly can prevent their accumulation. Areas that cannot be cleaned continuously, such as entrance ways, should have anti-slip flooring. Keeping floors in good order also means replacing any worn, ripped, or damaged flooring that poses a tripping hazard.

**10.6 Signs and Barricades**

Proper Housekeeping also underlines the need to educate the workers the safety practices through appropriate signs. As per above signs should be displayed to lay emphasis on the simple safety practices. These will include among others; reminders of safety, things to do and not to do, locations of emergency treatment, locations for refuse collection, locations of hazardous material, entry restrictions, speed limits, location names and directions.
The signs will display letters in sufficient size and colors for easy reading and comprehension. All signs will be in a universal language and local language where language is used. Barricades will be erected at entrances to the project site where security personnel shall screen all workers and visitors. Barricades will also be used to mark out any hazardous areas, such as explosives stores or potentially dangerous locations in the site. Efforts will be taken by all safety officers of the subcontractor to maintenance of the positioning of the notices as well as to maintain the visibility of its message.

11. Staff accommodation & recreation

Provision of decent staff accommodation is a pre requisite. The developer will ensure that the arrangements made by the Contractor/sub-contractors for the provision of staff accommodation is in compliance with the requirement stipulated under this plan. Employee facilities need to be adequate, clean and well maintained. Accommodation for staff should be comfortable in terms of sleeping, dining arrangements, washing, bathing and sanitary facilities as well as for food storage and cooking. Ideally, two beds per standard room or three if it is a larger room would be optimal.

The mattress should be of a minimum comfort quality and a mosquito net, sleeping provision is essential. One bathing and toilet facility per six persons is minimal and adequate water supplies for washing, bathing and sanitation should be made available and maintained. Safe drinking water either boiled or filtered or bottled should be the case. Lockers are necessary for storing employees’ personal belongings. Washroom facilities require cleaning once or more each shift. They also need to have a good supply of soap, towels plus disinfectants, if needed.

Kitchen hygiene and cooking facilities as well as cooking personnel should be closely monitored. All food handling staff should be consistently monitored for worm infestations, hand washing practices with soap, clipped finger nails and encouraged to wear clean head gear and aprons. Housekeeping practices should be consistently monitored to ensure proper toilet maintenance, kitchen maintenance as well as sanitary solid waste disposal practices including composting and land fill. Adequate options for recreation through consensus among the staff are highly desirable and organized & independent activities should be encouraged. Music, television and outdoor
activities should all be provided. As far as is possible and viable, there should be a total awareness and incentive to minimize alcohol consumption and smoking and a complete taboo on the use of drugs.

Consistent awareness raising on community interactions as well as on prevention of Sexually Transmitted Infections (STI), given the high prevalence of STIs and HIV Aids should be practiced. All employees should be provided with a copy of the code of work ethics and should ensure that they sign off to the list of ethics for compliance. There should be leadership among the staff to encourage such practices.

11.1 Water, sanitation and hygiene

The site employees should refrain from using river water for drinking purposes. Suitable drinking water is supplied to the designated water tanks in the work sites. The drinking water quality should be analyzed for microbes at two monthly intervals at an independent / government body. Drinking water and water for other purposes should be clearly indicated at the source in a notice. Each work site should have sufficient water sealed toilets. Pipe borne water should be supplied to these toilets. Site employees should use these toilets for daily ablutions and should keep them flushed and clean at all times. Sanitary workers should be employed to cover the entire set of sanitary facilities and these set of employees should not be used in any other work especially on food handling. Hand washing facilities are available near camp sites and in plenty at meal rooms with an appropriate detergent. All Site workers should wash their hands prior to partaking of meals. Safety Officers should enlighten the employees of the of the value of hygienic practices such as hand washing avoid littering of food waste and to discourage feeding stray and pet animals at site.

11.2 Fire Protection

On site locations where fire hazards exist, suitable fire protection equipment in adequate quantities shall be available. This equipment will be periodically inspected and maintained to ensure proper functionality. All employees shall be trained in the use of fire protection equipment at regular intervals. Fire drills using all available fire equipment should be done at regular intervals.

11.3 Health Care

Guidelines have been provided in the ESMP. It is recommended that the Developer seek assistance from the Health care center to provide all the necessary health care facility to the workers, health awareness and emergency health care. This can be done by negotiating with the authorities of the Health care center. Issuance of malaria tablets, awareness creation on HIV/AIDS, and emergency health care for persons injured while at work, any other medical care can be included in the MOU.
### Reporting format of Work Site Accidents

<table>
<thead>
<tr>
<th>NO.</th>
<th>Nature of Accident</th>
<th>MINOR</th>
<th>MAJOR</th>
<th>FATAL</th>
<th>Site</th>
<th>Comments made by the Supervising Officer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Falling objects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Treading on sharps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Handling tools</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Handling materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Machinery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Welding flash effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Foreign body eye</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Road traffic accident</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Burns</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electric shock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Reporting format for site employees treated for other illnesses

<table>
<thead>
<tr>
<th>NO</th>
<th>MEDICAL CONDITIONS/SYSTEMS INVOLVED</th>
<th>SRI-LANKANS</th>
<th>UGANDANS</th>
<th>INDIANS</th>
<th>Treated by</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Malaria</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Respiratory tract infections</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Genitourinary tract infections</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Ear, Nose and Throat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Gastrointestinal tract infections</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Injuries and Trauma</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Cardiovascular system</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Central Nervous system</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Eye infections</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Musculoskeletal system</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Oral and dental conditions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Poisoning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Electric shock</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Skin diseases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Burns and scalds</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Tungiasis/jiggers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Somatic pain</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Others</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## FORMAT FOR SAFETY INSPECTION

<table>
<thead>
<tr>
<th>Safety Features / parameters</th>
<th>Unsafe Condition/ Behavior Observed</th>
<th>Corrective and Preventive measures suggested</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. PPEs used by executives/staff/workers while working at site</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Helmets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2 Gum / safety boots</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3 Safety belts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4 Gloves</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5 Eye shields</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.6 Gas masks</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2. Sign Boards in work sites</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1 No smoking sign boards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2 Speed limits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3 Use Helmets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4 Safety First</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3. Heavy equipment/other vehicles in the site</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1 Registration No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2 Record of previous maintenance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3 Reverse Gear Horn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.4 Head Lights</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.5 Tail Lights</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.6 Windscreen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.7 Tires</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>4. General housekeeping in work sites</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1 Illumination level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2 Potable water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3 Waste bins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4 Cloak rooms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.5 Toilets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.6 General Cleanliness</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>5. Transportation &amp; handling of explosives</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1 Mode of transport</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2 Storage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.3 Name of supervising blaster</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.4 Blaster License No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.5 Validity date of License</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>6. First aid box</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1 Available of medicine / tools</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.2 Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>7. Public Safety</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.1 Alternative access provided</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.2 Notice given</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.3 Safety measures introduced</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. **Purpose of the Document**

Purpose of this document is to present a set of guidelines to be used by the project implementing partners (EPC Contractor, sub-contractors and the Developer) when managing construction waste. Waste Management Strategy and the responsibility of the contractors and the developer in respect of implementing the waste management strategy is explained below. Measures described in this document should be read together with the ESMP and other supplemental plans. What is appropriate for application during the construction phase should be given priority.

2. **Legal provisions for waste management in Uganda**

In Uganda waste management is mandated by Waste Management Ordinance, 2000. It stipulates that it is illegal and punishable to dump garbage in places where it may be or become a public health nuisance. These places include water bodies, public streets and the roadside.

It is a responsibility of every Local Authority, according to section 5 of the Public Health Act, Cap.281, to take all lawful, necessary and reasonably practical measures to safeguard and promote public health. It is also a duty of a local authority to maintain its area at all times in a clean and sanitary condition and prevent the occurrence of any nuisance (Section 55 of the Public health Act, Cap.281). In its definition of nuisance, Section 57 of the Public health Act, Cap.281, includes un-collected garbage among others as being a public nuisance.

The Conditions of approval of the SEIA issued by NEMA requires the developer to adopt good waste management practices and thereby to ensure proper public safety and environmental health.

**Relevance to IFC Performance Standards:**

Performance Standard 4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration and/or intensification of impacts due to project activities. While acknowledging the public authorities’ role in promoting the health, safety, and security of the public, this Performance Standard addresses the client’s responsibility to avoid or minimize the risks and impacts to community health, safety, and security that may arise from project related activities, with particular attention to vulnerable groups.

3. **Roles & Responsibility:**

The responsibility of preparing a waste management plan and implementing the same mainly lies with the EPC contractor during the construction period and the developer during the operational phase of the project. The project should establish close relationship with the Local council (LC 3) chairman office for the implementation of the recommendation in this plan.
The EPC Contractor as per the guidance given by the Eco Power Holdings (the Developer) shall be responsible to prepare a comprehensive and functional waste management site specific plan prior to construction work. The workforce should be made well aware of the plan and the guidelines through meetings and discussions. Necessary formats, records should be prepared and assigned to the responsible persons to maintain them in order to ensure that plan is effectively implemented.

The contractor may appoint a Supervisor, who is directly in charge of the site whose functions would-be among other things, implementation of the waste management plan. This can be also delegated to the Officer in Charge of the Stores, if dedicated employees will not be engaged.

4. Construction Wastes

Waste is any solid, liquid, or contained gaseous material that is discarded by being disposed of, burned or incinerated, or recycled.

Basic types of wastes that are likely to be generated during construction, phase of the project can be categorized into solid waste; liquid waste and further can be divided into hazardous waste and nonhazardous waste. Solid waste also can be bio degradable and non-biodegradable.

Biodegradable are materials that can be broken down by living organisms or through decomposition. Some of them can be used as compost as well.

Non-biodegradable refers to plastics and other products that are toxic in nature or will release hazardous wastes through air or when ingested.

During the construction phase of the project there will be wastes generated such as:

- Spoils from land clearing and excavation works; (Soil and tree cutting)
- Debris from construction and demolition works; (Scrap materials, nails, bricks, concrete, timber, Steel; timber; plastic materials);
- Hazardous waste such as Cement residue; oils, gases, paints resulting from the vehicle wash bay, transformers, generators and compressors etc.
- Wastes from the temporary toilets that will be constructed for the construction workers and
- Other waste materials such as (Vegetable, food waster, throw away, paper, bottles, cans, cardboard)

5. Waste Management

There should be a good 'housekeeping' standard all over the construction area in order to accomplish good waste management practice. There should be an effort and an objective among the site managers to ensure that minimum waste is generated from construction work.

Work site efficiency and profitability can be improved by promoting reuse, recycling and recovery of waste, rather than disposal. A proper waste management plan can increase environmental awareness of the workforce and management and environmental management performance is likely to improve the more the workers are aware of their responsibilities.
Therefore it is essential to have a good communication strategy connected to the Waste Management Strategy. Such a strategy can be discussed under following themes:

- Identification and minimization of construction solid and liquid waste
- Segregation, Storage; Recycling, Re-use and proper disposal of waste
- Organization of awareness campaigns on waste disposal

6. **Identification and minimization of Solid and illiquid waste**

The types of wastes that are likely to be generated could be classified as non-hazardous and hazardous wastes.

The non-hazardous wastes that could arise from the project include the following:

- Wastes arising during land clearing and excavation works. This includes debris and spoil, tree/vegetation, rock materials, timber logs, rocks pieces.
- Concrete debris, rejected concrete, excess bricks and spilled cement mortar
- Reinforcement material cuts and pieces
- Wood/timber wastes used for scaffolding, concrete curing, etc.
- Glass, cans and used packaging
- Plastic wastes including packaging wastes, empty plastic bottles, and wrapping material

The following materials shall be considered as hazardous materials as a minimum

- Thinner; bottles and cans that contained such material
- Wood preservatives
- Various paints (flats, non-flats, varnish, lacquer, floor coatings, anti-rust paints and waterproofing sealers). Empty cans and bottles
- Adhesives and sealants
- Cement bags

7. **Dealing with Non Hazardous Wastes**

7.1 **Segregation; Storage; Recycling and Disposal of wastes**

Prior to storage all non-hazardous wastes and hazardous wastes that are identified and anticipated wastes during construction process shall be first segregated at the site into various materials.

At point source this can be segregated by introducing garbage bins to collect different types of wastes. It is essential that these bins are color coded for easy identification enabling right kind of waste is deposited in the respective bin. A typical Color code is given below:

- **Green color** - organic waste (Biodegradable materials only)
- **Blue color** - paper and cardboard
Red color - Glass bottles and glass
Orange color - plastics and polythene

The concrete waste bins or plastic bins can be used. These can be ground fixed or can be kept as movable properties. In order to avoid any bad order there should be drainage holes provided through the base of the bin.

The bins that will be used to collect organic waste should be properly lined with garbage bags and the lids should be well closed to prevent obnoxious odor emissions and access to flies.

All construction wastes shall be stored in chambers or sheds or temporary storage huts until they are appropriately disposed. The chambers or huts should be sited in areas having a little or no vegetation patches and far away from water-bodies.

In addition, such storage areas/huts shall be kept away/totally isolated from worker quarters and office blocks used by the Contractor and Client. Also such sheds/temporary storage huts shall not be sited in areas subject to flooding, severe erosion and natural drainage paths.

All iron scrap materials collected from the demolition of structure, from the respective sites together with what has already been stockpiled should be appropriately disposed. These can be given to scrap collectors who are visiting the site from Kassese and Fort Portal areas.

All the garbage bags should be regularly collected for sanitary disposal. The EPC Contractor should get the services of the private garbage collectors, if the EPC contractor or the developer will not be able to attend to this matter on regular basis.

7.2 Wastes and Management Options during Construction Phase

Following waste management options are provided for different types wastes generated from the construction activities:

**Table 2: Options for disposal of wastes (Non Hazardous wastes)**

<table>
<thead>
<tr>
<th>Waste material</th>
<th>Disposal method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete debris and rejected concrete (Pump excess concrete)</td>
<td>No concrete debris can be allowed to be mixed with river water. Construction area should be well covered enabling proper salvage of concrete debris. This can be used to as a filling material. All the debris can be deposited on the pot holes along the project access roads. All pump excess concrete should be disposed for reinforcing access roads or improving the main gravel roads.</td>
</tr>
<tr>
<td>Mixed debris /Planks</td>
<td>This includes wastes that are difficult to separate notably a mixture of concrete, brickbats and cement mortar, etc. Shall be used as a filling material within the site.</td>
</tr>
</tbody>
</table>
| Rubble or rock debris | Excess rubble/rock material should be managed as follows.  
  - Construction of retaining structures such as gabion walls or closely compacted rubble as peripheral bunds or as mean of curtailing soil erosion and soil ingress.  
  - Rubble pitching works of exposed, erodible soil.  
  - Construction of drains and as a media for silt pits. Very much applicable for the lead-ways of the culverts & Peripheral bunds. |
<table>
<thead>
<tr>
<th>Waste material</th>
<th>Disposal method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spoil</td>
<td>Shall be used as a filling and slope stabilization material within the site. The spoil could be compacted, turfed with native grass or rubble pitch (if possible) Spoil containing a higher content of clay material could be compacted during drier periods to make peripheral bunds and then plant with native grass around the areas needing turf and terracing. All spoils generated should be treated according to the ESMP guidelines. No spoils should be haphazardly disposed. Designated spoil yards have to be demarcated.</td>
</tr>
<tr>
<td>Removed vegetation/trees</td>
<td>May be used for the construction of labor huts. Timber logs having a wide diameter could be used as soil pegs or as alternatives to compacted rubble walls beneath slopes as a means of curtailing soil erosion Attempts should be made to minimize removal of major trees.</td>
</tr>
<tr>
<td>Cofferdam materials</td>
<td>Should be salvaged immediately after construction work and removed to safe area for filling purposes.</td>
</tr>
<tr>
<td>Reinforcement material including off cuts</td>
<td>All off cuts should be removed into a designated area. They should not be allowed to lie in the construction sites. Public access areas should be cleared first and ensure that no injury to the public will be caused as a result of haphazard disposal of off cuts.</td>
</tr>
<tr>
<td>Nails</td>
<td>All bent nails should be removed into a designated area. They should not be allowed to lie in the construction sites. Public access areas should be cleared first and ensure that no injury to the public will be caused as a result of haphazard disposal of off cuts.</td>
</tr>
<tr>
<td>Bricks</td>
<td>Good quality bricks salvaged from demolition of buildings, structures should be re-used for the construction works.</td>
</tr>
<tr>
<td>Glass material</td>
<td>All glass off cuts should be removed into a designated area. They should not be allowed to lie in the construction sites. Public access areas should be cleared first and ensure that no injury to the public will be caused as a result of haphazard disposal of glass off cuts Sizes shall be classified. Glass items including glass bottles shall be given to vendors involving in supplying the material to recycling agents</td>
</tr>
<tr>
<td>Gunny bags</td>
<td>All used and excess may be used for coir matting of erodible areas</td>
</tr>
<tr>
<td>Plywood and Wood planks used for supporting of concreted columns and beams for form work</td>
<td>It is appropriate to minimize the use of timber planks (plywood boards for form work by adopting more re-usable materials with improved technologies. (Steel plates). When using timber (Plywood) they should be used maximum number of times before they are discarded. They can be given to persons to utilize the material as firewood. Where possible they may also be used for soil pegging</td>
</tr>
</tbody>
</table>
7.3 Trash Rack Waste (Screenings) Management

- Leaves & twigs may be buried or incinerated after sun drying. However, this material should not be burned in areas close to the Dam intake / Fore-bay and close to the spill way as this could lead to fire hazards and will be a nuisance to the community members living close by. Remove them to waste disposal sites.

- Plastics and/or polythene material may be disposed to bins designated for collection of these wastes and then handover (after sufficient collection) to vendors involved in supplying plastic and polythene waste to recyclers or contact nearby plastic factories that may use plastic for crushing and grinding metal collection.

8. Managing Hazardous Solid and Liquid Wastes

Wastes are listed as hazardous because they are known to be harmful to human health and the environment when not managed properly. Paints and certain degreasers and solvents are ignitable waste. And therefore can be considered hazardous. Although car batteries are not harmful, if removed, the battery acid is hazardous.

During the construction as well as operational phases hazardous wastes can be generated: Some of the wastes that are likely to be generated are given below.

- Car Batteries;
- Empty paint cans (used for the maintenance painting of penstock pipes) and solidified paint brushes
- Used Oil and Empty Oil/chemical containers or drums
- Ink cartridges and toners used for computer printers
- e-wastes
- Sewage and Black water (Sewerage) from toilets (Temporary and permanent)

The Developer shall dispose the above wastes as per the options given in Table 3. Note that they shall be disposed after bulk or sufficient collection and until proper disposal they should be safely stored in rooms/areas having good ventilation, but further away from working areas and not facing air ducts (air intake points).

Prior to the use of any construction material which contains hazardous substances as identified in the Material Safety Data Sheets, the Site Manager shall ascertain whether alternative construction material can be substituted for the one originally planned for use.

The preferred substitute material would either have no or minimal volatile organic compound present or would have volatile organic compounds which would be considered less hazardous.

All containers of hazardous materials shall be labeled in accordance with appropriate standards. The labels on containers provided by the manufacturer, importer, or distributor shall be used.

Labels affixed to containers of hazardous materials shall:
• Identify the material using a name with which workers are familiar.
• Identify the hazards associated with the material, including toxicity information that indicates symptoms and target organs.
• Identify the name, address, and telephone number of the manufacturer, importer, or distributor where more information may be obtained.

Labels are not required on portable containers filled from a correctly labeled container if the worker uses the material from that container only during that work shift.

However, the Contractor shall prepare a container label when the contents of the container are not used on the shift during which the container was filled and when the container label is defaced or illegible. The prepared temporary label shall indicate pertinent chemical identification and health information.

8.1 Managing Fuel and Lubricants Waste;

i) **Spill Prevention**

Hazardous spills could occur at the service bay for vehicles. Suitable filtration systems shall be constructed to collect the drained oil from the vehicles without an impact to the personnel or environment.

I. **Recovered Oil /Used Oil:**

Recovered Oil should be managed as a recovered product, and not a waste, as it will be used/reused as raw material as part of processes in other industries.

II. **Oily Sand/Dirt:**

Sand and/or dirt that are oiled will be placed in bins stored at the temporary waste storage area (if no bins area available, the sand/dirt can be stockpiled at the staging areas - lined and covered with suitable covers).

III. **Solid Oily Debris:**

If non-hazardous (oiled dirt/sand, PPE, trash, wood, etc.), they can be collected and transported to dump site.

If hazardous, they need to be collected in sealed containers and transport to a suitable waste disposal location.

IV. **Concrete Waste Water**

Concrete waste water or fresh concrete or cement based mortar are highly toxic to marine and plant life. Therefore the EPC contractor should ensure that the concrete wash area is located at least 20m from river, water streams, other storm water drains, pits and inlets.

The following measures should be implemented by the Contractor during the construction phase.
a) The effluents from the wash bay should be drained through appropriate settlement tanks before they are disposed. No drainage should be directed towards river or streams/any other water course.

b) Dewatering equipment and compressors, generators which are frequently used for construction related work should not have leakages; the machinery, equipment and vehicles used shall be regularly checked for oil, fuel and lubricant leaks and any leaks shall be immediately repaired.

c) Concrete wash out area should be designated and it should be away from water courses. All the wash materials should be collected and disposed for filling areas. Effluents should not mix up with surface water. A settlement tank should be installed along the drainage path from the concrete wash out area.

d) Any storage of oil rich products (if required) shall be allowed only in un-corroded cans/barrels & only in storage areas as describe above (see section 2.1.2)

e) Heavy restrictions on fuel storage for any machinery & equipment such as concrete mixers shall be implemented in the vicinity of the water bodies

f) Used or waste oil and lubricants shall not be disposed or burnt & instead given to nearby service stations for recycling

g) Repairing and washing of vehicles, machinery and equipment shall be disallowed within river reservations and near water sources such as wells

h) Any oil spills from machinery and equipment (during accident events) shall be contained using buckets, tins until rectified. The collected oil will be given to nearby service stations or used again.

i) Any spills should be contained immediately by adding good soil or sand. Heavily contaminated soil and even clothing, etc. should be removed with care, should be safety stored and transported for proper disposal. Heavily contaminated excavated/removed soil material may be kept in large polythene bags or large drums until proper disposal

j) Hazardous wastes (chemicals) shall not be exposed to direct sunlight and possible ignition sources (e.g., exposed wires). Also they shall be kept on the floor or stored in short or readily reachable steel racks (not on wooden cupboards) to avoid possible spills. They shall not be stacked on top of each other to avoid possible spills (whether kept on steel racks or on the floor).

k) Empty cement bags and hazardous wastes (chemicals) with chemicals that are partly used shall be stored in the Stores/sheds having adequate ventilation. Dust masks or respirators and eye goggles shall be supplied to persons entering such areas or when dealing with such material.

l) All cement bags should be well covered with tarpaulin sheets and Cement spills shall be regularly cleaned by means of sweeping. Appropriate PPE should be worn by those who are engaged in such activities.
m) There should be fire preventative measures (gas cylinders containing CO₂) in and around the waste storage sites. Therefore, in this regard the Contractor should educate employees with reference to safe handling, transport and storage practices for materials.

n) Cans/containers, bottles, etc. containing used chemicals or to be disposed/reused for later construction works shall not be kept open under any circumstances especially in storage areas to avoid possible volatilization of volatile organic compounds (VOCs). Cans/containers containing used oily products or waste oil too shall not be kept open under any circumstances.

o) As people may tend to use some of the empty containers that contained hazardous or poisonous material it is important to prevent unauthorized access to these areas. There will be a heavy demand for empty containers by the community as they use plastic cans for collecting and storing potable water. Empty Containers (other than disposable water Containers) should not be given to the community members.

Table (3) Disposal options for hazardous wastes (solid) and waste oil

<table>
<thead>
<tr>
<th>Waste material</th>
<th>Disposal Options &amp; Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car batteries</td>
<td>Batteries that are dead should be given to garages that may accept them. There may be collectors in the town.</td>
</tr>
<tr>
<td>Empty paint cans</td>
<td>Give them to vendors after collecting sufficient quantities for disposal. The paint, empty chemical containers should not be handed to the Community members,</td>
</tr>
<tr>
<td>Alkaline batteries and other metal containing wastes such as wires</td>
<td>Educate the staff and workforce not to dispose them to bins provided to collect organic waste. Hence small bins (labeled) may be kept for the collection of small batteries, small pieces of e-waste (see below), bulbs, ink cartridges and toners. Encourage the staff to make use of refillable ink cartridges. Excess may be disposed in consultation with the Local Authorities (however, necessary documentation should be maintained and filed)</td>
</tr>
<tr>
<td>e-wastes such as damaged computer parts &amp; accessories (which may be unviable for repairs)</td>
<td>These contain heavy metals. Therefore, after bulk collection, handover to collectors. Educate the staff and workforce not to dispose them to bins provided to collect organic waste.</td>
</tr>
<tr>
<td>Oil drums or cans (used, but damaged ones) and empty lubricant cans</td>
<td>After bulk collection, handover to collectors for recycling</td>
</tr>
<tr>
<td>Waste oil</td>
<td>Used or waste oil and lubricants shall not be disposed or burnt in open air &amp; instead given to nearby service stations for recycling. Used oil can be collected in barrels and when sufficient quantities are collected they can be disposed to the collecting g centre/vendors. Label all containers as “used”</td>
</tr>
<tr>
<td>Plastic bottles/cans contained</td>
<td>Contact agents involved in supplying plastic and polythene waste to</td>
</tr>
</tbody>
</table>
### Waste material disposal options & recommendations

<table>
<thead>
<tr>
<th>Waste material</th>
<th>Disposal Options &amp; Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous chemicals; for example, toilet cleaners/antiseptics and detergents</td>
<td>Recyclers or contact nearby plastic factories that may use plastic for crushing and grinding. Store toilet cleaning chemicals including empty bottles/cans separately from other wastes described above. Note that they should be kept in areas having good ventilation and preferably in cupboards that cannot be reached by children.</td>
</tr>
<tr>
<td>Oil spills</td>
<td>Any spills should be contained immediately by adding good soil or sand. Contaminated soil and even gloves, cloth, etc. should be removed with care, should be safety stored and transported for incineration.</td>
</tr>
<tr>
<td>Liquid Waste generated from Temporary Toilets</td>
<td>Should be disposed regularly for sanitary landfills if available.</td>
</tr>
<tr>
<td>Empty tins (paints, lacquer, varnishes, etc.)</td>
<td>Metal cans including empty paint cans used for the penstock works shall be given disposed by giving them to collectors. Do not incinerate them. Do not throw them to the water course.</td>
</tr>
<tr>
<td>Adhesives and sealants (used ones)</td>
<td>After sufficient collection handover to vendors willing to take such debris.</td>
</tr>
<tr>
<td>Glass bottles (including ones which contained hazardous wastes)</td>
<td>Shall be classified in terms of material and capacity. Shall be given to vendors involving in supplying the material to recycling agents.</td>
</tr>
<tr>
<td>Paint brushes</td>
<td>Solidified ones cannot be reused, should be disposed by giving them to collectors.</td>
</tr>
</tbody>
</table>

### 9. Worker Awareness

All employees should be educated on appropriate handling of construction material to prevent unnecessary spills, intentional waste and excess ordering construction materials. The site supervisor should be adequately made aware of appropriate estimating of the materials required so that there will not be waste arising due to excess supply. Sometimes due to improper handling, waste could occur. Smoking inside the storage areas shall be strictly prohibited and notices shall be placed. Paints and thinner materials (which contain flammable or UN Hazard Class 3 Hazard compounds shall not be stacked on wooden cupboards).

Furthermore, flammable liquids such as paints and fuel oil (including empty containers, buckets or cans that may have contained such material) shall be kept away (whether during storage or transporting) from explosives and even away from gas cylinders such as oxy-acetylene which are often used in welding.

### 10. Reporting / Documentation Requirements

1) A “Waste Management” File/Registry shall be maintained by the store-keeper. It shall encompass records mentioning how much quantity is given to relevant vendors for off-site recycling and reuse or reused for the construction works including temporary works.
2) The types of waste that will be produced and the quantity of each type of waste should be recorded on regular intervals in the main registry / File maintained for recoding different types of wastes.

3) Each time waste is removed from the site its type and quantity are recorded. Reports can then be created to make sure waste is dealt with in the most effective and profitable way possible. The records should be counter checked and signed by the site Supervisor.

4) These shall include dated letters with other supporting documents (where necessary) given by vendors, manufactures, suppliers (to whom the waste generated at the sites have been sold/donated) stating the quantity purchased.

5) All the Letters of Acceptance shall be given a Reference Number.
7.5 Public Safety Guidelines

Hydro power projects pose safety risks for the general public both during the construction phase as well as the operational phase. The necessity of ensuring public safety during the construction phase of the RSHPP is felt strongly in view of the presence of farmers and those who use river water beneath the main structures and the pedestrians who use the foot paths crossing the river to either side of the villages.

Most of the proposed project structures will be accessible to the public as they intersect with footpaths and public access domain. Therefore the probability that they can present much safety problems will be high. There is danger of children, those who collect water from the river and those who will bath in the impounded area falling into the impounded area or at the dam (impounded) areas. The excavation work along the Low Pressure Pipes which meander along the section of the steep slopes along the hilly parts of the project area will require special safety measures.

During the excavation of these areas, there can be spoils and fly rocks falling towards the river causing obstructions to the river water users and damaging and crops located beneath slopes. Of them the possible falling of construction debris (rock and soil) during excavation and vegetation clearing towards river is very heavy at the area close to the Dam and the power House.

Procedures for safety project operations have been included in the ESMP and various other supplemental management plans. Of them public safety has been elaborated in the Traffic Management Plan as well. Road safety has been identified as one of the pre requisites for the safer project operations. Vehicle movements within the project premises as well as on project road ways need to be highly controlled and monitored. Speed limits should be strictly enforced and awareness raising as well as orientation sessions should be provided to vehicle drivers on a periodic basis to sensitize them on prevention of dust creation as well as on accident prevention. Speed limits to be enforced within the perimeter of the main project site should be 20mph and on the side roads 30mph.

1. Specific recommendations to install public safety devices:

It is proposed that the dam once constructed will have the facility for the community to serve as a bridge between the two villages lying on either side of the river. This traditional foot path through an existing bridge can be replaced with a route via the Dam. The safety of the public should be ensured through the design as well as through awareness. It should have side railings and should be at an elevation that will not impact due to high flood levels. The dam should have adequate danger and warning signs. Properly located and spaced signs can be an effective method of preventing persons from entering hazardous areas. It is important to locate signs so that persons entering an area from any direction can see one or more of the signs.

Fences and guardrails are required at the spill way area, Dam and at the Reservoir area and area where the transformers will be installed to prevent public access. Fences, together with signs and locked gates, are probably the most effective means of prohibiting land based access to hazardous project features. Powerhouse tailrace areas are usually more important due heavy concentration of human activities along the downstream of the river. Sudden increases in tailrace flows can be very often hazardous to persons using the river water, in tail water areas.
Public safety is also a concern when the blasting activities take place in the areas surrounded by Houses and community access roads.

It is recommended that:

- Warning signs in tailrace areas to be erected;
- Clearly visible and legible warning signs at an appropriate distance upstream of and facing the reservoir of the dam should be erected;
- Fences restricting access to hazardous areas around dams and other project structures.
- Audible warning devices, together with signs to explain their meaning, at those projects with sudden changes in operation that result in large flows and rapidly changing tail water levels.
- Restricted public access to powerhouses, intakes, and other operating structures.
- Signs posted at surge chambers to warn of sudden discharges.
- Warning signs posted to warn pedestrians to travel along access roads.

2. Safety of project property

Ensuring safety of the project property is the responsibility of the developer as well as the contractor. It is necessary to engage the services security personnel for the safety of all the project property, project construction sites, and places such as stores and vehicle park area. Special security has to be ensured in areas where explosive materials are stored. (Normally this is kept in the custody of the nearby police station)

The security personnel need to be briefed about the areas to be patrolled, marking their routine patrolling; use of firearms while at work, apprehending culprits; salvaging stolen items and reporting any undesirable events. These have to be done by the Project administration manager and where possible in close association with the Uganda Police.

There had been a practice that the services of the Uganda police has been sought for purpose of providing security services instead of deploying private security services.

Other Public safety Measures

Public Safety can be ensured through several measures. Public awareness, physical measures adopted by the contractors to prevent falling objects while carrying out construction related activities, adherence to and proper implementation of a traffic management plan are some of the means through which public safety can be ensured.

The planned excavation work on the steep slopes, the laying of penstock pipes (most of which will be buried) within a passage where there is a dense population characterised by presence of a children population, primary schools, hospitals, houses, community trading centres and a large number of pedestrians, the construction work can pose a critical challenge to public safety.

Rock blasting activities to be done at the weir site and in rocky areas in the headrace channel and pile driving activities (particularly drop hammer type) can produce impulsive noises which will be a public nuisance as well as a risk on public safety. Public safety will be further ensured when the construction work will be in progress during which, there can be possible river water
contamination due to construction debris and effluents mixing up with river water which is widely used for various consumption purposes by the nearby community members.

The weir and impounded area is located adjacent to a large number of houses and the main road. The impounded area is used to be an area used by the local children for recreation. This recreation habit may continue even after the weir will be constructed and therefore it can cause hazards to the public in general. Along the river there are at least five water extraction points where water is used by the people for various consumptive purposes.

The SEIA as well as the planning visits made by various consultants have earmarked some of the risks that may pose a threat to public safety which have now been addressed well in the ESMP. Nevertheless, the contractor and the sub-contractors should be aware that any negligence or inadequate planning can cause grave impacts on public safety, especially during the stage when the excavation work will be undertaken. Therefore adopting appropriate safety devices will be essential. Safety devices and measures can be divided into basic categories namely:

I. Educating and informing the public meetings and visual and audible warnings of hazardous areas,

II. Physical restraining devices,

III. Escape devices, and

IV. Procedures for safer project operations.

3. Educating and informing the public

SEIA, ESMP as well as the Traffic Management Plan have already addressed methods of educating and informing the public on safety measures to be followed during the construction work in project areas. It is essential that the contractor assesses the risks that may be involved prior to respective construction work and plan out specific measures as to how the public safety can be ensured. It is important that the views and suggestions of the possibly affected community members too will be sought through public consultation. It is recommended that:

- The project management (the Site Construction Manager and the Site Safety and Welfare Officer convene meeting with the public on a regular basis (at least every one month) and inform them about the risks involved in the construction work,

- Prepare site specific Safety Plans to the relevant construction site (when excavation and blasting work will be scheduled along Dam area/low pressure pipes and anchor points )

- Ensure full participation of the community members in preparing site specific construction plans ( incorporating the safety measures to suit the nature of the construction activity)

- Presenting of same to the public for their better understanding.

- Continuous monitoring of the implementation of safety methods
• Details such as the period (that the public will have to follow the safety instructions), any optional access roads, and other optional safety measures (by excavation or any other construction work such as temporary relocating of the house dwellers to be affected) should be made known to the general public well in advance.

Another method is the introducing of visual and audible warnings of hazardous areas which is described below.

5.1 Danger and Warning Signs

While the construction work at the Dam will be on going, there should be adequate danger and warning signs and physical restraining devices such as fences to keep children away from the construction site well above the Dam area. This will be a hazardous area especially for the small children who have been crossing this area for water collection. Properly located and spaced signs can be an effective method of preventing persons from entering hazardous areas. It is important to locate signs so that persons entering an area from any direction can see one or more of the signs.

5.2 Fences

Isolating of the work areas is important during construction, in order to ensure public safety and to protect the public from accidents. This could be done by erecting wire mesh fences encircling the construction areas. Fences and guardrails are required at most projects to prevent public access to hazardous areas such as the weir and impounded area, powerhouses, substations, intake areas and the tail race. No barbed wires will be permitted. The height should be between 6-14 feet depending on the safety priority. It is important that the contractor puts up a wire mesh around the houses very close to the spillway frontage preventing the children to move into the road and the construction site. This should be done in consultation with the members of the Grievance committee. Fences, together with signs and locked gates, are probably the most effective means of prohibiting land based access to hazardous project features. Where possible the natural barriers can serve, along with fences, to limit public access.

5.3 Signs and Barricades:

Powerhouses and other project buildings have many inherent hazards. Therefore, public access to these areas should be restricted. Appropriate signs will be displayed to lay emphasis on the safety practices to be adopted by the general public. These will include among others; apologies for obstructions to public access due to construction work, danger and warning signs (against unauthorized access); re-routes; things to do and not to do, locations of emergency contacts, entry restrictions, speed limits, location names and directions.

• The signs will display letters in sufficient size and colors for easy reading and comprehension.

• All signs will be in English language and local language

• Efforts will be taken by all safety officers of the subcontractor to maintenance of the positioning of the notices as well as to maintain the visibility of its message.
7.6 Traffic Management Plan

1. Purpose

Traffic management is the management of pedestrian, vehicles and machinery in the areas surrounding the project’s construction sites. The SEIA has identified the need for having a separate traffic management plan in view of the increased traffic the project will generate and the sensitivity of the project’s location in an area where there is heavy pedestrian movement. By implementing the guidelines provided in this Traffic and Transport Management Plan it is expected to mitigate the impacts to residents by the addition of vehicle movements created by the construction of the Project.

The traffic management plan for Rwimi Small Hydro power Project will deal primarily with the vehicles carrying construction materials, spoils, and other vehicles, transporting persons to and from the construction site and other work places and other moving equipment and machinery such as Forklift trucks, compact dumpers and mobile cranes, etc. with a view to avoiding any accidents, congestion and public inconvenience. The plan will comply with the requirements of Uganda’s traffic laws and legislation; regulations stipulated by traffic procedures that have been in force in the District.

2. Traffic related legal and regulatory background in Uganda

Traffic and Road Safety Act No 15 of 1998 (Ch. 361) stipulates provisions for traffic and road safety in Uganda. This Act defines licensing authorities, mechanism for granting various classes of licenses compliance requirements, and the enforcement regime. It also provides for conditions of motor vehicles for use on a road, provision to deal with causing bodily injury or death through dangerous driving or carelessness, reckless and dangerous driving, offences and penalties, etc. The Ministry of Works, Transport & Communication (MOWTC) of Uganda is vested with powers to among other things, to manage public works including government infrastructure and to promote standards in the construction industry, through the Transport Regulation Department.

One of the activities of the Department is to monitor movement of heavy vehicles to ensure compliance with axle load regulations. Uganda national Roads Authority is the key department in charge of developing highways which is monitored by Roads and Bridges Department of the Ministry. Among other things the department provides guidelines for the maintenance of district and community access roads.

The Local Government Act promulgated in 1997 devolves responsibility for road maintenance of rural, community feeder and urban roads to district and urban authorities. One of the features need to be noted in this plan is the requirement to comply with axle loads. Axle loads limits are geared towards preventing rapid deterioration of the road infrastructure.

Highway traffic management is the responsibility of the Uganda Police and is implemented through the respective Traffic divisions of the police offices in the Police Divisions. Police Posts have been deployed in most parts of the country. The police are empowered to stop and search.
vehicles, inspect them for road worthiness, and prosecute drivers if the police are satisfied that the law has been broken.

3. Project Site Accessibility

Rwimi SHP Project is located in the middle reaches of river Rwimi in Kitswamba Sub County, Busongara County in Kassese District. The site of diversion can be reached by traveling along the A109 road from Fort Portal for about 2km passing bridge over Rwimi River and then turning to right and following the earth road off Rugendabara leading to the dam site. The dam is located at the village Kihoko along the main feeder road which starts from Rugendrabara and runs through all four LC1 areas in the Kitswamba Sub-county. The feeder road is gravel compacted and well maintained, nevertheless a section of the road connecting to the dam requires widening of the existing community foot path. This section should be equipped with adequate speed humps to check speed limits of the vehicles.

The low pressure pipe, surge tank and penstock are located in the villages Nyaseke and Nyakabale village which can be accessed through a feeder road leading to Upper Rugendrabara Village. The road needs extensive improvements in order to make this motorable for the transport of construction materials. A section which extends towards the surge tank and another extending to the penstocks need widening and improving as all these roads are going to be permanent structures for the project. The powerhouse will be located in Upper Rugendrabara and can be accessed through an existing community foot path part of which falls alongside the river bank. Since sections of the river bank is mined for clay large potholes need to be filled and both the banks should be strengthened in order to make this area motorable for transport of raw materials.

Of these three access roads only the main feeder road which starts from Rugendrabara is considered busy with a presence of fairly a large fleet of vehicles plying on the road carrying goods transporting same to the interior villages. No speed limits have been imposed along this road. It is also noted that several foot paths overlap with project access roads and construction areas. In addition there will be construction work in areas where there is agricultural land.

The access road construction itself may require partial road closures during construction and the duration of such closures will be dependent on the time taken for the construction activity. In order to manage new project related vehicular movements following interventions/actions should be undertaken by the contractor.

a. There should be a clear site layout plan and the site road map highlighting the areas where project traffic will be envisaged and management interventions will be required. The plans should indicate the general traffic control in the project area and specific work sites that may require specific traffic control.

b. There should be a clear site construction plan identifying where the specific constructions will take place, and their proximity to the public building and highways.

c. A site route map to indicate the route that the suppliers for the raw material delivery and other project transportation should follow to be developed. This is
essential in view of the fact that the main construction sites will be accessed through different access roads.

d. It is desirable as far as practicable to demarcate public vehicle and pedestrian routes from site vehicles and site worker routes in that plan. The plan should also demarcate areas for loading, unloading, parking, and exit routes.

e. Copies of this should be displayed in the site office and the LC (3) Chairman’s office. This should be coded showing main roads, community access roads, the schools, hospitals etc. and site temporary and permanent access roads, site office and material storage areas spoil dumping areas.

f. Copies of this should be with the Site Project Manager as well as with the Site Welfare and Safety officer.

g. Any change made to site traffic routes need to be communicated to site workers, the suppliers, and the LC (3) Chairman.

4. **Delineation:**

In case where community access roads need lane closures, for purpose of construction activities or for purpose of handling heavy equipment such as penstock carrying containers, all such closures should be done in close consultation with the Traffic Police and the LC (3) Chairman.

In case the closure will require to be in effect for over 24 hours, community should be made aware in advance, of such closures.

Closures of short durations should be done where possible only during non-peak hours. Closures should be initiated in such a way that it should allow the traffic to slow down at least 500 meters ahead of such closures. Short closures should be manned by signalers.

Full short term lane closures operating for less than 24 hours, cones can be used for delineation. All cones will be at least 700mm in height and constructed from Fluorescent orange or red materials that is resilient to impact and will not damage vehicles when hit at low speed. Cones shall be designed to be stable under reasonably expected wind conditions, air turbulence from passing traffic.

Cones will be inspected at intervals necessary to ensure any miss-alignment or displacement is identified and corrected prior to this causing disruption to traffic.

For long terms works where delineation is required, fixed base bollards (or pre-cast concrete slabs) shall be installed for the duration they are required.

Alternative traffic route should be provided if the closure will be lengthy. Such alternative roads used for detours should also have
adequate safety measures such as road signs, humps and other lighting and repair.

Where the closures require the community to detour and to take alternative routes, the community members should be made well aware of the alternative routes, well in advance.

4.1 Temporary signs

Advance warning signs, other warning signs, regulatory and other signs delineation devices such as cones shall be placed in the same sequence i.e. those furthest in advanced placed first. Signs and devices must be properly displayed and securely mounted that are erected before are required shall be covered by a suitable opaque material.

All signs use shall conform to the designs and dimensions and the national and international traffic standards and codes. Prior to installation all signs and devices shall be checked to ensure that they are in good condition and meeting following requirements:

- Mechanical condition – items that are bent broken or have surface damage shall not be used
- Cleanliness Items will be free from accumulated dirt, road grime and other contamination
- Color of Fluorescent signs – Fluorescent signs whose color has faded to a point where they have lost their daylight impact shall be replaced
- Retro reflectivity Signs for night time use of which retro reflectivity is degraded either due to prolong use or surface damage and does not meet the national standards shall be replaced
- Battery operated devices: Shall be checked for lamp operation and battery condition. Where signs do not conform either to the requirements standards or would fail to pass any of the above checks, they shall be placed on notice from the site safety officer

4.2 Pedestrian access:

Since the surrounding area in very close proximity to the construction site has a daily presence of a large number of pedestrians majority of whom may consist of school children, the contractors should be mindful of the movements of the pedestrians’ access.

All measures should be taken to manage uninterrupted pedestrian movements. Location of access roads /detours shall be done in consultation with the local community especially in important and sensitive environments such as intersection at school crossing. In addition following steps are necessary:

After consultation with the local communities mechanism shall be put in place to take care of persons that might use the pedestrian crossings (School children, women carrying agricultural products, patients etc.)
• Restrictions have to be introduced on construction related traffic movements along the area where there will be many pedestrians (in front of the school and the primary and secondary schools)

• Pedestrian access will be restricted at times throughout the proposed worksite, (it is necessary that security system is put in place to prevent children having access to the construction site as a precautionary measure.

• The Site Project Manager or the Site Administration Manager should ensure, through a checklist, whether all the measures have been taken to ensure that the pedestrian are obstruction free to make their daily movement.

5. Supply & Delivery of Construction Materials

The project may require large quantities of construction materials such as cement, sand, metal and aggregates during construction. It is desirable to locate storage and loading areas away from the areas of frequent pedestrian activity (community foot paths and agricultural land areas)

The area that has been identified for the storage of aggregates will have to be reviewed in the light of its close proximity to human activities such as agriculture, play areas and areas used by the pedestrians.

The following measures are to be followed:

a. All deliveries of stocks should be carefully planned and suppliers should be advised as to the time and location at which these will have to be delivered.

b. They should inform in advance the site stores officers the delivery of such stocks so that traffic and transportation can be properly managed.

c. The frequent presence of trucks can add to increased traffic, sound (excessive noise) and smoke pollution through exhaust emission.

d. Avoid as far as possible the peak traffic hours such as school hours in order to reduce the risk of any children/traffic accident/incidents.

e. In the event that spills of aggregates occur, (e.g. cement or sand), all the roads should be cleaned after the deliveries are made. The drivers should be made aware of this requirement.

f. Ensure that allowable axel weight is not exceeded when the deliveries are brought by the suppliers using the Kassese \ Fort portal main highway.

g. All the drivers employed by the contractor must be fully sensitized about the speed limits and the need for strict compliance to the safety rules.

h. Regular sensitizing sessions are carried out by the Site administration Manager and the Environment/Health & Safety Manager.
i. In case of transporting of friable materials and spoils, adequate protection will be ensured when transporting them. All friable materials will be transported in closed trucks or by using tarpaulin sheets to cover materials.

The maximum vehicle dimension set by Uganda are a width of 2.65 m, a height of 4.2 m and a length of 22m for trucks, and draw bar trailers. The maximum laden weight or gross vehicle weight (GVW) in Uganda is limited to 53 tons as long as it complies with established axel limits.

Axel Load limits to be noted:

<table>
<thead>
<tr>
<th>Tonnage</th>
<th>Type of vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>08</td>
<td>Steering axel</td>
</tr>
<tr>
<td>10</td>
<td>Single drive/load axel</td>
</tr>
<tr>
<td>16</td>
<td>Tandem drive/load axel</td>
</tr>
<tr>
<td>24</td>
<td>Triple axel group</td>
</tr>
</tbody>
</table>

(Source; Paper on Enforcement of Laws and regulations governing Road Transport industry in East Africa, 2001)

6. Transport of workers and maneuvering of heavy machinery.

Use appropriate safe and decent transportation mode to transport workers to project sites, during the construction phase. Although it is not envisaged that large number of workers will be transported from distanced town and villages to the work site, it is imperative that if they are provided routine transport, they must be provided with transport in vehicles equipped with canopy (closed vehicles) with seating facility.

No worker must be allowed or must be asked to travel in a back of a pickup, flatbed truck or a lorry which is not suited for passenger travel. This aspect had been very poor in Mpanga construction site.

In case of transporting heavy machinery, appropriate Lorries (Low bed) should be used and they should be loaded and parked on the vehicles using required safety methods.

7. Operation of heavy machinery plant and vehicles

Experienced drivers should be engaged in driving all types of vehicles in the fleet. In case of construction machinery operators (Crane, heavy trucks, rollers, excavator operators etc.) competency for such work should be proved through accepted permits licenses.

A copy of the license or driving permit or a permit to handle heavy duty equipment should be retained by the contractor’s Administration Manager. All equipment operators should possess valid permits issued by the traffic authorities or construction authorities of the Government of Uganda.

The vehicle and machinery used for the construction purposes of the site should be inspected regularly by the Site Transport Manager employed by the contractor for regular servicing, safety of Tires, repairs oil and hydraulic vacuum. Stickers of different colors may be introduced to recognize the vehicles and machinery used by contractors and sub-contractors.
The Transport Manager should also:

1. Ensure that all the drivers comply with traffic and transport guidelines and driving disciplines;

2. Ensure that vehicle parking space is provided away from the township for vehicles carrying stocks.

3. Ensure that the vehicles carrying stocks and construction materials community access roads.

4. Ensure that vehicle road worthiness certificates are received for all the vehicles engaged in the site.

5. Ensure that all the vehicles have updated insurance coverage.

Make sure that warning devices are fitted to the vehicles and machinery when maneuvering in public roads and the work sites. Flashing orange lights should be mounted on all the vehicles and construction equipment. Heavy duty machinery should be fitted with reversing alarms or in the absence should have a banks-man to guide the driver/operator. Signalers should be engaged enabling the operators to safely operate their machinery. Ensure that drivers and signalers are in constant communication during operations of heavy machinery.

8. Public Awareness

The contractor shall undertake to increase the level of public awareness prior to commencement of the works to advise all road users of the impending construction work, the time taken for such work, and the road conditions likely to be encountered.

Since there are at least three or four schools located along the main access roads of the work sites, the awareness should be specially targeted to school children. Public awareness meetings need to be conducted in regular intervals enabling the community members in the area to be well aware of the specific constructions related activities and how they will be affected to the routine pedestrian activity and the normal traffic of the area.

It is also important that regular visits are made to the schools in the area and inform the children as well as the teachers about the impending work and solicit their assistance in implementing Traffic Plan. Provide necessary assistance to the schools in developing a cadre of signalers from the school children and ensure that signage in front of schools are repaired and replaced when they become distorted or faded.

In addition, this campaign should be broad enough to reach the general motoring public and will consist of a combination of the following options:
a. Erecting advance advisory signage in the form of black and yellow temporary sign erected on the approaches to the work site 10 days prior to commencement of works indicating the type of work to be undertaken, and the time and date of the works.

b. Place notices in the local project office, the LC (3) Chairman’s office about the construction schedule and the possible vehicle movements.

c. Install message signs (sign posting) to warn possible traffic congestion at work area. This can be done by referring to the construction schedule. For example, there will be delineation required when the areas very close to the main road will be excavated for installing of penstock pipes.

d. Liaise with emergency services (Police, Fire Brigades, and other emergency services) regarding impending road closures and construction.

e. Obtain the services of the Traffic Police to improve driver awareness and training before the drivers are engaged in construction work.

f. On completion of the awareness and training, the contractor should arrange issuance of a workplace identity card to the respective drivers. Before issuing the ID, the Transport Manager should obtain a copy of the ID Details and the details of the driving permit, record same in a register for future reference. Also other such times will be identified through public consultation and during this periods truck traffic will be restricted.

g. Discussions to be held with community leaders to identify measures to ensure safety for pedestrians, including school children that use the road as a walkway. Public and truck drivers will be advised regarding the road safety requirements.

h. All the Drivers employed by the contractor to be fully sensitized about the speed limits and the need for strict compliance to the safety rules. The Transport Manager should have a record of how many drivers have attended the sensitization programmes and when did they take part last in such sessions.

i. Regular sensitizing sessions are carried out by the Site Transport/Administration Manager and the Environment/Health & Safety Manager whenever new drivers/contractors will be engaged into the work site. There should be leaflet (prepared in English/local languages) to sensitize about the key compliances for the benefit of the drivers who will transport construction materials to the site. This can be given to the suppliers enabling the suppliers to circulate among the drivers.
j. Humps (using gravel and cement) to be introduced along the main community access road and where needed additional action should be taken to control traffic by engaging signalers (especially in front of schools).

k. A pre-warning road side sign board is erected before each of the hump in keeping with traffic management procedures.

There is a necessity to maintain all the existing road signage and other traffic control methods adopted by the traffic police. Therefore in consultation with the traffic police and with the EHS Manager:

a. Improve or repair the road signs indicating the speed limits/signage/humps. All signs shall to be positioned and erected such that they:
   i. Are within the driver's line of sight
   ii. Cannot be obscured from view
   iii. Do not obscure other devices from the driver’s line of sight
   iv. Do not become a possible hazard to workers or vehicles and
   v. Do not deflect into an undesirable path

9. Record Keeping

The site Health & Welfare Officer under the direction of the Site Administration Manager needs to ensure that temporary signs, devices and traffic control methods are maintained at all times. To achieve this, procedures in line with requirements outlined above will be instituted.

All the traffic related issues should be recorded on a daily basis and that action should be taken to avoid any disturbances to the public immediately. When road accidents take place, strictly follow an accepted procedure to report, investigate and to address the complaints.

Procedures to follow when road accidents take place:

1) Road accident or vehicle breakdown within the project area will be attended to immediately and remedial measures taken.

2) Road works that may impact on any services requiring access the area need to clear from the area quickly as possible.

3) Project traffic controllers, supervision and foreman should be equipped with mobile communications to advice and /or liaise with emergency services to ensure a prompt response will the need arise.

4) The contractor shall when necessary advise the authorities (Police, Fire brigades and other emergency services) in the event an emergency during the proposed works and the traffic management arrangements.
7.7 Explosive Handling and Blasting Procedure

This will explain following aspects of explosive handling and blasting procedure:

Ugandan Laws and Regulations:

a. Use of explosives is governed in Uganda by following laws and regulations:
   i. Explosives Act 1936 (Charter 298)
   ii. Permits

b. Names of the regulating agencies:
   i. Geological Surveys and Mines Department – Ministry of Energy and Mineral Development (Blasters permit)
   ii. National Environmental Management Authority
   iii. Chief of Military Intelligence – Ministry of Defense
   iv. Uganda Police – Ministry of Internal Affairs

c. Types of Permits and Records
   1. Blasters permit
   2. Use of explosives permit

d. Agencies responsible for issuing of permits for procure, storage and use of explosive for Uganda:
   i. Ministry of Internal affairs – Government Security Officer

e. Prescribed methods of storage of explosives and detonators as in the Acts and/or regulations
   i. Inspectors recommendation

f. Regulations in effect which stipulates the construction methods of storage facilities

g. Regulations in effect relating to transport of Explosives
   i. Covered in the clauses in the explosives permit

1. Explosives Act 1936

Explosives Act 1936 (Chapter 298) governs matters relating to the manufacture, storage, sale, transport, importation, exportation and use of explosives in Uganda. (See specific legal requirements/provisions below);
Under section interpretation, it interprets “blasting material” as any explosive used for the purpose of blasting;

“Explosives” means—
   (I) gunpowder, nitroglycerine, dynamite, guncotton, blasting powders, fulminate of mercury or of other metals, colored fires, and every other substance, whether similar to those herein mentioned or not, which is used or manufactured with a view to produce a practical effect by explosion or a pyrotechnic effect;
   (ii) Any fuse, rocket, detonator, cartridge and every adaptation or preparation of an explosive as herein defined;
   (iv) any other substance which the Minister may from time to time by statutory instrument declare to be an explosive;

“Explosives magazine” means any building licensed under this Act

“Local authority” means the council of any municipality or town within the meaning of the Local Governments Act or any other Act, and in all other areas the district commissioner or such Person, body of persons or authority as the Minister may, by statutory instrument, appoint to be the local authority for the purpose of this Act;

(Section 6) Restriction on storage of authorized explosive.

(1) No person shall keep, store or be in possession of any authorized explosive in or on any premises other than an explosives factory or explosives magazine, unless the explosive is kept—
   i) for private use, and not for sale or other disposal, and in accordance with rules;
   ii) for use in the construction of any railway, road or other public work, in quantities not exceeding five thousand pounds in weight, and is stored in a temporary magazine approved by an inspector and under conditions prescribed in writing by an inspector;
   iii) in quantities not exceeding one thousand pounds in weight, and is stored in an isolated place approved by an inspector and under conditions prescribed in writing by an inspector; or

By a person in possession of a license, as provided in section 7, to deal in explosives, and in accordance with any conditions attached to that license or prescribed by rules.

(Section 10) Prohibition of use of blasting materials without permit.

(1) No person shall use or cause to be used blasting materials, unless—
• he or she is in possession of a permit issued under the authority of an inspector;
• he or she is under the immediate supervision of a person to whom a permit has been issued; or
• He or she is the holder of a miner’s blasting certificate issued under any law relating to mines.

There shall be payable for every such permit the fee prescribed in the rules.
No such permit shall be issued unless the issuing authority is satisfied that the applicant may safely be entrusted with the use of blasting materials and that their use is necessary by him or her. The permit shall be obtained from the Ministry of Internal Affairs.

2. Permission to use Explosives
Permission to purchase, transport, store and use commercial explosives for construction of the Small Hydro Power Station has to be provided by the Ministry of Internal Affairs, Uganda which will be signed by the Permanent Secretary of the Ministry.

This letter will stipulate following conditions for compliance:

1. Explosives should be purchased from Explosives dealers duly registered in Uganda:
   These are:
   Nitro Chemicals (U) Ltd, located at King Fhad Building, Kampala and Twiga Chemical industries located on 7th street Industrial Area in Kampala
2. You must employ a registered blaster with a valid blaster’s permit;
3. You should transport explosives in a box body motor vehicle
4. Blasting activities must be supervised by police personnel
5. You must erect a temporally Explosives magazine at nearest Police Station which will be your storage facility for explosives.
6. You must observe all the NEMA laid down guidelines which were provided to you.
7. Police personnel from Police Anti-Terrorism Unit (PATU) based at Naguru will from time to time provide the escort services for the explosives whenever being transported from Magamage Ordinance depot.

3. Mostly required explosives by type are:
   • Ammonium Nitrate
   • Super power (Dynamite) 25 mm
   • Plain Detonators
   • Detonator cords
   • Detonator relays
   • Safety Fuse

4. Persons engaged for the use of Explosives
   1) Licensed Blaster (who will possess the license issued by the Geological Surveys and Mines Department.) and
   2) A experienced Blasting Supervisor
5. Procedure followed for the release of Explosives for routine blasting purposes

5.1 Safeguard on Storage, Transport and Use of Explosives for construction activities.

(1) Contractor shall appoint a competent full time employee to be in charge of storage, transportation, and use of explosive material. He/she should have sufficient knowledge and experience in (a) storage, transportation, and use of explosives. This person shall be formally appointed to be in charge of handling and use of explosives and this decision shall be communicated to all stakeholder parties (Client, Contractor Employees, Consultants, Community, etc.) through appropriate means. In case of the Client and the Consultant the method of communication shall include a letter.

(2) The person who is in charge of handling of blasting material as per the Clause (1) shall be fully familiar with the country laws and regulations including environmental laws and regulations that apply to the importation, handling, storage, transport and use of explosives.

(3) The responsibilities of the person in-charge of explosives appointed as per Clause (1) include but may not be limited to the following.

a. Maintaining the stock positions of explosives, carrying out regular audits on stocks, monitoring of explosive handling and usage, and reporting to the management. Adequate resources shall be provided to the said person to carry out his work effectively.

b. Maintain the permits issued by regulating agencies

c. Maintain records related to procurement, issue and use of explosives. The records thus maintained shall contain the information agreed between parties concerned (Client, Consultant, Contractor, etc.) but commonly include: relevant dates such as purchase, quantity involved, name(s) of responsible person(s), etc.

d. Liaison with community on explosive related matters including impact avoidance and mitigation measures.

e. Ensure the implementation of safeguard measures listed in this document and any other safeguard measures agreed with the Client/Consultant.

(4) The permits and records with regard to explosives as stated in Clause 3 (b) and (c) shall be maintained at a place or places as directed/agreed with the Client/Consultants as applicable.
(5) A permit to handle, transport, and use explosives shall be obtained from the relevant authority prior to import, storage, transport and use of explosives. Conditions stipulated in the permit shall be followed in full. The Contractor shall at all times comply with relevant laws and regulations relating to the importation, handling, transportation, storage and use of explosives.

(6) Contractor’s employees, who are authorized or permitted to work with explosives, shall be trained in the proper method of handling, transporting, and using an explosive unless they already have proper training prior to being selected to carry out such tasks.

(7) Contractor shall not allow an employee to handle, transport, or use an explosive while the employee is under the influence of intoxicating beverages, narcotics, or similar types of drugs. Contractor shall not allow employees with physical disabilities, visual and hearing impairments to handle transport or use explosives.

(8) In advance of carrying out any blasting work: The Contractor shall establish, post, and make known to all employees at the work sites, method or code of blasting signals. Contractor shall educate the Client and Consultants staff on the same.

(9) Contractor shall device a mechanism to inform and educate the community regarding the blasting schedule/program and any subsequent changes to the blasting program, areas of blasting, warning signals used in blasting work, personal safety measures and complaints procedure.

(10) Contractor shall provide and maintain clearly visible signs that identify a blast area at all approach routes to the area. Signals shall include: Warning Signal before blasting; Blast Signal just prior to blasting and All Clear Signal after the blasting. The warning sign boards design shall be acceptable to Client/Consultant as applicable.

(11) All blasting material including detonators should be of approved type and in good physical condition.

(12) Unless otherwise directed by the Client/Consultant, the Contractor shall maintain a complaint book that records complaints on blasting work. The information shall include date of complaint, person, contact details, type of complaint, complaints in words, and who has received the complaint. Also the action taken regarding the complaint shall be reordered.

(13) The workers engaged in blasting related work shall be provided with necessary safety gear and use of such gear by the employees shall be ensured. The safety gear includes, ear plugs, helmets, boots, muffs etc.
5.2 Transport of Explosives in Vehicles

1) The storage compartment of a vehicle that is used for the transportation of more than 2500kgs of explosives shall be entirely enclosed and without windows. The doors of the storage compartment shall be equipped with strong hinges that are securely bolted on the inside and shall be provided with a padlock, which shall be kept locked when an explosive is carried in the vehicle. The entire vehicle body shall be constructed so that bolts, screws, nails, or any metal does not protrude on the inside of the vehicle.

   i) The similar arrangement as above for storage compartment is encouraged for vehicles transporting less than 2500kgs. If explosives are transported by a vehicle with an open body on sites, the original manufacturer’s container shall be used. The magazine shall be secured to the bed of the vehicle. An original manufacturer’s container shall be restrained within the bed of the vehicle so as to prevent movement or displacement of the container. The bed of the vehicle shall be lined with wood. Open trucks should be avoided in transport of explosives in public roads.

2) A vehicle that transports an explosive shall have signs which read “EXPLOSIVES” on all 4 sides and which have letters that are not less 5 inches high and white on a red background.

3) A vehicle that transports an explosive shall be equipped with a portable fire extinguisher in operable condition. The vehicle driver shall be trained in the use of fire extinguishers.

4) Contractor shall keep the Police authorities informed of transport of explosive given the route of transportation, vehicle numbers, locations of storage and locations of use of explosives. Contractor shall inform the police on transport of explosive before the explosives been loaded to the vehicle.

5) A vehicle that is used to transport an explosive shall not be left unattended.

6) A vehicle that is used to transport an explosive shall be capable of carrying the imposed load and shall be in good mechanical condition. The imposed load shall not be more than the rated capacity of the vehicle.

7) A vehicle that carries an explosive shall not be taken inside a garage or shop for repairs or servicing, except for emergency repairs under the supervision of authorized person.

8) An explosive shall not be transported in any form of trailer.

9) A vehicle that carries an explosive shall be operated by an experienced driver with sound track record for good driving.

10) When explosives are transported in a vehicle, the explosives shall be placed in the original manufacturer’s container or specified/approved magazine. The magazine shall be secured to the bed of the vehicle. An original manufacturer’s container shall be restrained within the bed of the vehicle so as to prevent movement or displacement of the container. The bed of
the vehicle shall be lined preferably with wood. Vehicles with metal bed without proper wood cover should not be used for transport of explosives.

11) Explosives shall be delivered directly to the approved storage place or blast area.

12) If the explosives are transported in the same vehicle with detonators, both explosives and detonators should be separately packed as specified in (1) above and explosives and detonators packages shall be physically separated by minimum of 600mm or by a thick solid partition not less than 150mm.

13) Metal, metal tools, carbides, oils, matches, electric storage batteries, inflammable substances, acids, and oxidizing or corrosive compounds shall not be transported in the bed or body of any vehicle or vessel containing/transporting explosives.

5.3 Storage

1) Explosives and detonators shall be stored as prescribed in the regulations (if applicable) or as per the directions issued by the manufacture.

2) Storage magazine if required to be constructed shall be constructed and maintained as prescribed in regulations (if applicable) or as per the directions issued by the manufacture.

5.4 Safety before Blasting:

1) Before explosives are delivered to a blast area, all of the following provisions shall be complied with:

   (a) All employees, except for those employees directly connected with the blast, shall be removed from the blast area.
   (b) Electrically powered machines and equipment, except for a machine that is used to load a hole, shall be de-energized switched off.
   (c) A power cable that is within 50 feet of an explosive shall be de-energized and locked out.

2) A drill hole shall conform to the following requirements:

   (a) Be large enough to freely admit the explosive.
   (b) A hole that has contained an explosive shall not be deepened.
   (c) Only those holes to be fired in the next blast shall be loaded within a given blast area.
   (d) A drill hole which has been sprung and which is not water-filled shall be cooled not less than 2 hours before an explosive is loaded

3) Procedures that permit safe and efficient loading shall be established before loading is started.
4) Tamping of explosives shall be done only with wood or static free plastic rods which do not have exposed metal parts, except that the connectors may be non-sparking metal. Violent tamping shall not be done. A primer or detonator shall not be tamped.

5) Except for an explosive that is specifically manufactured for such use, an explosive shall not be loaded or used in a potentially explosive atmosphere.

6) A blast hole in open work shall be stemmed to the collar or to a point that will confine the charge.

7) A bore hole shall not be sprung if the bore hole is adjacent to or near a hole that is loaded. A flashlight battery shall not be used to spring a hole.

8) When loading a long line of holes with more than 1 loading crew, the crews shall be separated by a distance that is consistent with a safe operation.

9) Loaded holes shall not be left unattended unless the holes are protected against accidental detonation.

10) Before adopting any system of electrical firing, the authorized person shall conduct a thorough survey for extraneous currents. All dangerous currents found by the survey shall be eliminated before any holes are loaded.

11) Blasting operations shall be suspended and all persons shall be removed from the blasting area during the approach of and during a storm.

12) A prominent display of signs warning against the use of mobile radio transmitters shall be posted on all roads within 1000 feet of the loading operation.

13) The blasting affected area shall be clearly marked on ground using suitable prominently displayed sign boards.

5.5 Post-blast Requirements

1) Immediately following a blast, the lead wire or permanent blasting wire shall be disconnected and short-circuited, and the blasting machine or power source shall be locked in the off position.

2) An employee shall not return to the blast area until visibility has returned to normal and the air quality is desirable.
3) The supervisor shall make an inspection of the blast area to determine if all charges have been exploded before allowing an employee to return to the blast area. He shall identify any misfires and treat misfires as per the Clauses 53 and 54.

4) Blasting supervisor shall inspect the blasting surface/area once the blasting surface/area is accessible and check for dangers that threaten the safety of the employees and community. These threats include, loosen boulders, rock pieces that may fall, possible areas of earth or rock slips, etc. Such identifications shall be notified to the management. All necessary actions shall be taken to address those issues.

5.6 Misfires

1) If a misfire has happened, the following requirements shall be complied with:

2) Shall prevent all employees from entering the area, except for employees who are required to handle the misfire.

3) A new primer shall be inserted and the hole shall be re-blasted. If this procedure might present a hazard, the explosive shall be washed out with water or blown out with oil-entrained air.

4) Drilling new blasting holes, digging of the blasted area, or picking of blasted material shall not be permitted until all holes that contain unexploded charges have been detonated or removed.

5.7 Pre-blast Safety Measures

1) Before firing a blast, the blaster in charge of the operation shall do all of the following:
   (a) Set the time of the blast.
   (b) Make sure all persons are out of the blast area.
   (c) Give the proper warning signals as defined in Clause 49, 50, 51 and 62. Make it certain that all employees and equipment have been removed from the hazard area.
   (d) Barricade or post entrances to prevent the inadvertent entry of employees into the blast area.

2) Avoid above ground blasting work in extreme weather conditions, such as during heavy rains, storms, lightening, heavy winds, etc.

3) At least 1 flagman shall be safely stationed on a street or highway which passes through the danger zone to stop traffic during blasting operations. The flagmen shall be equipped with traffic control devices and protective equipment and a mobile phone/communication set (walkie-talkie).
4) The vehicles and road users should be stopped at a reasonable distance from the site and people in the vicinity should be informed when the blasting is carried out. Any debris on the road should be removed promptly before clearing the road for users. Blasting work should be carried out in off peak hours but not during the hours of darkness or at other times, which may cause unacceptable disturbance to religious or other ceremonies.

5) Sufficient and adequate warning shall be given prior to blasting. Use of flagmen, siren, etc. should be arranged. The public in the area should be informed well in advance about the blasting operation and timing.

6) Take precaution to prevent injury to people and damage the structures/houses and vehicles in the vicinity at the locations of blasting work. Blasting should be controlled to prevent vibration damage to structures and injury to people.

7) Blasting should be controlled to prevent vibration damage to structures and injury to people.

5.8 Other safety measures

1) A fire shall not be fought if there is an imminent danger of an explosion by an explosive due to the fire. Employees shall be removed to a safe area and employee entry to the fire area shall be prevented.

2) Smoking, a spark, or a flame-production device, including a firearm, shall not be permitted within 50 feet of an explosive.

3) Additional precautions shall be taken when using an explosive in a congested area or in close proximity to a structure to contain the explosion by using mats or by other methods to control the throw of fragments which could cause injury to an employee.

4) Explosive shall not be used in the proximity of utility lines without the knowledge and consent of the utility firm.

5) Only approved explosives which are within expiry date and in good physical condition shall be used in blasting. Leaking or deteriorating explosives shall be destroyed under the immediate supervision or direction of the manufacturer.

6) The preparation of blasting operations shall be stopped at the approach of and during a thunder storm. Employees shall be removed from the blast area.

7) If possible, a blasting operation above ground shall be conducted during the daytime. It is recommended to carry out the blasting work between 6 am to 6 pm.
8) Unused detonator and explosive shall be removed from the workplace and shall be returned to the magazine.

9) Contractor shall obtain expert services to determine the safe vibration limits unless specified by the regulations. Contractor shall carry out vibration measurements on regular basis and ensure that recommended vibration levels are not exceeded. Contractor shall also submit reports of vibration measurements to the Client/Consultants within one week of receipt of such test results with his proposals for vibration reduction measures if required.

10) Contractor shall establish air blast limits prior to commencement of blasting work. Peak overpressure shall be held below prescribed levels. Appropriate blast-hole patterns, detonation systems, and stemming shall be used to prevent venting of blasts and to minimize air blast and noise levels produced by the blasting operations. The overpressure limit shall be lowered if it proves too high based on damage.

11) Blasting work shall not be carried out in days of social and religious importance if such activities hinder the cultural activities of the community. Community shall be consulted adequately to identify dates in which the blasting work shall be avoided in a given area.

12) Before the firing of any blast, the rock to be blasted shall be covered with approved blasting mats, soil, or other equally serviceable material, to prevent fly rock that may result in damage to life or property.

13) The homeowners/renters determined to be in the design fly rock zone for a particular blast shall be notified well in advance of the pending blast, and few hours prior to the blast so that they may temporarily relocate during the blast. The periods of advance notification shall be determined in consultation with community.

14) Suggested methods of protecting structures and utilities from the effects of the blasting, blast induced fly rock, vibration, and air blast overpressure include, but are not limited to the following:

1. Rope blasting mats
2. Wire rope or tire blasting mats
3. Backfilling
4. Stemming full depth
5. Reduced explosive loads
6. Use of millisecond delays
7. Relocation of any or all existing utility lines

15) The CONTRACTOR shall protect all overhead and underground utilities prior to blasting and immediately repair or replace any damaged by the blasting operations. If the CONTRACTOR
wishes to temporarily relocate any utility lines that lie near a blast zone, he shall have written approval from the governing utilities and pay all relocation costs.

16) If fly rock travels beyond the design fly rock zone limits, all blasting operations shall cease. The respective parties shall review the site and determine the cause and solution to the fly rock problem. Before any further blasting proceeds proper solution to fly rock problem shall be implemented.

17) The affected people shall be appropriately compensated against damage by vibration, air-blasting, and fly rocks.

Explosives Inventory-is kept inside the magazine, this includes explosives out and explosives in. The entries are made and signed by the Blaster and the Police Officer.
Blasting details book- kept with the blasting supervisor (make a small summery of the days blasts)

7. Community Alert
   - People in the close vicinity to be informed at least two hours in advance before the explosives are transported to the site.
   - Before the blast takes place, the family members are moved to a distance place, at least half a kilometer.
   - A siren is to be used to make the people aware of the blast.
   - An employee together with a policeman with a red flag to be stationed at access roads until they are informed that the blast is over. The police presence is required to ensure the safety of the community members.

If the blast is carried out within the construction site following procedure is adopted:
   - The access road to the particular site is closed from all its entrances.
   - An employee to be stationed in each of the road entrances with a red flag until they are informed that the blast is over.
7.8 Slope protection, Erosion Control and Soil Conservation Guidelines

1. Purpose

This document attempts to provide guidelines for the civil contractors to adopt appropriate technical as well as biological measures for slope protection, soil conservation and erosion control, during the construction phase as well as operational and maintenance phase, but with particular emphasis on the construction phase.

The guidelines provided here will supplement any other technical and structural designs and construction remedies, which the design engineers and the civil contractors will suggest for purpose of protecting slopes, soil conservation and erosion control.

In preparing these guidelines, the recommendations made in the previous feasibility studies, the Social and Environmental Impact Assessment report and its related technical reports such as the geological study, the observation made by the Consultants during the site visits have been considered.

It is assumed that the contractor as well as the sub-contractors will design the technical as well as non-technical measures to suit the slope conditions and erosion levels of the terrain when grading and clearing will be undertaken using the guidelines to stabilize the slopes, to protect from erosion and to conserve soils in the construction areas.

2. Impacts due to excavation of the slopes

The SEIA describes the impact of soil erosion as follows:

‘When subjected to earthworks and construction activities, it will expose the land surface to soil erosion. The situation will be exacerbated by the activities such as levelling, embankment construction in the plain area, stabilizing and removal / clearance of vegetation to open the access roads and for temporary use during construction for instance dam site and power house, pipe laying areas and staff quarters site etc. The impact of soil erosion is likely to be severe especially in areas downstream where homesteads down slope could be swept by rolling soils and rock particulates. Soil erosion is also a threat to the water quality of the river which is critical water sources for the surrounding communities. The major concern here is that construction works may sediment such streams and downstream water bodies, and increase the suspended solids in such waters making it unfit for human consumption. If appropriate measures are not taken, the increased erosion loss could be significant over the whole construction period’.

3. Country legislation governing matters pertaining to soil protection and conservation:

The GOU has several legislation in which soils conservation measures have been prescribed. Two of the main documents are the National Environmental (Minimum Standard for Management of Soil Quality) Regulations and the National Environment (Mountainous and Hilly Areas Management) Regulations, 2000. *(Uganda section 107 of the National Act Cap 153)*

1. Section 30 and 107 of the NEA Act (Minimum Standard for Management of Soil Quality Regulations) deals with soils to be used only with conservation measures and provides guidelines for soil conservation. Fourth Schedule provides for Soil Conservation
Measures and Guidelines and describes that simple conservation practices are insufficient to stop erosion on steep topography (Slopes of 15% and above);

2. The objectives of the guidelines for the Mountainous and Hilly Areas Management Regulations are to (among other things):

   II) Facilitate the sustainable utilization and conservation of resources in mountainous and hilly areas by and for the benefit of the people and communities living in the area;

   III) Promote the integration of wise use of resources in mountainous and hilly areas into the local and national management of natural resources for socio-economic development; and

   IV) Regulate and promote efficient and sustainable use of resources in mountainous and hilly areas so that the functions and values derived there from are maintained for the present and future generations.

3. In terms of the guidelines, a mountainous and hilly area is at risk from environmental degradation if:
   
   I. It is prone to soil erosion;
   II. Landslides have occurred in such an area;
   III. Mud flows have occurred in such an area;
   IV. Vegetation cover has been removed or is likely to be removed from the area at a rate faster than it is being replaced;
   V. Any other land use activity in such an area is likely to lead to environmental degradation;

4. It further stipulates that every land owner or occupier whose land is situated in a mountainous and hilly area shall take measures:
   
   I. To reduce water run-off through the grassing of medium and steep slopes,
   II. To mulch and bund gardens on medium and steep slopes;
   III. To practice agro-forestry;
   IV. To prevent the burning of grass in areas of intensive agriculture or on steep slopes.

Following rules have been stipulated in the guidelines as necessary for soil conservation. A land owner or occupier on gentle to medium slopes in a hilly or mountainous area shall:

   I. not cultivate gardens exceeding one hundred meters in width (in case of a gentle slope) and seventy five meters in width in case of medium slope;
   II. leave uncultivated strips of land of not less than two meters width between all cultivated plots which shall be planted with grass approved by the local environment committee;
   III. follow contour lines marked by the local agricultural extension officer and the local environment committee in planting crops;
   IV. grass with low growing grasses all house compounds except winnowing areas and areas for drying foodstuffs;
V. not demarcate fields or plots by furrows or gullies; and
VI. lay parallel to, and halfway between the existing bunds trash lines consisting of dead vegetation where the land is planted with permanent crops.

3rd Schedule of the regulations provides soil conservation measurements and guidelines for application. It stipulates that soil conservation is required as a basis for environmentally sound production of food, wood, and other commodities bases on sustainable use of land, species and ecosystem. In most areas of Uganda the combination of several conservation practices are recommended and packages will depend on area and crops/ livestock/tree species on the land.

Lowlands and flat areas (Slopes up to 3%). Lowlands and flat areas are the alluvial plains and the bottom lands of small tributaries in a catchment. The following soil conservation structures and practices are recommended:

I. surface or subsurface drainage;
II. interception and diversion ditches;
III. rows of crops should be laid out at right angles to the contour lines;
IV. crop rotation;
V. Fertility improvement (package will depend on crops and area).
VI. Diversion ditches or field ditches should be at a spacing of 100 to 200 meters; depth of 30 cm and length not more than 500 meters. These should be laid out slightly off the contour to obtain a gradient of 0.3 to 0.5%. The collecting ditches (depth 60cm), should drain into main ditches or natural drainage ways and should run in the direction of the greatest slope.

Medium slopes (Undulating to hilly), Slopes of 3 to 15%. The recommended conservation practices in this category are as follows:

(1) contour cultivation; (b) contour ridges or absorption banks at a spacing of 30m;
(2) grass strips and cropping, width 30m;
(3) mulching;
(4) agro forestry;
(5) crop rotation and fertility improvement;
(6) Wind breaks or shelter belts; should be located perpendicular to main erosive wind direction.

Steep topography (Slopes 15% and above). Simple conservation practices are insufficient to stop erosion and the following management practices are recommended:

I.1. Terraces;
I.2. Contour cultivation (plough and planting along the contour), and absorption banks at a spacing of 10-20 m;
I.3. Crop rotation and fertility improvement;
I.4. Strip cropping - strip width 10 to 20 m;
I.5. Agro forestry.

Relevance to IFC Performance Standards:
Performance Standard 6 recognizes that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development. Relevant threats to biodiversity and ecosystem services, especially focusing on habitat loss, degradation and fragmentation, invasive alien species, overexploitation, hydrological changes, nutrient loading, and pollution has to be minimised. In the absence of a relevant and credible global, regional, or national standard for the particular living natural resource in the country concerned, the client will:

- Commit to applying good international industry operating principles, management practices, and technologies; and
- Actively engage and support the development of a national standard, where relevant, including studies that contribute to the definition and demonstration of sustainable practices.

4. Slopes:
Slopes are naturally unstable. When modified mass movement, erosion, slippage or slide can be caused. The characteristics that influence the stability of a slope may include its geology, slope drainage, slope topography (shape and steepness), soil type and changes to the slope (placing soil or removing soil from the slope). Development of steep slopes, especially adjacent to agricultural corridors, human populated areas can increase risk of people and agricultural property being affected. Removing vegetation can increase the amount of sediment traveling down the slope. If the ground is also deeply weathered, in it would be unwise to carry out excessive excavation for location of with steep slopes unless proper slope stability measure is undertaken before and after development.

5. Frequently adopted slope stabilization strategies:
Properly designed slope protection and stabilization can comprise of a vegetation-biological and a mechanical-structural component. For maximum effect, both components must be integrally planned.

5.1 Vegetation /biological designs
Methods based on vegetation and biological designs for slope protection can be affected by having a dense vegetative cover along the slopes where the areas will be exposed to low to modest slopes.

**Dense vegetative covers for surface stabilization**

Surface stabilization is extremely important immediately after land modification in order to prevent erosion and sedimentation of the water courses. It should be done as rapidly as possible. This can be done through simple methods such as terracing and allowing a dense vegetative cover depending on the nature of the slope. This method is more suited to stable or marginally stable slopes. Native plants (fast growing and grass) can be introduced before planting tall trees. The immediate objective of the stabilization is to ensure that soil is trapped with a route system to prevent surface run off. This method is less expensive and easy to maintain.

It is also important that this is blended with the types of vegetation in the surrounding area to make visually harmonious with the natural landscape. Use of terraces and grass, appropriate drainage paths, culverts and use of outside soil tips can help stabilizing the slopes during excavation. It is expected that soil tipping will be done only in areas pre identified for such purposes. Since spoil dump areas will also prone to erosion, it is required that terracing and establishing vegetation cover in such areas to prevent spoils eroding into the nearby water streams and possibly into the river. For unstable slopes, these methods should be preceded by any form of mechanical interventions such as retaining walls etc.

**Excavation and filling techniques**

Where the slopes are steep, it is not desirable to form vertical cuts unless the area that is going to be cut is consisting of solid surface (rock surface). Where the soil seem to be fragile it is best that flat slopes are cut in two benches or terraces. Over steep slope can give way to earth collapses or slope failures especially during heavy rains. It is best to vegetate the areas excavated immediately after the cut slopes. Long-term stable cut slopes in most soils and geographic areas are typically made with about a 1:1 or ¾:1 (horizontal: vertical) slope.

Cut and fill will include excavating the toe of an earth flow until successive failures result in a stable slope, removing and replacing failed material with lighter, more stable material, or re-compacted debris. Scaling and removing of loosened material should be carried out over the slope faces by manually and should avoid the use of machinery along the slopes. Fill materials should be properly compacted to avoid future slope failures. Compact fill slopes in sensitive areas or when the fill is constructed with erosive or weak soils. Use specific compaction procedures, such as wheel rolling or manual methods. Machinery should be used depending on the sensitivity of the area.
Drainage Techniques

This would include efforts to remove or disperse surface water, drainage of tension cracks, using rock fill underlain by filter cloth to prevent upward migration of water into the prism of the channel section, insertion of trench drains, perforated, horizontal drains, or drainage galleries, insertion of vertical drains or wells discharged pumps, for drainage of low permeability soils. All unpacked debris which may create unaccounted disturbances to rainstorm water draining along the slope should be removed. Prevent accumulation of seepage water at lower edge of the channel walls by allowing them to be drained without adversely affecting the other surrounding soil especially on penstock sloping area. If the slopes are unstable due to vertical nature and the fragile soils and that the site is on a failure surface, there need to be structural remedies such as retaining walls.

Soil conservation methods

All construction activities should require proper soil protection measures in order to minimize damage to the crops in short term and to prevent any slope failure in the long term. Soil erosion is likely to occur due to loosening of soils which arise from excavations and from vegetation clearances along the steep slope and along the access roads. Rehabilitation of the cleared areas and cut and fill slopes should be vegetated using biological methods such as re-grassing and tree planting in area areas prone to soil erosion. Other soil conservation techniques including terracing and contour ploughing to restore the bare hill sides within and surrounding the proposed project site should be implemented. The access road should be properly graded and fill areas should be compacted according to the required standards to prevent erosion and slips. In areas where the land is cleared and modified, terracing, transplanting living plants and seedlings, (in case of grass, seeding and fertilizing, or mulching) of exposed the soil surfaces may be required. In Mpanga, this method was undertaken along the river bank as most of the soils were dumped along the river bank.

5.2 Mechanical/ Structural designs:

Restraining structures.

These include retaining walls, piles, buttresses, counterweight fills, cribs, bin walls, reinforced earth, and pre-stressed or post-tensioned soil or rock anchors. The purpose of a retaining structure (e.g. gabions, crib walls, welded-wire walls, geo-textiles), is to provide stability against sliding or failure and protection against scour and erosion of a slope, or the toe or cut-face. However this is an expensive option and can be suited only in areas where there is no space for larger cuts into the hill side.
Advantages of gabion structures are ease of construction, tolerance of uneven settlement, and good drainage characteristics. Gabion walls are particularly suited in areas where only small, fragmented rocks are available. Typically, they can be built without heavy equipment. Both crib and gabion walls lend themselves to incorporation of vegetative systems to provide additional strength over time as well as providing a more esthetically pleasing appearance.

Retaining walls provide lateral support to vertical slopes of soil. They hold back a vertical or near vertical face of soil that would otherwise cave, slump or slide. Retaining walls are the most common way to deal with steep slopes and can be constructed from many materials including boulders, fieldstone, concrete, treated wood, railroad ties or landscaping timbers, self-stacking precast concrete blocks and bricks.

6. Site specific slope management measures for RSHPP:

As explained in section (1) of this supplemental management plan, the slopes to be subjected for modification for the construction of Rwimi Small Hydro Power Project are considered to be steep to gentle and require management measures to stabilize them for erosion and for soil conservation.

After a reconnaissance visit to the channel trace following areas has been earmarked for slope stabilization purposes:

Table (1) Management Measures specific to project site locations

<table>
<thead>
<tr>
<th>Possible impacts due to the modification of slopes and erosion</th>
<th>Location</th>
<th>Management measures/ actions</th>
</tr>
</thead>
</table>
| Vegetation clearance for the construction of the Dam/Dam access road and the intake can be exposed to excessive erosion. | Dam Access Road/ Dam/ intake / Reservoir Cha 0+013 to 0+090 | • Vegetation clearance should be immediately followed by measures to stabilize the soils through measures such as terracing and pitching stones/concreting road edges to prevent gully erosion.  
• There may be a need for retaining walls. |
| The aqueduct area (that will be built to allow the seasonal stream to flow undisturbed during rainy season) can be exposed to erosion. | Along the low pressure pipes at Cha 0+166 | • After the construction of the aqueduct ensures that the area below be terraced and allow vegetation to grow to prevent any obstruction to the seasonal water flow. |
| Rock falls, earth collapses and earth slips can pollute | Along the low pressure pipe | • During excavation it is necessary to ensure that no debris (spoils or other earth materials) fall down |
the water intake point beneath, when the slopes above will be excavated. The slope is considered very steep.

<table>
<thead>
<tr>
<th>Section</th>
<th>Slope</th>
<th>Notes</th>
</tr>
</thead>
</table>
| The land will bisect due to the construction of the low pressure pipes needing Cha 0+295 & Cha 0+480 to 0+660 & Cha 1+650 | close to 0+111 | the slopes. Fly rocks should be minimized by adopting appropriate blasting practices.  
  - Plan only small areas for excavation one at a time ensuring that all precautions are taken to cover such areas to prevent erosion and sediment flow during rain.  
  - Allow underpass or overpass depending of the lay out of the low pressure pipe enabling the people to travel across the agricultural land. |
| The pipe laying section will need excavation of steep slopes which has either side agricultural lands. There is all the possibility that spoils can be fallen into the river. Cha 0+340 to 0+450 | close to 0+111 | Plan for small areas for cut and fill at a time  
  - When excavating the slopes, adequate measures should be introduced to ensure the stability of the cut slopes.  
  - If the gradient is steep enough, vertical cut slopes should not be used unless the cut is in rock or very well cemented soil.  
  - The side slopes should be incorporated with step cuts at every 3 m intervals where necessary. The width of these step cuts should be around 1 m.  
  - Clayey type of soil need to be removed and the excavated areas should be properly compacted before the construction of the headrace canal.  
  - Any fill areas should be manually compacted (to prevent on the slopes that may affect the agricultural lands below.  
  - Compaction should meet the accepted standards and should follow the appropriate sequence.  
  - No soil tipping is allowed below the embankment |
| The section of the low pressure pipe to be excavated and rocks to be removed is very steep and the possibility that rock boulders if flown can obstruct the river flow is high since the river section is narrow. Cha 0+913 to 0+938 & Cha 1+064 to 1+366 | close to 0+111 | Excavation work should be planned. Prepare a design for clearing the rock before blasting work commences.  
  - Avoid open blasting, rock to be removed without big boulders allowed to be rolled towards the river.  
  - Use blasting methods that will reduce intensity of spraying of boulders and aggregates. (smaller charges densely drilled blast holes and blast mats)  
  - Once rock overburden is removed stabilize the area with rubble /masonry retention walls.  
  - Provide advance warning to the community below before the blasting take place and before mucking operations are carried out after blasts. |
| The steep slope along the section of the penstock at anchor 38 consists of rocks which will be cleared. Erosion will be possible once rock overburden is cleared. | Point at anchor 37 and 38 | - Section of rock to be cleared should be stabilized with retaining wall or terraced lay out.  
- Prevent rock debris and spoil to be rolled into the agricultural lands nearby |
| --- | --- | --- |
| Foot paths to water collecting points and natural drainage paths can be obstructed after the construction of the penstock | Anchor point (44) (41) | - Ensure that alternative foot paths and drainage paths are provided during the construction of the Anchors and installation of the penstock pipes  
- Ensure that natural drainage paths are stabilized and ensure their flow through installation of underpasses, culverts underneath the channel sections.  
- Apply drainage techniques to prevent erosion (see diagram 5.2) |
| There will be excavation in areas close to a few houses and agricultural land areas frequented by women and children | Cha 1+474 to 1+ 507 | - Install drainage paths to facilitate storm water drainage at regular intervals  
- All grievances pertaining to loss of crops due to falling of rock debris should be immediately attended to.  
- The removal or tipping of top soil for subsequent use and the compaction of excavated areas should be properly planned so that the farmers will not be affected due to construction operations... |

7. Access Roads

Construction Access Roads

Rwimi (I) SHP Project is located in the middle reaches of river Rwimi in Kitswamba Sub County, Busongara County in Kassese District. The site of diversion can be reached by traveling along the A109 road from Fort Portal for about 2km passing bridge over Rwimi River and then turning to right and following the earth road off Rugendabara leading to the dam site. The dam is located at the village Kihoko along the main feeder road which starts from Rugendrabara and runs through all four LC1 areas in the Kitswamba Sub-county. The feeder road is gravel compacted and well maintained, nevertheless a section of the road connecting to the dam require widening of the existing community foot path. This section should be equipped with adequate speed humps to check speed limits of the vehicles.

The low pressure pipe, surge tank and penstock are located in the villages Nyaseke and Nyakabalevillage which can be accessed through a feeder road leading to Upper Rugendrabara.
Village. The road needs extensive improvements in order to make this motorable for the transport of construction materials. A section which extends towards the surge tank and another extending to the penstocks need widening and improving as all these roads are going to be permanent structures for the project.

The powerhouse will be located in Upper Rugendrabara and can be accessed through an existing community foot path part of which falls alongside the river bank. Since sections of the river bank is mined for clay large potholes need to be filled and both the banks should be strengthened in order to make this area motorable for transport of raw materials. It is also noted that several foot paths overlap with project access roads and construction areas. In addition there will be construction work in areas where there is agricultural land.

Specific recommendations are:

- A survey has already been carried out and the recommendations of the survey need to be followed in designing the access roads.
- All cuts and fills should be graded to provide adequate slopes for side drains.
- If the road is designed for one way traffic, adequate space areas should be provided for in clear visible area for at least 20 feet (6 m) width crossing sections in every 250 meter intervals. Consider constructing a narrow, single lane road with inter-visible turnouts to minimize excavation.
- Curves and switchbacks must be of sufficient radius for trucks and other large vehicles to negotiate easily.
- The new stretch will be compacted using a layer of gravel. Both the new stretch and its connecting road will be further improved with way side drainage, slope protection, culverts and appropriate areas for vehicle crossing. Where necessary aqueducts, bridges and culverts should be designed and constructed.

Access roads which are of short distance and will be built on the existing community foot paths should withstand Lorries which will carry spoils and other construction materials. Most appropriate stabilization measure will depend on site-specific conditions such as the steepness of the area to be excavated, the soil type, road use and alignment constraints.

- In general, the access roads need to be properly graded compacted and erosion control measures to be introduced.
- Since the area will be muddy and fragile during the rains, construction of access roads should be completed before the onset of rainy seasons.
- Both side and at least one side of the road should have a drainage (line drain) which can be stone pitched as shown in the figure above.
• All earth materials removed will be carefully transported to spoil yard and under no circumstances side tipping will be allowed.
• Necessary signs, barricades and road humps will be erected. Areas where the schools are located, specific measures will be taken to control dust emission by watering.
• Any loss of property or agricultural land to be incurred during the construction of access roads will be duly compensated.
• All culverts and temporary bridges (mostly wooden) need to be replaced with causeways and stronger appropriate type of culverts as shown in the figure.
• The access road to power house which will be built along the section alongside the river should be properly reinforced with gabions to prevent river bank erosion.

8. Conclusion

The guidelines should be supplement to the measure already recommended in the SEIA and the ESMP. It is assumed that the civil contractors too are equipped with adequate technical knowledge to adopt slope protection strategies when construction work is undertaken in steep slopes such as in this environment. Therefore a method statement for the excavation of the Dam section should incorporate procedure to be followed taking into account the measures suggested above. When planning the excavation for the steep slopes, as suggested it is necessary to prepare site specific mitigation plans. Such plans should be limited to small areas. Areas already surveyed have provided minimum amount of land and therefore a combination of both structural methods and biological methods will be important for slope protection and erosion control.
7.9 Chance Find Procedure & Guidelines

Background

IFC Performance Standard (8) recognizes the importance of cultural heritage for current and future generations. Consistent with the Convention Concerning the Protection of the World Cultural and Natural Heritage, this Performance Standard aims to protect irreplaceable cultural heritage and to guide clients on protecting cultural heritage in the course of their business operations. Cultural heritage refers to tangible forms of cultural heritage, such as tangible property and sites having archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values, as well as unique natural environmental features that embody cultural values, such as sacred groves. In addition, the requirements of this Performance Standard on a project’s use of cultural heritage are based in part on standards set by the Convention on Biological Diversity. The requirements of this Performance Standard apply to cultural heritage regardless of whether or not it has been legally protected or previously disturbed.

Legal, Regulatory, Policy and Customary Framework

The Historical Monuments Act 1967, Uganda stipulates action to be taken in respect of preservation and protection of historical monuments and objects of archaeological and traditional interest. Intangible forms of culture, such as cultural knowledge, innovations and practices of communities embodying traditional lifestyles, are also included.

The customs existing in this part of the country with regard to deaths and burials is also considered. Normally burials are made in the same home/agricultural area and the graveyard locates within the close proximity to the construction area are of cultural importance. The view upheld by the community members is that “they do not disturb dead”.

The project Context

The proposed Rwimi Small Hydro Power Project (RSHPP) will be located in the Lower reaches of River Rwimi. The land along the right bank of the River is a consisted of undulated mountainous terrain with steep to moderately steep slopes predominantly used for agriculture. During the initial land survey, two burial ground were observed along the access road to the dam site. During a subsequent survey these two burial grounds were deviated from the access road but, there will be a possibility that such burials could be observed during excavation.

The SEIA mentioned that the project is not located within an archeologically or culturally significant area. However, before starting the construction works, SEIA recommended that the civil contractors should be taken on a guided tour to the site to acquaint themselves on the physical and cultural resources. There are no structures that are of significant cultural value to the people which would be affected by the proposed project. Since the construction process will be modestly large in scale, involving significant earthworks at the dam site, access roads and the other structures along the slopes and agricultural lands, the contractors need to be made aware
of the chance find procedure enabling them to take action in case burials and any other culturally significant objects could be observed.

**Scope**

In case during the excavations, there unearths materials/objects that are considered to be of significance in terms of the fact that;

- they are of archeologically important;
- or that they are culturally sensitive objects such as burials, trees or stones by virtue of the fact that community in the area uphold and respect them
- or that they are of important to GOU for their natural resources value such as minerals

Then the Chance Find Procedures to be followed:

**Responsibilities of Contractors & Sub Contractors**

1. Each Subcontractor on the job is responsible for providing adequate awareness and to plan all work to prevent any damage to objects/materials if unearthed during the normal course of work.

2. The contractor, the sub-contractors and the work force engaged by them are required to be conversant with chance find procedures;

3. During the course of transect walks, surveys and during excavation along the project area, if any of the objectives as explained above is observed or that any worker brings to the notice of the civil contractor or representative in the site that such objective is observed during the work, the developer and its representatives in the site as well as civil contractor or his staff in the site should be held responsible to stop the work forthwith in that particular location to prevent any willful or damage otherwise can be caused;

   It may include:
   - Burials
   - Any trees, any stones which are of cultural importance

4. The IFC PS (8) guidelines explains that when in doubt about whether something is cultural heritage, the client should seek the knowledge and advice of local and international experts, government authorities, and members of local communities and Indigenous Peoples.

5. The knowledge of local communities is particularly important for identifying cultural heritage that may be tied to the natural environment and not evident to outsiders. Therefore in this case, the civil contractors should have the presence of mind to act upon any doubtful objects that will be surfaced in the excavation work.
6. Any such event should be notified either to the police, DISO (District Investigation Security Officer), the LC (3) Chairman and/or the District Environmental Officer.

7. Action should be taken to seal off the immediate area until arrival of any one of the officials.

8. The sealed off site should be left undisturbed until an authorized representative arrives to verify whether the object/material is of historical/cultural/natural importance or not.

9. If material is found to be of Historic importance an emergency evacuation is done to collect the material for further investigation or safe keep by the government of Uganda.

10. Recomence of work will be possible only after the consent of the responsible officer being satisfied that action is taken to protect or to deal with the objects.

11. All legal requirements as well as cultural requirement should be documented and all such documentation should be made available in any of the subsequent investigations;

12. In case of burials, the contractor should consult the Grievance Committee members and should be in touch with the relevant family members, before they are dealt with. In consultation with the family members the contractor should provide all necessary assistance to protect the burials in situ (by erecting a fence around the area) or to translocate same with consent of the family members after paying compensation if required.

13. Areas to be protected on the advice of the stakeholders should be adhered to by the contractor and the project developer. Such areas should be demarcated and specific management practices should be adopted.

14. However it is the responsibility of all those involved to ensure that construction work commences at the earliest possible and that all issues with regard to the ownership, claims and protection be amicably settled.
7.10 Livelihood Improvement Programme

(Livelihood Improvement Framework was prepared in the context of land acquisition for Rwimi Small Hydro Power Project)

Preamble:

In order to accommodate the associated structures for the proposed Rwimi Small Hydro Power project, it requires approximately 8.75 ha of land equivalent to 21.646 acres to be acquired from the community living close to the project area in the villages of Kihoko; Nyaseke; Nyakabale and Upper Rugendabara in Kasese District. This comprises land required for project infrastructure development, access road, workers’ camp and the transmission line. The acquisition affects 96 households who are primarily living on agriculture. Almost all the households whose lands are affected by the land intake fall into the category of customary land owners who will be entitled to compensation based on the crops available in the land at the time of valuation. There were no freehold owners of the land except one family. Project affected persons (PAPs) requiring any physical displacement were not identified except one family whose house was partially affected due to the acquisition of land for the access road.

Adequate measure had already been taken by the project developer to ensure that impact on economic displacement (PAPs being peasant farmers) due to land intake, be mitigated by providing the projected affected persons with necessary compensation. No major physical displacements were envisaged. No sites of cultural significance or graves were affected during land acquisition. All resettlement issues were appraised in the Resettlement Action Plan, the recommendations of which were approved by the National Environmental Management Authority (NEMA).

Computation of compensation to be paid to the PAPs in settlement of the land to be acquired was carried out according to the regulations stipulated by the Uganda Land Act and the conditions of approval made by NEMA. A Resettlement Action Plan was required to be prepared by the Developer which was duly prepared considering the community grievances as well as other local and international obligations pertaining to land acquisition and any physical/economic loss arising out of such work. Although compensation was paid to all the PAPs, based on the accepted standard practices such as replacement cost, 30% of additional value was added to base compensation in the form of disturbance allowance enabling the PAPs to better prepare for land transfer.

Nevertheless, since almost all the PAPs are farmers and their primary livelihood is based on agriculture, diminishing of the size of land may make their lives vulnerable. Providing an alternative means for sustained livelihoods, in the event of acquisition of lands for the development projects is well recognised in existing social safeguard policies and the institutional processes. However without adequate commitment to ensuring the livelihood improvements (beyond the legal provisions) of the poor affected persons, there is no guarantee that most of the poor people will have their livelihoods restored to the previous levels. It is in that context it is vital to implement a Livelihood Improvement Framework (LIF) taking into consideration the loss of livelihoods and its associated impacts on the
community well being when lands are acquired for development purposes. Such an approach not only to keep pace with the Legal provisions of Uganda but to be abreast with international best practices.

The LIF will ensure that the Rwimi Small Hydro Power project whether the existing practices such as community engagement, resettlement and compensation Action Plan (RAP) and other regulatory requirements have been sufficient to ensure a sustainable livelihood framework to support the project affected persons of small hydro power projects.

**Widely Used Terminology by IFC**

**Affected person/people or affected community:** any community or person who can no longer use, own or benefit from a built structure, from land (residential, agricultural, or pasture), from annual or perennial crops and trees, or from any other fixed or moveable asset because of a project’s implementation. This loss may be in full, or in part, and may be temporary or permanent.

**Compensation** - payments made by those causing specified and agreed loss to those who suffer the impairment of access to land, waters and other critical natural resources or livelihoods, or damage to, or destruction of, community members’ individual or collective assets of any kind, whether accidental or planned. For further information, see the Rio Tinto Compensation and benefits for land access guidance.

**Cut-off date:** This is the date when the census and the inventory of assets of the people affected by the project are completed. People occupying the project area after the cut-off date are not eligible for compensation and/or resettlement assistance. In the same way, fixed assets (like built structures, crops, fruit trees and woodlots) that appear after this date, or an alternative mutually agreed on date, will not be compensated.

**Economic displacement:** Economic displacement occurs when people’s means of earning an income is lost because of the construction or operation of a project. This includes situations where people lose their access to resources (land, water, forest or markets) that they depend upon for their livelihood.

**Host community/population:** Host communities are those who receive project-affected, resettled people either on their land or in their geographical and economic area of influence/jurisdiction.

**Indigenous:** refers to people, communities and nations who claim a historical continuity and cultural affinity with societies endemic to their original territories, which developed prior to exposure to colonisation or formation of a nation state. Indigenous communities can be referred to in many ways (such as tribal, aboriginal, first nation and, most correctly, by the name they ascribe to themselves in their own language) and usually consider themselves distinct from mainstream society with whom they contest their cultural sovereignty and rights of self-determination. Their strong customary affiliation to ancestral lands and waters is where major conflicts can occur with resource developers.

**Land acquisition:** A company can acquire land by purchasing the land or by gaining the right to access that piece of property (e.g: through easements or rights of way). If this is undertaken in an open market on a willing-seller/willing-buyer basis it is not considered resettlement.
**Land expropriation:** This process dispossesses a person, household or community of their land. It is usually done by a public authority and may be in return for compensation.

**Livelihood:** the occupational activities associated with the maintenance of material life. In industrial society livelihoods are typically associated with formal employment and cash remuneration; in other societies livelihood can be dependent on subsistence hunting and gathering, arable farming and animal husbandry. Hybrid livelihoods are common, relying on a mixture of occupational elements, including the cash economy.

**Physical displacement:** This occurs when people have to move to another location because a project acquired the land where they lived. It entails the loss of shelter and associated assets.

**Replacement cost:** In the absence of in-kind recompense, when calculating the compensation amount, lost assets must be calculated at full replacement cost. This is the deemed market value of the assets plus transaction costs.

**Resettlement Action Plan (RAP):** The document in which a company specifies the resettlement procedures that it will follow and the actions that it will take.

**Resettlement assistance:** Support provided to people who are physically displaced by a project. Assistance may include transportation, food, shelter and social services that are provided to affected people during their relocation. Assistance and/or money that is paid to cover transition expenses (eg: moving costs and lost work days) is also considered part of this.

**Vulnerable groups:** These are people who are potentially more negatively impacted by resettlement than others because of their gender, ethnicity, age, physical or mental disability, or historical, economic or social status. These people have the same rights to resettlement assistance as other persons, but may need additional help to access the assistance.

**Broader Concepts and International Best Practices**

IFC PS (5) is necessarily written to cater for a wide spectrum of magnitudes and severities of project-related displacement. Resettlement is considered *involuntary* when “affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in physical or economic displacement” (IFC, 2011, p. 258).

The IFC defines **physical displacement** as the “relocation or loss of shelter” (ie: physical residence) and **economic displacement** as the “loss of assets or access to assets” associated with income source or means of livelihood (IFC, 2011, p. 258).

Economic displacement can be both permanent (eg: when arable land is acquired for the permanent placement of project infrastructure) and temporary (eg: when crops are damaged during exploration activities).

Physical and economic displacement can occur together or separately (eg: when a project impacts on productive land bordering a settlement, but does not affect people’s residences).

Livelihood assistance to be provided in case where the income derives from the land resources to be acquired by the project exceeds 10% of the PAP's total income that is derived from the total land area.
Livelihoods Approach

Calls for resettled people to be better off as a result of resettlement. To meet this requirement the following things should be undertaken;

- Provision of security of tenure over new land and housing.
- A detailed livelihood census of the community to be resettled and host communities is taken prior to resettlement.
- Livelihood improvement programmes are agreed with resettled and host communities prior to resettlement.
- Real time monitoring of livelihood activities and production during the resettlement period to ensure no income/production/food security gap emerges.
- After resettlement, livelihood monitoring by independent experts occurs for a minimum of five years. The monitoring will include annual surveys of resettled and host communities' opinions of resettlement.
- Make sure that all displaced persons receive compensation, regardless of their formal land tenure or otherwise, excluding people who stay on the land after a suitably publicised cut-off date.
- Displaced people are not a homogenous entity. Develop different categories of compensation for different categories of impacted people. Give particular attention to vulnerable groups who may feel the impacts of resettlement more severely than others.
- Include the host communities (communities to which displaced people are relocated) in the resettlement planning.

Consultation and engagement

- Both the displaced people and the host community should be engaged before, during and after resettlement occurs. Relevant and adequate information needs to be provided ahead of time so that people can participate in an informed manner. Engagement should be inclusive and culturally appropriate.
- Provide displaced people with a choice of resettlement options.
- Make sure that effective complaints, disputes and grievance process is in place as early as possible in the resettlement process. (see Community complaints, disputes and grievance guidance)

Compensation

- Provide just and fair compensation for all lost assets, at full replacement cost (See Compensation, benefits and resource access guidance). At a minimum, the compensation should enable the affected persons to fully restore their standard of living and their income-earning capacity to pre-resettlement levels.
- Wherever possible, in kind compensation should be provided instead of cash compensation (e.g. like for like replacement of land and buildings). If people earn their living off the land, preference should be given to land-based compensation. For persons whose livelihoods depend on natural resources, continued access to those resources should be provided for, or alternative resources that will provide the same amount of income or livelihood-earning potential.
- The affected people should receive all or a significant proportion of compensation for their assets and be resettled before work begins on the acquired land. In some instances, it will be appropriate to pay compensation at regular intervals for the life of the project,
recognising that resettled people may be unfamiliar with large amounts of cash and/or regard the compensation as 'rent' for on-going use of land.

- Support should also be provided for the period of time it takes for the affected persons to re-establish their livelihoods in their new location.

**Resettlement planning and responsibility**

- A Resettlement Action Plan (RAP) should be sufficiently comprehensive that all resettlement impacts are managed and monitored.
- Working alongside the relevant government authorities is particularly important when government capacity is limited and/or the national resettlement legislation lags behind international best practice (as captured within IFC Performance Standard 5).

**Internal processes**

- Projects are advised to maintain a database to record and track resettlement and compensation activities.
- Resettlement is a critical path task that needs to be completed prior to construction so integration of project and resettlement timelines is required.
- The Communities and Social Performance and project team needs to be resourced adequately, particularly during prefeasibility. The Communities and Social Performance team will require resources to manage data, administration and records, and a field team that is accountable for engagement, negotiations with affected persons. Consultants will be required for specific technical tasks.
- In most jurisdictions the implementation of the social and environment impact assessment (SEIA) process will need to be integrated with the RAP development and implementation. Expert consultant advice is recommended.
- Knowledge base: Resettlement requires detailed, household-by-household census of livelihoods. This data should be compiled and managed to support long-term (5 to 10 years) monitoring in order to demonstrate that livelihoods have improved as a result of resettlement.

**DFID concept on sustainable livelihood Framework:**

“A livelihood comprises the capabilities, assets and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base.” (DFID, 2000)

Above speaks of how the livelihood outcomes can be influenced due to the vulnerability context of the poor, accessibility to livelihood assets and how the regulatory environment influences over the secured (not secured) livelihood strategies that enable accomplishment of the relevant livelihood outcomes. The most important here is the vulnerability context which is described by way of shocks, trends and seasonality which determine to what extent the poor farmers are vulnerable to reach the livelihood outcomes as desired. Both the above concepts support securing livelihoods and had provided important linkages on which sustainable livelihoods can be ensured.
Data Source: DFID (2000)

Social safeguards policies in Uganda that protects the livelihoods of Project Affected Persons:

As described by the IFC (PS 5), livelihoods are terms as ‘the occupational activities associated with the maintenance of material life. In industrial society livelihoods are typically associated with formal employment and cash remuneration; in other societies livelihood can be dependent on subsistence hunting and gathering, arable farming and animal husbandry. Hybrid livelihoods are common, relying on a mixture of occupational elements, including the cash economy.

Most relevant to the context of SHPP in Uganda are the livelihoods which can be dependent on arable farming and animal husbandry. Nevertheless accessibility to land resources and land ownership, level of poverty, gender, literacy levels do have a significant bearing to ensure equitable and fair redress. The legal and regulatory environment of Uganda has provided for adequate provision in various pieces of legislation social safeguard measure to prevent farming communities from being unduly exploited by the developers who require land for various development activities. The process of Resettlement Action Planning has taken into consideration these elements to ensure that project affected persons are duly compensated and that they are engaged in public consultation before arrangements are made to pay compensation;

SEIA is a powerful tool to appraise the social impacts of small hydro power projects. Whilst long term national energy generation targets have been met from the small hydro power project in Uganda, the resultant land acquisition process leads to numerous social issues (at least on a temporary basis) which have a significant effect on the livelihoods of the communities whose primary source of income has been the land based agricultural activities.
The existing legal provision has been well explained in the Resettlement Action Plan documents which inter alia stipulate:

- The requirement of Resettlement and Compensation Action Plan preparation for approval by statutory agencies prior to any development work is undertaken;
- The different types of displacements (Physical and Economic) and how each of the type of displacement needs to be addressed;
- Provision made in respect of compensation in various Acts and Ordinances (Land Act; Land Acquisition Act etc.)
- Provisions made in respect of the transparent process to undertake valuations of crops and property;
- Provision made in respect of information disclosure and public engagement;

Livelihood Assistance Programme (LEF Targeting PAPS in RWIMI)

According to the Resettlement Action Plan (RAP), ninety six (96) PAPs have been compensated in view of the fact that they will be economically displaced due to land acquisition, in connection with RSHPP. In addition in a recently concluded study it appeared that at least three families on the other side (Left Side) of the river may be affected when the construction of the Dam will be completed and water will be impounded in this section of the upstream of the river.

The land is an important factor of production especially for the average Ugandan community member since most are living on subsistence agriculture. Although the procedures require that adequate compensation is paid to those who will be economically and physically displaced, there is no guarantee that the PAPs utilize them for productive purposes (to regain their lost assets). This is because most of the communities are poverty stricken. While the RAP makes it compulsory to monitor the spending pattern of the PAPs over a period of time to ensure that they will invest money to restore the productive livelihoods, it cannot be assured that a HH who has lost a considerable portion of his land to the project will recuperate the lost livelihoods within a considerable period of time.

Therefore implementation of a LIF will be essential. This LIF has been formulated to include the a programme of action to be implemented by the Developer within a reasonable period of time to ensure that all the essential recommendations made in the RAP as well as the SEIA are implemented and specially that a programme of action targeting the HHS whose livelihoods have been adversely impacted due to land acquisition. LIF makes the HHS eligible for receiving assistance based on a criteria accepted to the IFC (PS) five, enabling the project management to allocate adequate resources and technical oversight to ensure that worst affected PAPS regain their livelihoods with the support of the project.
Objective of the LIF
By implementing the LIF, it is expected that the worst affected households whose land was acquired are resilient and that they continue to earn household income from alternative sources. It is also the objective of the LIF to ensure that the Developer would implement all the essential recommendations made in the RAP that have particular focus on the improvement of the livelihoods of the PAPs.

Criteria of Household Selection for LIF
Foremost, the LIF will support those households whose livelihoods have been significantly affected due to land acquisition. During the RAP, there was a sample survey of the households to ascertain the average size of land owned by the PAPs. This revealed that on average the land to an extent of two acres is owned by majority of the households. Taking into this consideration it was decided that LIF will give priority to those HHs whose land in excess of 0.5 of an acre has been acquired. This number stands to nearly 15 PAPs scatted in the 04 villages. However those lands in excess of 0.250 acres will be considered if they fall into following criteria.

- If the Households headed by signalwomen
- Households with disabled or
- Orphaned members
- Households not benefitting from other support initiatives

LIF will also support those three families who are on the other side of the River at the point of the proposed Dam location, whose land will be affected due to the ponding of the dam over the period.

Proposed Activities:
Following activities have been earmarked for implementation during project’s construction phase:

<table>
<thead>
<tr>
<th>Intervention Areas</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empower the Grievance Committee to implement LIF (as per the Public Consultation &amp; disclosure Strategy)</td>
<td>Project will strengthen the village level reconciliation of disputes especially over the issues arising from the project related matters, by appointing of a Grievance Committee with members from the respective villages from where the PAPs are representing. This will ensure that PAPs will be fairly treated as per the RAP and LIF.</td>
</tr>
<tr>
<td>Support the PAPs numbering 20 (A list is attached) whose livelihoods have been affected due to land takeover in excess of 0.300 to 0.500 acres.</td>
<td>Considering that the average landholding of the PAPs is about 2 acres, taking over of an extent in excess of 0.3 to 0.5 acres is considered significant. The project has already identified them based the land survey and the RAP. This section of the households will receive special attention and support from the project to revive their livelihoods. While they or the members of their families will be considered for work during construction and during the commissioning of the project on priority basis, they will be provided with technical assistance to undertake alternative livelihoods (based on a detailed consultative process).</td>
</tr>
</tbody>
</table>
If they have already purchased some land for cultivation, the project will support them to find seeds, plants of their choice at least for 04 consecutive agricultural seasons.

In case the HH has family members needing special health care, the project will ensure that such members will get necessary health care facilities, until the income level of the HH is restored.

The grievance committee make representations on behalf of any affected family who will be eligible for LIF assistance under any other criteria other than land as stipulated in 6.3.

<table>
<thead>
<tr>
<th>Families on the left side of the Dam whose agricultural land will be affected during Dam Construction and during the reservoir.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due to the water being impounded at the Dam, there will be an impact on the other side of the agricultural lands. Since the area was earlier considered under the River reservation and the village in question falls within a separate District (Kaborala), RAP had not considered making any compensation to the relevant families. A special study carried out subsequently revealed that agricultural land of three families will be impacted during the construction time and during the operation phase. It is now recommended that they be sufficiently engaged in the LIF enabling them to receive adequate relief and livelihood assistance. These three families will be compensated for their land once, the area will be properly surveyed and the impounded area will be clearly demarcated. They will be eligible to receive other assistance as stipulated above, if the impact area will be significant.</td>
</tr>
</tbody>
</table>

Support the improvement of the access bridge that connects either side of the river at the proposed dam area.

| The project is likely to disrupt community access to either side of the river at the point of the proposed dam in view of it being affected by the excavations and construction activities at the Dam. This will also be inundated when the area will be impounded by water when the dam construction will be completed. Foot bridge and the foot paths particularly leading down to the River and other parts of the project area will have to be redesigned and opened up before any construction/excavation work will start. There are several foot paths that intersect between the river and the planned areas for excavation. These will be identified and re-routed. In addition, the project management unit will improve the access roads which are important for project induced vehicles as well as for the general use of the communities. Most of the roads do not have proper surface drainage systems thus creating deep gullies. These roads will be graded, compacted and surface drainage improved. |

<table>
<thead>
<tr>
<th>Improvement to access to water (Boozer supply, water pools, community engaged gravity flow small water supply schemes; supply of additional Jerry Cans)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The main source of potable water for the communities in the area is the Rwimi River. This was strongly emphasized during the stakeholder consultation during SEIA process and RAP community consultation. This has been emphasized in ESIA permit issued by NEMA. Water sources will be affected as a result of pollution during construction and quantitatively due to diversion of the river flow. These two impacts areas will be managed through different interventions. These have been articulated in the ESMP. Water availability during Dam construction will be affected due to pollution. (Coffer</td>
</tr>
</tbody>
</table>
Options will be provided for the communities to collect water from the river by improving a good communication system so that advance notice will be given to them as to when they will not be able to use the water. Those who need additional Jerry Cans or any water storage facilities will be looked into. The recent water audit transpired that water requirement for the daily consumption of the communities accessing to water in the stretch of the river from the point of Dam to the power house amount to 14 cubic meters a day.

While the environmental flow will meet this requirement, in order to ensure that the people will access to sufficient water during the dry season, the existing watering point along selected downstream locations will be pooled so that water may retain in those areas.

| Implement Tree Planting programme as part of catchment protection and improvement of community livelihoods | PAPs will receive tree seedlings under this programme in order to engage them in restoring the tree cover that will be lost due to project interventions. |
| Community sensitization on the use of water, health care; general project benefits and HIV/AIDS mitigation | There is a need to sensitize the community (water users) of the likely pollution of water during construction. This will be addressed in the sensitization workshops. With the probable influx of workers into the project, communities must be protected from the probabilities of HIV infection. The project is based in a social environment where poverty and low levels of literacy abound. For communities to identify themselves with the project, sensitization needs to be provided indicating the probable benefits the project will have and how the local people can buy into it. In addition, the ESIA identifies safety measures that both workers within the proposed project area and the communities that will be living adjacent to the project need to take. This information needs to be provided early in the project. |

**Resource Allocation, Implementation and Monitoring**

**Institutional**

Rwimi Small Hydropower Project will have a dedicated unit for the implementation of the recommendations in the RAP. It will function under the leadership of Site project Manager. This will be institutionalised after the commence of the construction work and will be done in consultation with the Civil Contractors.

A Grievance Committee has been appointed to function on a continuous basis until project’s construction phase will be over. The community development officer of the LC office and the LC (1) of each of the project affected villages will serve as members together with the representative of the Civil Contactor and the site project manager.

**Compensation:**

Based on the recommendations made in the Resettlement Action Plan, all the Project Affected Persons were paid compensation. (96 in all). Both physically displaced persons and
Economically Displaced persons were taken into consideration. Moneys were paid into individual bank accounts. It is planned to monitor of how they use the compensation money, and it will be the function of the project management unit, which is yet to be established.

Compensation was paid based on proper land valuation undertaken by the Land Officer attached to District Land Office. While the compensation was computed based on replacement cost, an additional 30% was added to the final value of the compensation to provide for disturbances. The criteria used for the valuation of compensation is provided in the annex (1) the letter issued by the valuation officer.

**Monitoring & Evaluation**

Implementation of the activities identified in the LIF need close monitoring. The project Community Welfare Officer will be responsible for preparing detailed activity plans and to obtain adequate funds from the management to implement these activities. The physical progress of the implementation will be supervised by the Resident Site Manager.

Support the PAPs numbering 20 (A list is attached) whose livelihoods have been affected due to land takeover in excess of 0.300 to 0.500 acres.

In addition to the performance monitoring an evaluation of the impacts of the LIF implementation is also proposed at the end of the project construction phase.

Under each of the key interventions following monitoring indicators will be tracked for progress monitoring:

**Key Intervention:**

1. Setting up of a Functional Grievance Committee (as per the Public Consultation& disclosure strategy under section 7.1)

   **Indicators:**

   1.1 GC members convene their regular meetings as per the guidelines in the Public Consultation& disclosure Strategy
   Means of Verification:

   Minutes of the Grievance Committee Meeting

   Records indicating payment of seating allowance yto the members of the GC

   1.2 GC members demonstrate a sound awareness and knowledge of the procedures laid down in the LIF (as well as the procedure to be adopted by the project management in public consultation and disclosure strategy)

   Means of verification:

   Minutes of the awareness meeting targeting the GC members of the key documents / procedures arranged by the developer

   1.3 Number of grievances recorded in the Grievance Register (which are brought to the attention of the GC by the LIF beneficiaries) resolved by the GC.
Means of verification:

Records in the Grievance Register

Type of assistance received by the PAPs in the LIF

Resolutions made by the GC in connection with the Grievances.

2. Support the PAPs numbering 20 (A list is attached) whose livelihoods have been affected due to land takeover in excess of 0.300 to 0.500 acres.

*It has been decided to pay additional compensation to three of the families whose land falls on the left side of the Dam in Kabarole District on the understanding that a section of the land belongs to them can be eroded when the water will be inundated on completion of the construction of the dam. According to the initial site survey maximum inundation boundary still falls within 30 meters from the highest water mark, based on the” Permit to carry out regulated activity in wetland/river bank/lakeshore” and the National Environment (wetlands, river bank and lake shores management) regulations 2000 - 29.2.*

Indicators:

2.1 The LIF beneficiaries show % increase of HH income supported by the project through its decisions to implement targeted interventions

Means of verification:

# of PAPs whose family members receive temporary job opportunities in the project (during construction phase)

Means of verification:

Labor engagement records indicating the relationship of the person engaged to the PAP households.

2.2 PAPs receiving direct assistance from the project in a given agricultural season and the type of assistance

Means of verification:

Records that indicate distribution of seeds/seedlings kept by the site welfare officer

3. Compensate the families on the left side of the Dam whose agricultural land will be affected during Dam Construction and during the impounding of the reservoir.

Indicators:

3.1: Amount of compensation and assistance earmarked from LIF to be received by the three families as per the recommendations of the grievance Committee;

Means of verification:
Records indicating the computation of payments,

GC resolutions and payment vouchers

4. Improvement to access to water (Boozer supply, water pools, community engaged gravity flow small water supply schemes)

Indicators:

4.1 Physical presence of optional water sources in and around the project site
4.2 Community consultation and implementation of the advance notification systems / communication system of the optional arrangements made and the venues from which the water can be collected
4.3 Amount of funds spend for the water supply purposes and the type of infrastructure developed for water supply (Example Boozer supply of water during excavation, distribution of additional Gerry cans, water pooling points along the river etc.; community based gravity flow water project)

4.4 Reduced number of complaints received by the project with regard to water issues
4.5 Progress achieved in respect of implementing CDAP;

Means of verification:

Physical observation of the availability and accessibility to the alternative sources (Boozer supply/gravity flow water schemes; water pools and Jerry cans etc)

Community consultation minutes and the # of complaints if any received by the GC on issues of water pollution/ inaccessibility of water

Minutes of the community consultations in respect of providing alternative water sources during construction;

Any records kept by the GC in connection with resolving complaints on water.

Minutes of the community consultation on matters of optional arrangements, observation of the systems in place and the level of community awareness

5. Support the improvement of the access bridge that connects either side of the river at the proposed dam area

Indicators:

5.1. Community consultation and the design of shifting of the bridge to appropriate location minutes

Means of verification:
• Community consultation minutes and
• Decisions made about the location of the bridge to an appropriate place

5.2 Physical construction of the access bridge

Means of verification:

Physical observation; Designs and funds allocated

6. Implement Tree Planting programme as part of catchment protection and improvement of community livelihoods of the PAPs

Indicators:

6.1 Number of tree seedling distributed/planted by the community in a given agricultural season
6.2 Extent covered by planting of trees along the immediate catchment area

7. Community sensitization on the use of water, health care and HIV/AIDS mitigation campaigns and

Indicators:

7.1 Number of awareness/sensitization meetings targeting water users
7.2 Number of awareness/sensitization meetings held on HIV/AIDS and on general project sensitization
7.3 Amount of funds allocated/spent on health care of the communities in close proximity to project area
7.4 Number of persons receiving outpatient treatment from the health camps

Means of verification:

1. Level of community awareness on the use of water during construction times (Impact assessment report)
2. Physical observation of the availability of optional water sources and the same is being used by the community;
3. Records of the conduct of the health camp,
4. Attendance list of community members participating at the awareness meetings,

Implementation of the activities identified in the LIF need close monitoring. The project Community Welfare Officer will be responsible for preparing detailed activity plans and to obtain adequate funds from the management to implement these activities. The physical progress of the implementation will be supervised by the Resident Site Manager.

Support the PAPs numbering 20 (A list is attached) whose livelihoods have been affected due to land takeover in excess of 0.300 to 0.500 acres.

In addition to the performance monitoring an evaluation of the impacts of the LIF implementation is also proposed at the end of the project construction phase.
Under each of the key interventions following monitoring indicators will be tracked for progress monitoring:

A report will be submitted to the project management based on the regular monitoring of the above plan.
## Resource Allocation for implementing & LIF and Community Development Action Plan (CDAP)

<table>
<thead>
<tr>
<th>Intervention Areas</th>
<th>2014 (UGX)</th>
<th>2015 (UGX)</th>
<th>2016 (UGX)</th>
<th>Total (UGX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support the PAPs numbering 20 + 3 for cultivation activities (Seedlings for 04 consecutive agricultural seasons).</td>
<td>1,000,000</td>
<td>1,000,000</td>
<td>1,000,000</td>
<td>3,000,000</td>
</tr>
<tr>
<td>Health Care</td>
<td>3,000,000</td>
<td>3,000,000</td>
<td>3,000,000</td>
<td>9,000,000</td>
</tr>
<tr>
<td>Compensation for the land of those three Families on the left side of the Dam whose agricultural land will be affected during Dam Construction and during the reservoir.</td>
<td>@ 3,000,000</td>
<td></td>
<td></td>
<td>9,000,000</td>
</tr>
<tr>
<td>Technical assistance for alternative income sources (training or provision of machinery for IGAs) for at least 1 member of the family</td>
<td></td>
<td>5,000,000</td>
<td>5,000,000</td>
<td>10,000,000</td>
</tr>
<tr>
<td>Support the improvement of the access bridge that connects either side of the river at the proposed dam area (Project will provide other support such as the use machinery)</td>
<td>750,000</td>
<td></td>
<td></td>
<td>750,000</td>
</tr>
<tr>
<td>Improvement to access to water</td>
<td>3,000,000</td>
<td>4,000,000</td>
<td></td>
<td>7,000,000</td>
</tr>
<tr>
<td>• Supply of Jerry Cans:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Small water schemes;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Water boozers supply</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Construction of water pools</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Water Quality Monitoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tree Planting programme. Provision of tree seedlings, and planting campaigns along the river stretch</td>
<td>500,000</td>
<td>1,500,000</td>
<td>1,000,000</td>
<td>3,000,000</td>
</tr>
<tr>
<td>HIV/AIDS mitigation campaigns (At least two in each year)</td>
<td>500,000</td>
<td>500,000</td>
<td>500,000</td>
<td>1,500,000</td>
</tr>
<tr>
<td>Community Sensitization</td>
<td>250,000</td>
<td>250,000</td>
<td>250,000</td>
<td>750,000</td>
</tr>
<tr>
<td><strong>Total for three years</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>44,000,000</strong></td>
</tr>
</tbody>
</table>

A sum of UGX 44 Million has been tentatively allocated for the implementation of the activities identified in the LIF.
List of PAPs whose land was affected due to take over of land in excess of .300 acres to .500 acres

<table>
<thead>
<tr>
<th>Village</th>
<th>Name of HH</th>
<th>Extent of land affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIHOKO VILLAGE</td>
<td>Kiiza Eryeza</td>
<td>0.356 acres</td>
</tr>
<tr>
<td></td>
<td>Balyana Andereya</td>
<td>0.828 Acres</td>
</tr>
<tr>
<td></td>
<td>Muganda Edward</td>
<td>0.771 Acres</td>
</tr>
<tr>
<td></td>
<td>Muhindo Justus</td>
<td>0.505 Acres</td>
</tr>
<tr>
<td>NYASEKE VILLAGE</td>
<td>Mughanda Uliya</td>
<td>0.474 Acres</td>
</tr>
<tr>
<td></td>
<td>Mukonga Byangonzi</td>
<td>0.339 Acres</td>
</tr>
<tr>
<td></td>
<td>Mukonga Israel</td>
<td>0.658 Acres</td>
</tr>
<tr>
<td></td>
<td>Mukonga Yosiya</td>
<td>0.682 Acres</td>
</tr>
<tr>
<td></td>
<td>Bwambale Franco</td>
<td>0.493 Acres</td>
</tr>
<tr>
<td></td>
<td>Katuuku Isaya</td>
<td>0.978 Acres</td>
</tr>
<tr>
<td></td>
<td>Ntare Nehemiah</td>
<td>0.438 Acres</td>
</tr>
<tr>
<td></td>
<td>Nyamaithaka Yowasi</td>
<td>0.976 Acres</td>
</tr>
<tr>
<td>Nyakabale</td>
<td>Bolingo Amos</td>
<td>0.913 Acres</td>
</tr>
<tr>
<td></td>
<td>Mughanda Yona</td>
<td>0.325 Acres</td>
</tr>
<tr>
<td></td>
<td>Mumbere Yeremiya</td>
<td>0.561 Acres</td>
</tr>
<tr>
<td></td>
<td>Kasirindi Augustine</td>
<td>0.518 Acres</td>
</tr>
<tr>
<td>UPPER RUGENDABARA I VILLAGE</td>
<td>Musubaho Zubairi</td>
<td>0.570 Acres</td>
</tr>
<tr>
<td></td>
<td>Kayiri Stephen</td>
<td>0.774 Acres</td>
</tr>
<tr>
<td></td>
<td>Kyamaisho George</td>
<td>0.870 Acres</td>
</tr>
<tr>
<td>KABAROLE DISTRICT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7.11 Special Studies for Rwimi SHPP (Water Audit & Aquatic Species Study)

This aquatic ecological study has been undertaken by the following team:

**ECOLOGICAL STUDY TEAM**

<table>
<thead>
<tr>
<th>N</th>
<th>Name and Expertise</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Joseph Katswera</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aquatic Science specialist</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Erisania Bwambale Kithaghenda</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Environmental and Natural Resources Specialist</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Flora specialist)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Jonson Masereka</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fauna Specialist (Zoologist)</td>
<td></td>
</tr>
</tbody>
</table>

**EXECUTIVE SUMMARY**

An aquatic study was carried out between the proposed weir and the power on River Rwimi to generate environmental and social information for the RWIMI mini hydro power project in Uganda. This study was carried from 15th to 19th August 2013. The purpose of the study was to ground truth the status of the aquatic ecosystem of River Rwimi. The specific objectives were to:

- Identify the aquatic macrophytes and invertebrates and assess their relationship in the river ecosystem
- Identify the altitudinal variation (distribution and abundance) of the fish species in the river.
- Collect information relating to the usage of river water by the community.

The materials used in this study included Surber sampler, Peterson mud grabber, sweep net, binocular microscope, Parlinda 2x4x folding magnifying glass. The methods used also included Kick sampling; fishing using gillnets; direct observation, direct counting and recording; community interaction/meeting and photography.

The biological environment identified included: macro invertebrates, potential disease vectors, macrophytes, fish and herpetiles. Generally, 56.25% of the macro invertebrates were found to be very sensitive to highly sensitive to changes in oxygen levels, organic loading, and 31.25% moderately sensitive and 12.5% tolerant implying that the river is organically pollution free at the moment. No micro-invertebrates were identified.
The invertebrates with very high sensitivity included *Beatis tricaudatus*, *Caenis tardata*, *Tipula maxima*, *Beatis tricaudatus*, *Caenis tardata* and *Ecdyonurus venosus*. *Beatis tricaudatus* and *Caenis tardata* are the most abundant species in both stations and form almost 90% of food for the dominant fish in the river according to the gut analysis results. Those with moderate sensitivity are *Isoperla fulva*, *Perla bipunctata*, *Helocordulina sp.*, *Ischnura sp* and *Glossiphonia complanata*. Most of these macro-invertebrates are predacious and hence gatherers of the substratum.

On fish distribution and abundance, *Varicorhinus ruwenzori* was the major fish caught in the river with varying relative abundance. The fish abundance was significantly high one (1) km below the proposed dam site with 19.35% and completely no fish catches at the weir. Therefore the relative abundance of fish decreases upstream the river. This shows latitudinal variation of the fish species whereby there was reduced abundance as you move upstream the river. Consultations with the fishers showed that they fish other fish species that include *Barbus altinalis* and that the observed small numbers of fish in the river is probably due to the flood that swept through the river on May 1, 2013. Reports from the local fishers testify that since the flood, fish catches have drastically reduced.

Water requirements for the community varied from swimming, bathing, washing clothes and also collection of water from the river for domestic use. On the whole, the average overall water requirement by the neighbouring communities was calculated as 14 m$^3$/day which is equivalent to a minimum of 0.000162083 m$^3$/s volume of river flow downstream. In addition, the flora and fauna in the river requires water to maintain the other ecological functions of the river

Livelihood sources at the weir (Kabarole side) that will be affected during and after construction of the weir include crop growing (cassava, maize and bananas) and cattle grazing. Only three families will be affected through land take.

**General Ecological issues identified**

I. Loss of fish and other life forms.

II. Loss of fishing grounds for the fishing community (since it’s a livelihood source) as a result of reduced water volume in the river

III. Loss of microhabitats of some aquatic organisms (*Beatis tricaudatus* and *Caenis tardata*). Habitat loss will be due to reduced river flow and volume of water in the river. This impact will result into a reduction in abundance of fish species as a result of degradation of their natural habitat. The construction of the weir will cause changes in the current water conditions, that is, drastic reduction in volume of water flow and flow rates will negatively affect the diversity, abundance and sensitivity of the macro invertebrates, fish and herpetile population.

IV. Construction of the dam will possibly affect land of three households namely: Zakalia Muhindo, Aminadab Mukirania Kitibitwa and George Maate through damming.

V. Reduced river flow when the water is dammed and channelled compared to the average overall water requirements by the neighbouring communities of 14 m$^3$/day which is equivalent to a minimum of 0.000162083 m$^3$/s volume of river flow downstream in addition to the water demands by the flora and fauna in the river.

**General recommendations to manage the issues**

I. The issue of the envisaged loss of fish and other micro fauna in the river between the weir and the powerhouse will be remedied through maintaining a minimum volume of water into the river to ensure continuity of life of the various life forms therein.
II. There is need for at least 0.001 m$^3$/s river flow to meet the water requirements by the neighbouring communities.

III. The fish (*Varicorhinus Ruwenzori*) and herpetilies recorded in the river require that a minimum volume of water flow should be left in the river not only to support aquatic life but also to maintain the other ecological functions of the river.

IV. There will be need for a meeting with the three families after dam construction having assessed land take by the dam waters. This will also be done after removing the riverbank area as stipulated in the Riverbank regulations in Uganda.

V. Therefore, to maintain the diversity and abundance as well as sustain the sensitivity of the highly sensitive species it is recommended that a minimum volume of water should be left flowing in the river.

CHAPTER ONE: INTRODUCTION

1.1 Introduction

The animals living in a stream/river provide the best indicators of its overall health and ecological condition. Human activities that alter a river catchment interfere with its natural ecological processes and have immediate as well as long-lasting effects on the animals that live in the stream river. Monitoring of river quality was based on macro invertebrate’s assemblages because they represent an enormous diversity of body shapes, survival strategies, and adaptations. Many macro invertebrates require clear, cool water, adequate oxygen, stable flows, and a steady source of food in order to complete their life cycles. These animals, in turn, provide food for other higher aquatic animals like fish, frogs etc. Below are descriptions of the macro invertebrates sampling methods used, and the aquatic macro invertebrates found, categorized basing on their sensitivity to organic loading.

1.2 Purpose and objectives of the study

The purpose of this study was to ground truth the status of the aquatic ecosystem of River Rwimi and water audit. This study will generate data to help identify the potential environmental impacts that might rise during construction of the dam.

The specific objectives of the study were to:

- Identify the aquatic macrophytes and invertebrates and assess their relationship in the river ecosystem
- Identify the altitudinal variation (distribution and abundance) of the fish species in the river.
- Collect information relating to the usage of river water by the community.

CHAPTER TWO: MATERIALS AND METHODS

2.1 Site selection and sampling for benthic macro-invertebrates

Sampling for benthic macro-invertebrates was done from two stations chosen along river Rwimi. Station one was at the position of the dam; and the other station at 100 meters below the dam.

2.2 Site selection and sampling for aquatic benthic fauna

The following materials were used: Surber sampler, Peterson mud grabber, sweep net, binocular microscope, Parlinda 2x4x folding magnifying glass.

2.3 Method description
Kick sampling was used in stony shallow areas of the river to capture floating organisms dislodged from the river substratum. Before disturbing the river substrate, a Surber sampler with a netting of 0.5mm mesh opening was placed in the river with the wider end facing upstream and the corn end downstream. The river was then disturbed up stream by kicking to dislodge organisms from boulders and sand. These then drifted into the netting of the sampler where they were captured, later removed and preserved with 95% ethanol and packed in vials. A minimum of three kicks were done for each station.

A Peterson mud grabber with area of 1.74m$^2$ was used to collect mud sediments at each station. Three samples were taken from each station two at the edges of the river and where silt/mud had accumulated.

A sweep net was also used to capture flying insects at all stations. The slow moving arthropods were picked directly by hand when observed.

In the field all captured fauna were put in vials with tight caps and preserved with 95% ethanol.

A binocular microscope and Parlinda 2x4x folding magnifying glass were used to view the microscopic taxonomic features on the captured fauna for easy identification in the laboratory.

Identification

In the laboratory all preserved samples were sorted and identified to the lowest practical taxon, usually species, using keys of Clesceri et al (1989), Needham (1962), and Pennack (1978).

2.4 Fish sampling

Fishes were sampled using a piece of mosquito net of about 4m$^2$. The net was manipulated manually by two people in water, in pools of water along the river bank. The same sampling method was applied at each of the four selected sites. The sites were: site 1 (Weir); site 2 (100 m below the weir); site 3 (500 m below the weir); and site 4 (1,000 m below the weir).

2.5 Direct observation, direct counting and recording

A combination of both visual observations and direct counting of the water collection points was done along the stretch from the weir to the powerhouse to assess the use of water by the community. Observations were made on the number of people using water during the day, frequency of the people gathering at the water points; the purpose for which water is used; quantification of the volume of water collected by the community for various domestic purposes was done.

2.6 Community interaction/meeting

One meeting was held to help map out key stakeholders (land owners) in the project area, their impacts on dam construction and how this construction will impact on them.

2.7 Photography

During the study, photographs of use of water and fishing were captured.

CHAPTER THREE: BASELINE ENVIRONMENTAL INFORMATION (BIOPHYSICAL)

3.1 Physical Environment

3.1.1 Physical and biological characteristics of the sampling stations
The study sites had no canopy but with natural small bushes along the river banks. The river bottom was rocky with a mixture of boulders, cobbles, bed rock, gravel and sand. The speed of the river is moderate to high. There are shallow pools in the river bed and banks.

In addition, attached to the un-submerged bed rocks, boulders and gravel are both micro and macro algae; and mosses.

3.2 Biological Environment

3.2.1. Micro-invertebrates

No micro-invertebrates were identified.

3.2.2 Macro-invertebrates

The stretch between the weir and the powerhouse has members of order Diptera (*Chironomus calipterus*, *Chironomus calichirus* and *Tipula maxima*); Ephemeroptera (*Beatis tricaudatus, Caenis tarsdata* and *Ecdyonurus venosus*); Plecoptera (*Isoperla fulva, Perla bipunctata* and *Nemouratri spinosa*); Odonata (*Helocordulina sp. and Ischnura sp*); Coleoptera (*Psephenus herricki, Gyrinus ubtriatus, Enochrus sp and Oreodytes rivalis*); and Annelida (*Glossiphonia complanata*) (Annex 4).

The dominant macro invertebrates found were members of the orders; Ephemeroptera (may flies), Plecoptera (stone flies), and Coleoptera (water beetles). Ecologically the later are fresh water dwellers and dwell in excellent quality water environments free of organic matter and highly oxygenated (Mackie, 2000). This implies that human activities in its catchment has not negatively impacted on River Rwimi to cause organic pollution.

These macro invertebrates recorded require clear, cool water, adequate oxygen, stable flows, and a steady source of food in order to complete their life cycles. These animals, in turn, provide food for other higher aquatic animals like fish, frogs etc.

These aquatic macro-invertebrates communities respond highly to environmental perturbations and are therefore important in assessing impact of wastes on surface water bodies. They are sensitive to changes in environmental conditions, form stable communities, and differ in tolerance levels to different pollution agents. Ecologically the following aquatic insect orders, Ephemeroptera, Coleoptera, Plecoptera, are found to dwell and breed in highly oxygenated fresh waters therefore indicators of good water quality then some species of Odonata and Diptera, can tolerate moderate pollution levels. On assessing the quality status of River Rwimi basing on benthic macro invertebrates communities, the captured insect larvae and adults were sorted, identified to species level, counted, and further categorised in order of sensitivity to organic water pollution as sensitive, moderate and tolerant (Annex 3). Percentages of these categories were then calculated as: number of species of a given category divided by the total number of species for all categories x100%.

Generally, 56.25% of the macro invertebrates ware found to be very sensitive to highly sensitive to changes in oxygen levels, organic loading, and 31.25% moderately sensitive and 12.5% tolerant implying that the river is organically pollution free at the moment (Annex 5). However decomposition of organic debris in micro habitats and pools of water could be occurring which accounts for some pollution but not significant to affect aquatic fauna.

The invertebrates with very high sensitivity included *Beatis tricaudatus, Caenis tarsdata, Tipula maxima, Beatis tricaudatus, Caenis tarsdata* and *Ecdyonurus venosus*. *Beatis tricaudatus* and *Caenis tarsdata* are the most abundant species in both stations and form almost 90% of food for the dominant fish in the river according to the gut analysis results. Those with moderate sensitivity are *Isoperla fulva, Perla bipunctata*,...
Helocordulina sp., Ischnura sp and Glossiphonia complanata ( Annex 5). Most of these macro-invertebrates are predacious and hence gatherers of the substratum.

However any human activity that would cause changes in the current water conditions, that is, drastic reduction in volume of water flow and flow rates will affect the diversity, abundance and sensitivity of these organisms.

Therefore, to maintain the diversity and abundance as well as sustain the sensitivity of the highly sensitive species it is recommended that a minimum volume of water should be left flowing in the river.

3.2.3. Invertebrates associated with macrophytes

The macrophytes recorded were Brayophyceae which are ovipositing sites for most aquatic insect species including Ephemeroptera of species Beatis tricaudatus and Caenis tardata. Beatis tricaudatus had the highest abundance (36.7%) followed by Caenis tardata with percentage abundance of 33.2% in the sampled stations. Chloropyceae which are highly abundant as periphytons/Aufwuchs on various substratum are food for larvae of insect of species - Tipula maxima and Glossiphonia complanata with moderate sensitivity and relative abundance of 0.8%. (Annexes 4 and 5).

3.2.4 Potential disease vectors

The potential disease vectors identified include Glossina sp and Anopheles sp. The potential diseases include trypanasomiasis and malaria respectively. The workers especially at the weir will need to be protected from Glossina sp by providing them with protective gear (overalls) which should be long sleeved and heavy, with colour that blends with the background to prevent them against bites. They should also be supplied with treated mosquito nets in their camps to prevent them against mosquito bites. The project activities may not increase the spread of the vectors.

3.2.5 Fish species, distribution and abundance

3.2.5.1 Materials and Methods

River Rwimi is a fishing ground (Fig 1) by male young and male adults along the whole stretch from the weir through the site of the powerhouse. The fishing methods used by the community include lift netting; seining, gillnetting and hook-and-line.

3.2.5.2 Fish distribution

Fig 1: Fishing in River Rwimi
Sampling for fish was done using 2 inch gillnet. Fishing was done at four sites (at the dam, 100 m below the dam, 500 m below the dam and 1000 m below the dam). All the sites were taken between the proposed dam site and the proposed power house. The recorded fish species in all the four sites sampled was *Varicorhinus ruwenzori* (Fig 2).

![Varicorhinus ruwenzori](image)

**Fig 2: Photos of Varicorhinus ruwenzori**

### 3.2.5.3 Fish abundance

From fishing in the river, *Varicorhinus ruwenzori* was the major fish caught in the river. In addition the river had ornamental fish.

These fishes had varying relative abundances. The relative abundance of *Varicorhinus ruwenzori* was significantly high at site four (1 km below the proposed dam site) with 19.35% and completely no fish catches at the weir. Therefore the relative abundance of fish decreases upstream the river. This shows latitudinal variation of the fish species whereby there was reduced abundance as you move upstream the river. The rest were ornamental fish (Annex 6). Consultations with the fishers showed that they fish other fish species.

The observed small number of fish in the river is probably due to the flood that swept through the river on May 1, 2013. Reports from the local fishers testify that since the flood, fish catches have drastically reduced.

**Recommendation**

The observed abundance of fish requires that a minimum volume of water should be left in the river since it is a habitat for *Varicorhinus ruwenzori*, an endemic fish species of the river. This high relative abundance for the sites below the weir is an indication that fish breeding grounds are downstream and adult fish only migrate upstream. This means that construction and operation of the project a minimum volume of water should be left in the river to reduce any impact on the fish population in the river.

### 3.2.5.4 Biometric measurements

**Size and weight**

The size distribution was in the range of 10-14cm focal length and 12-20gm by fresh weight. And all the fish had mature gonads.
Gut content analysis

Microscopic analysis of the gut contents of fish captured in the river at all stations showed broken parts of invertebrates of class Insecta, order Ephemeroptera (May flies) and the representative species were Beatis tricaudatus and Caenis tardata.

The relative abundance of ephemeroptera larvae was recorded highest. This tallies well with the percentage abundance of the fish Varicorhinus ruwenzori. The distribution of algae is throughout the river course. This shows a positive relationship along the food chain where increase in relative abundance among the invertebrate fauna translates into a corresponding abundance of the vertebrate fauna (fish population) in the river. Thus a decrease in algal population will directly reduce the fish population.

Possible ecological issues

Diversion of all the water into the canal will result into loss of these aquatic invertebrates.

Recommendations to manage the issue(s)

It’s therefore recommended that a volume of water be retained in the river allow survival of the fish population between the weir and the power house.

In addition, a canal should be constructed connecting the dam with the river course below the weir to enable the altitudinal migration of the fish species past the weir.

3.2.5.5 The herpetiles in the river

Amphibians were also recorded in the river (Fig 3). These also need water in the river for continuity of life.

Fig 3: Tadpoles of amphibians

3.2.5.6 Water requirements for the community

A water audit was done using two methods: direct observation and discussion with the community. It was observed that the communities not only use the river for fishing, swimming, bathing, washing clothes but also collect water from the river for domestic use (Fig 4 and Fig 5).
Fig 4: Washing clothes in the river

The water requirements by the community was recorded as follows:

<table>
<thead>
<tr>
<th>Watering point</th>
<th>Water collection</th>
<th>Bathing</th>
<th>Washing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average (Litres/day)</td>
<td>Average (Litres/day)</td>
<td>Average (Litres/day)</td>
</tr>
<tr>
<td>Kalhalhu</td>
<td>1280</td>
<td>140</td>
<td>920</td>
</tr>
<tr>
<td>Nyaseke</td>
<td>1280</td>
<td>360</td>
<td>920</td>
</tr>
<tr>
<td>Nyaseke/Gatyanga II</td>
<td>1280</td>
<td>120</td>
<td>400</td>
</tr>
<tr>
<td>Nyakabale/Gatyanga I</td>
<td>1280</td>
<td>80</td>
<td>400</td>
</tr>
<tr>
<td>Upper Rugendabara I</td>
<td>1280</td>
<td>80</td>
<td>400</td>
</tr>
<tr>
<td>Total</td>
<td>6400</td>
<td>780</td>
<td>3040</td>
</tr>
<tr>
<td>Total m³/day</td>
<td>6.4</td>
<td>0.78</td>
<td>3.04</td>
</tr>
<tr>
<td></td>
<td>7.40741E-05</td>
<td>9.02778E-06</td>
<td>3.51852E-05</td>
</tr>
<tr>
<td>Total m³/s for domestic use</td>
<td>0.000118287</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other water users

<table>
<thead>
<tr>
<th>School</th>
<th>Population</th>
<th>Total m³/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nyakabale Primary School</td>
<td>526</td>
<td>2.104</td>
</tr>
<tr>
<td>Gatyanga Primary School</td>
<td>420</td>
<td>1.68</td>
</tr>
<tr>
<td>Total m³/day</td>
<td></td>
<td>3.784</td>
</tr>
<tr>
<td>Total m³/s</td>
<td></td>
<td>4.3763E-05</td>
</tr>
<tr>
<td>Overall total water requirements by the community m³/day</td>
<td>14.004</td>
<td></td>
</tr>
<tr>
<td>Overall total water requirements by the community (m³/s)</td>
<td>0.000162083</td>
<td></td>
</tr>
</tbody>
</table>

Note: Factor (1 Litre=10⁻³ m³); Seconds in a 24-hour day=86,400

In all these water uses, the average overall water requirement by the neighbouring communities was calculated as **14 m³/day** which is equivalent to a minimum of **0.000162083 m³/s** volume of river flow downstream. In addition, the flora and fauna in the river requires water to maintain the other ecological functions of the river.
3.2.5.7 Livelihood sources at the weir (Kabarole side)

The community members practice various livelihood systems. The major ones include crop growing (cassava, maize and bananas) and cattle grazing at the weir.

Possible issues

Construction of the dam will possibly affect land of three households namely: Zakalia Muhindo, Aminadab Mukirania Kitibitwa and George Maate through daming.

Recommendations to manage the issue

There will be need for a meeting with these three families after dam construction having assessed how much of their land has been taken up by the dam waters. This will also be done after removing the riverbank area as stipulated in the riverbanks regulations in Uganda.

3.3 General Ecological issues and recommendations

3.3.1 General Ecological issues

VI. Loss of fish and other life forms.

VII. Loss of fishing grounds for the fishing community (since it’s a livelihood source) as a result of reduced water volume in the river

VIII. Loss of microhabitats of some aquatic organisms (Beatis tricaudatus and Caenis tardata). Habitat loss will be due to reduced river flow and volume of water in the river. This impact will result into a reduction in abundance of fish species as a result of degradation of their natural habitat.

IX. Construction of the dam will possibly affect land of three households namely; Zakalia Muhindo, Aminadab Mukirania Kitibitwa and George Maate through daming.

X. Reduced river flow when the water is dammed and channelled compared to the average overall water requirements by the neighbouring communities of 14 m³/day which is equivalent to a minimum of 0.000162083 m³/s volume of river flow downstream in addition to the water demands by the flora and fauna in the river.

3.3.2 General recommendations to manage the issues

I. The issue of the envisaged loss of fish and other micro fauna in the river between the weir and the power house will be remedied through maintaining a minimum volume of water into the river to ensure continuity of life of the various life forms therein.

II. There is need for at least 0.001m³/s river flow to meet the water requirements by the neighbouring communities as well as water for the flora and fauna in the river requires water to maintain the other ecological functions of the river.

III. There will be need for a meeting with these three families after dam construction having assessed land take by the dam waters. This will also be done after removing the riverbank area as stipulated in the Riverbank regulations in Uganda.

General conclusion
The river supports a variety of flora and fauna with varied water requirements for their sustenance. A recommendation that at least 0.001 m$^3$/s of water should be left/allowed in the river as environmental flow to meet the water requirements of the flora and fauna in the river as well as maintain the other ecological functions of the river. These include maintaining the benthic community, the substratum and the existing microhabitats.

The fluctuation of water flow in the river will strongly reduce the biological productivity of the river. The periphytons, bottom fauna and fish will decline both in production and in biodiversity. Changes in water levels of river flow downstream will also affect diversity and abundance of macro invertebrates since they are sensitive to organic loading.

LIST OF ANNEXES

Annex 1: Physical and biological characteristics of the sampling stations.

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Vegetation cover/shading</th>
<th>River bottom/substratum</th>
<th>Water appearance</th>
<th>Shape of the river bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>At the dam</td>
<td>No canopy, natural small bushes, shrubs at the banks.</td>
<td>Rocky with a mixture of boulders, cobbles, Bed rock, Gravel and sand. (Hard bottom)</td>
<td>Colorless and transparent.</td>
<td>Undercut and steeply sloping.</td>
</tr>
<tr>
<td>2</td>
<td>100 meters below the dam</td>
<td>No canopy of natural trees and shrubs all over.</td>
<td>Rocky with boulders, cobbles, Gravel, Bedrock, and sand. (Hard bottom).</td>
<td>Colorless and transparent</td>
<td>Gently sloping</td>
</tr>
<tr>
<td>3</td>
<td>500 meters below the dam</td>
<td>No canopy of natural trees and shrubs all over.</td>
<td>Rocky with boulders, cobbles, Gravel, Bedrock, and sand. (Hard bottom).</td>
<td>Colorless and transparent</td>
<td>Gently sloping</td>
</tr>
<tr>
<td>4</td>
<td>1000 meters below the dam</td>
<td>No canopy of natural trees and shrubs all over.</td>
<td>Rocky with boulders, cobbles, Gravel, Bedrock, and sand. (Hard bottom).</td>
<td>Colorless and transparent</td>
<td>Gently sloping</td>
</tr>
</tbody>
</table>

Annex 2: River characteristics

<table>
<thead>
<tr>
<th>Site</th>
<th>Water Pools</th>
<th>Siltation</th>
<th>River side cover</th>
<th>River conditions</th>
<th>Shape of the river channel</th>
<th>Water flow speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>At the dam site 1</td>
<td>Shallow pools in the river bed and banks.</td>
<td>Silted</td>
<td>Natural plant cover degraded</td>
<td>Degraded/eroded.</td>
<td>U-shaped.</td>
<td>Very high</td>
</tr>
<tr>
<td>Other sites 3</td>
<td>Shallow pools in the river bed and banks.</td>
<td>Silted</td>
<td>Natural plant cover degraded</td>
<td>Degraded/eroded.</td>
<td>Wide.</td>
<td>High in the middle and slow at the banks.</td>
</tr>
</tbody>
</table>

Annex 3: Peripytic and floating plants

<table>
<thead>
<tr>
<th>Floating/submerged plants</th>
<th>Microalgae</th>
<th>Macroalgae</th>
<th>Blue green algae</th>
<th>Mosses</th>
<th>Littoral zone vegetation</th>
</tr>
</thead>
</table>
Annex 4: Abundance of sediment macro-invertebrates

<table>
<thead>
<tr>
<th>Taxon</th>
<th>Stations</th>
<th>Total</th>
<th>% abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Order</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Diptera:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chironomus calipterus</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Chironomus callichirus</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Tipula maxima</td>
<td>10</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td><strong>Ephemeroptera:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beatis tricaudatus</td>
<td>80</td>
<td>108</td>
<td>186</td>
</tr>
<tr>
<td>Caenis tardata</td>
<td>70</td>
<td>98</td>
<td>168</td>
</tr>
<tr>
<td>Ecdyonurus venosus</td>
<td>20</td>
<td>14</td>
<td>34</td>
</tr>
<tr>
<td><strong>Plecoptera:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isoperla fulva</td>
<td>40</td>
<td>32</td>
<td>72</td>
</tr>
<tr>
<td>Perla bipunctata</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Nemoura trispinosa</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Odonata:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helocordulina sp.</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Ischnura sp</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td><strong>Coleoptera</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psephenus herricki</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Gyrinuss ubtirius</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Enochrus sp</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Oreodytes rivalis</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Annelida</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glossiphonia complanata</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total number of taxa</strong></td>
<td></td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td><strong>Total number of individuals</strong></td>
<td></td>
<td>231</td>
<td>275 506</td>
</tr>
</tbody>
</table>

Annex 5: Sensitivity of macro invertebrates to organic loading

<table>
<thead>
<tr>
<th>Taxon/species</th>
<th>Sensitivity to organic loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chironomus calipterus</td>
<td>Very sensitive Tolerant</td>
</tr>
<tr>
<td>Chironomus callichirus</td>
<td>Tolerant</td>
</tr>
<tr>
<td>Tipula maxima</td>
<td>Sensitive</td>
</tr>
<tr>
<td>Beatis tricaudatus</td>
<td>Sensitive</td>
</tr>
<tr>
<td>Caenis tardata</td>
<td>Sensitive</td>
</tr>
<tr>
<td>Ecdyonurus venosus</td>
<td>Sensitive</td>
</tr>
<tr>
<td>Isoperla fulva</td>
<td>Moderate</td>
</tr>
<tr>
<td>Perla bipunctata</td>
<td>Moderate</td>
</tr>
<tr>
<td>Nemoura trispinosa</td>
<td>Sensitive</td>
</tr>
<tr>
<td>Helocordulina sp.</td>
<td>Moderate</td>
</tr>
<tr>
<td>Ischnura sp</td>
<td>Moderate</td>
</tr>
<tr>
<td>Psephenus herricki</td>
<td>Sensitive</td>
</tr>
<tr>
<td>Gyrinuss ubtirius</td>
<td>Sensitive</td>
</tr>
<tr>
<td>Enochrus sp</td>
<td>Sensitive</td>
</tr>
<tr>
<td>Oreodytes rivalis</td>
<td>Sensitive</td>
</tr>
<tr>
<td>Glossiphonia complanata</td>
<td>Moderate</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>9</td>
</tr>
<tr>
<td><strong>% sensitivity</strong></td>
<td>56.25 31.25 12.5</td>
</tr>
</tbody>
</table>

Annex 6: Fishes of River Rwimi
### Environmental, Social Management & Monitoring Plan RSHHP

#### Fish species counts

<table>
<thead>
<tr>
<th>Site</th>
<th>Fish species</th>
<th>Number of fish</th>
<th>Relative abundance (%) of the total catch</th>
</tr>
</thead>
<tbody>
<tr>
<td>At the dam (0 m)</td>
<td><em>Varicorhinus ruwenzori</em></td>
<td>2</td>
<td>6.451613</td>
</tr>
<tr>
<td></td>
<td>Ornamental fish</td>
<td>5</td>
<td>16.12903</td>
</tr>
<tr>
<td>100 m below the dam</td>
<td><em>Varicorhinus ruwenzori</em></td>
<td>3</td>
<td>9.677419</td>
</tr>
<tr>
<td></td>
<td>Ornamental fish</td>
<td>8</td>
<td>25.80645</td>
</tr>
<tr>
<td>500 m below the dam</td>
<td><em>Varicorhinus ruwenzori</em></td>
<td>5</td>
<td>16.12903</td>
</tr>
<tr>
<td></td>
<td>Ornamental fish</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1000 m below the dam</td>
<td><em>Varicorhinus ruwenzori</em></td>
<td>6</td>
<td>19.35484</td>
</tr>
<tr>
<td></td>
<td>Ornamental fish</td>
<td>2</td>
<td>6.451613</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>31</td>
<td>100.00</td>
</tr>
</tbody>
</table>

#### Annex 7: Population using water from the river

<table>
<thead>
<tr>
<th>Watering point</th>
<th>Number of people collecting water for domestic use</th>
<th>Number of people bathing</th>
<th>Number of people swimming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kalhalhu</td>
<td>103 25</td>
<td>4 10</td>
<td>7 16</td>
</tr>
<tr>
<td>Nyaseke</td>
<td>20 27</td>
<td>15 21</td>
<td>8 20</td>
</tr>
<tr>
<td>Nyaseke/Gatyanga II</td>
<td>13 18</td>
<td>6 6</td>
<td>3 7</td>
</tr>
<tr>
<td>Nyakabale/Gatyanga I</td>
<td>11 12</td>
<td>5 3</td>
<td>2 8</td>
</tr>
<tr>
<td>Upper Rugendabara I</td>
<td>9 9</td>
<td>3 5</td>
<td>6 4</td>
</tr>
<tr>
<td>Other water users</td>
<td>Population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nyakabale Primary School</td>
<td>526</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gatyanga Primary School</td>
<td>420</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A Conceptual Drawing of a Fish Ladder
8. **ANNEXURES**:

1.1. **CONDITIONS OF APPROVAL (SEIA) RWIMI SMALL HYDRO POWER PLANT**

In addition to implementing the mitigation measures outlined in the Environment and Social Impact Statement, this Certificate of EIA approval for this plant is granted on condition that the developer – M/S. Eco Power Holdings Limited shall;

(i) Obtain all the necessary Permits from the Electricity Regulatory Authority, prior to the construction and operational phases of the Hydropower Plant;

(ii) Ensure that the construction of the Hydropower Plant and auxiliary structures shall conform to the rules and safety regulations governing the construction of Hydropower Plants and that all necessary approvals on structural aspects of the Hydropower Plant, are obtained from the relevant competent authorities responsible for approval or structural plans and designs for Hydropower plants, including the Electricity Regulatory Authority (ERA), Ministry of Works and Transport among other relevant lead agencies;

(iii) Ensure comprehensive documentation of and full compensation of all persons/families affected by the proposed plant (including those whose agricultural fields/and or other existing properties will be forfeited due to implementation of plant activities) is undertaken, in a transparent and timely manner according to the agreed compensation terms and rates and, as required under the National Laws governing compensation and guidance provided by the office of the chief Government Valuer, respectively.

(iv) Undertake to ensure that separate environmental impact assessment (EIA) is carried out for any other component of this plant that is not a subject of this environmental impact assessment (such as the operation of the stone quarried/worker’s camps/parking/storage yards, etc.)

(v) Apply for and obtain, a water abstraction permit from the Directorate of Water Resources Management (DWRM), for intended abstraction of water from River Rwimi, as required under Regulation 3 of the Water Resources Regulations, 1998.

(vi) Apply and obtain permit from this Authority for carrying out some plant components within the regulated protection zone of River Rwimi as required under Section 29 of the National Environment (Wetland, River Banks and Lakeshores Management) Regulations, 2000.

(vii) In conformity with the National Environment (Wetlands, Riverbanks and Lakeshores Management) Regulations 2000, put in place appropriate soil conservation measures to ensure the protection of the riverbanks of River Rwimi, from siltation and/or sedimentation, by means of for example planting suitable indigenous plant species in the protected zone, amongst other methods.
(viii) In conformity with the National Environment (Waster Management) Regulations, 1999, ensure that all solid waste generated during the construction and operational phases of the plant, is disposed of in an environmentally sound manner, and at the suitable location approved by the Kassese District Local Government Authority.

(ix) Ensure that environmental pollution due to improper disposal of waste-oil resulting from oil-leakage and/or spillage due to operation of motorized equipment and electricity generators is avoided, and that used-oil/waste-oil from the said generators, and other hazardous waste generated at the plant site is collected and safely disposed of, in an environmentally-sound manner as prescribed under the National Environment (Waste Management) Regulations, 1999; and that waste-oil and any other hazardous waste, should be disposed of by an authorized (licensed) hazardous waste handler;

(x) Prior to the commissioning of the Hydropower plant, ensure that generators to be installed at the Hydropower Plant are subjected to the various functional tests, prior to licensing; this should be conducted conformity with the guidelines prescribed under the Electricity Regulatory Act 1999;

(xi) Ensure that the generators to be used during the implementation phase of are fitted with silencers, in order to reduce noise levels to permissible limits, as stipulated in the National Environment (Noise Standards and Control) Regulations, 2006; and the generators comply with air quality standards as shall be prescribed by this authority from time to time.

(xii) Carry out induction training and sanitization of the workforce, on the importance of adhering to Occupational Safety and Health procedures and guidelines, during the construction, commissioning and operational phases of the Hydropower Plant, and ensure that workers are provided with adequate personal safety equipment such as safety helmets, heavy duty hand gloves, overalls, gumboots, dust masks, ear muffs, eye goggles, etc.;

(xiii) Ensure that adequate first aid facilities are available at the plant site for emergency treatment, including provision of written first-aid instructions that should be posted in strategic areas of the plant site premises, and should be visible and easily accessible to all workers.

(xiv) Put in the place appropriate measures to mitigate all impacts associated with the construction and operational phases of the plant, including

- ensuring that no quarrying activity takes place in the river bed
- putting in place gabions/boulders along the riverbanks and river-bed located downstream, so as to minimize erosion of the river bed and river bank, particularly during the construction and operational phases of the power house and tailrace;
- minimizing pollution within the construction sites as well as along access roads where the heavy-duty construction equipment will be used, through sprinkling of water on various dust source points;
- Minimizing accidents through creating of humps along the access roads and enforcing speed limits (30km or less) among truck drivers.
- Protection of workers against exposure to excessive noise in areas where excess noise pollution is inevitable, through provision protective gear and adhering to the National Environment (Noise Standards and control) Regulations, 2003;
(xv) Ensure that a proper drainage system is constructed along the access roads, so that water run-off is controlled and directed appropriately so as not to cause flood problems, and to minimize pollution of water sources in the surrounding area, and, also ensure that culverts of appropriate sizes are installed at all recommended road location sites so as to minimize interference with drainage, control of floods or pollution of water sources in the plant area.

(xvi) Ensure that appropriate soil erosion control measures are put in place to control soil erosion hazards both on-site and off-site in the surrounding plant area, including measures to prevent the siltation and/or deposition of sediments into the River and any streams draining the project area, which may potentially affect the water quality of River Rwimi;

(xvii) Undertake to conduct routine water quality monitoring at selected points along River Rwimi, in order to detect any contaminants/pollutants that may impact on and cause deterioration of the water quality of the River, which is utilized as a domestic water sources by the local communities.

(xviii) Meet all the technical requirements with regard to the control and regulation of water flows up-stream and down-stream of the River; and, meet any other requirements as will be prescribed by the Directorate of Water Resources Management (DWRM) with regard to the capacity/design of the Hydropower Plant, the hydrology of the River Rwimi and the related environmental flows/water availability and other water quality aspects.

(xix) Put in place an emergency response system to initiate repairs immediate, in the event of equipment failure/malfunction, in order to promptly minimize the risk of possible flooding of crop field and/or neighboring residencies, and ensure that support infrastructure and personnel are on stand-by, to immediately respond to such emergencies.

(xx) Have in place a comprehensive emergency and monitoring plan including installing appropriate fire-fighting equipment at the plant premises, in order to cater for any fire risks/hazards that could possibly occur during the operational phase of the plant, and, ensure that all staff is trained in the techniques of fire-fighting and emergency procedures.

(xxi) Closely liaise with the relevant lead agencies, such as Electricity Regulatory Authority (ERA), Rural Electrification Agency (REA), National Environment Management Authority (NEMA), Directorate of Water Resources Management (DWRM), Kassese District Local Government Authorities and the local communities in the project area, to put in place a comprehensive joint catchment management programme including the promotion of integrated water use, so as to ensure sustainable use of River Rwimi not only for electricity power generation, but also for the other competing uses, including domestic use by the local communities.

(xxii) Undertake to regularly sensitize the local community on plant activities, and put in place a grievance management system to promptly address community concerns associated with plant operations.
(xxiii) Ensure that Sexually Transmitted Diseases (STD) and HIV/AIDS awareness and prevention programme is instituted to sensitize both the local community as well as the workers who will be involved in construction and operations phases of the Hydropower Plant.

(xxiv) ensure that any complaints from local communities regarding the operation of the Hydropower Plant and its associated infrastructure are addressed in liaison with the Electricity Regulatory Authority (ERA), Rural Electrification Agency (REA), NEMA, Directorate of Water Resources Management (DWRM) and Kassese District Local Government Authorities;

(xxv) undertake to ensure that the workers camp is immediately dismantled on completion of plant operations; and, that any waste generated at the camp site is properly disposed of in an environmentally-sound manner and should not be dumped in any regulated areas including wetlands, streams etc.

(xix) Undertake to properly landscape and re-vegetate the laid bare areas (including beneath transmission lines) with indigenous grass, and/or other suitable vegetation species; the restoration programme should be carried out to the satisfaction of the relevant lead agencies.

(xx) Undertake to conduct annual Environmental Audits and submit report to this Authority in conformity with Regulation 31(2) of the Environmental impact Assessment Regulations, 1998, and Section 22(3) of the National Environment Act, Cap.153; and, in accordance with the National Environment (Audit) Regulations, 2006, submit the first Audit Report by December 2013.

(xxi) Ensure that this Certificate of Approval is displayed at the plant site and is available at all times.

(xxii) Fulfill any other conditions and requirements as maybe required from time to time by Electricity Regulatory Authority (ERA), Rural Electrification Agency (REA) NEMA, Directorate of Water Resources Management (DWRM) and Kassese District Local Government Authorities and any other relevant lead Agency.

(xxiii) Implement the Mitigation Plan and Environmental Monitoring Plan as contained in the ESISL and ensure record keeping as required under Section 77 of the National Environment Act, Cap. 153, and transmit records to this Authority as required under Section 78 of the National Environment Act, Cap.153;

(xxiv) in accordance with Section 22 (4) of the National Environment Act, Cap.153, ensure that any other undesirable impacts that may arise due to implementing this plant but were not contemplated at the time of undertaking the Environmental Impact Assessment, are mitigated.
1.2. CONDITIONS OF APPROVAL (RESETTLEMENT AND COMPENSATION ACTION PLAN)

In addition to implementing the Mitigation Measures and Monitoring Plan recommended in the Resettlement Action Plan, the certificate of approval is granted on condition that, the Developer, ECO POWER HOLDINGS LIMITED, shall comply with the approval condition stated:

(i) Before commencing implementation of the Resettlement Action Plan (RAP), ensure that all the necessary stakeholder consultations have been undertaken and documented, and guidance obtained from the relevant lead agencies including the Chief Government Valuer, Electricity Regulatory Authority (ERA), Ministry of Energy and Mineral Development (MEMD), Ministry of Gender. Labor and Social Development (MGLSD), the Kassese District Local Authorities, and the National Environment Management Authority (NEMA), in order to avert any encumbrances during the actual implementation and monitoring of the RAP.

(ii) Ensure that a proper Grievance Redressing Committee is in place to cater for the whole cycle of compensation and/or resettlement of project-affected persons (PAPs) or project-affected households (PAHS) in Kihoko, Nyaseke, Nyakabale and Upper Rugendabara Villages, respectively.

(iii) Cooperate with the District Local Government Authorities and monitor the entire compensation process and address any grievances that may emerge among the project-affected persons/entities.

(iv) Effect all payments to the concerned PAPs/PAHs in a transparent and timely manner based on agreed terms and rates, and in accordance with the provision of the Land Act, Cap. 227, and other relevant national laws and rules governing compensation matters.

(v) Ensure that special persons are put in place to handle all address concerns pertaining to the vulnerable section of the PAPs/households- that is, the persons with disabilities, chronically ill, female-headed households, among others.

(vi) Consider putting in place and implement an appropriate corporate social responsibility (CSR) plan, to address concerns (e.g., access to public utilities/social services, sources of livelihood, etc.), as resolved in the meetings held with the local communities and District Local Government Authorities in the Kihoko, Nyaseke, Nyakabale, and Upper Rugendabara Villages.

(vii) For the losses that cannot easily be valued or compensated in monetary terms (for example, access to public utilities, income-generating activities, communal grazing areas, water sources, watering points for livestock, forest resources), ensure that all attempts are made to establish access to equivalent and socially/culturally acceptable resources and income generating opportunities, including planning and implementing community development projects for the indirectly affected communities.

(viii) In collaboration with the Local Authorities and relevant lead Agencies, identify and develop comprehensive follow-up actions to ensure proper integration of any
person(s)/household that shall inevitably be relocated to another location; and ensure that the relocated person(s) or household does not opt to settle or encroach in regulated areas such as river banks, road reserves, forested area, etc.

(ix) Ensure that proper procedures to address any concerns raised by PAPs/PAHs, the local Authorities and relevant lead agencies, are put in place to avert any incidences of conflict/disagreements among the concerned parties in the project area.

(x) Adhere to and implement both the proposed Mitigation Measures actions, Monitoring Plan, and Audits (compliance and Completion Audits) contained in the RCP, respectively, as required under Sections 77 and 78 of the National Environmental Act, Cap 153; and, submit the record of such audits to the relevant authorities.

(xi) Ensure that this Certificate of Approval is displayed at the project site, and other selected/ appropriate location(s) including at the Kassese District Local Government Headquarters and in Kitswamba Sub-county Headquarters, respectively, and the four villages mentioned in (i) above; and, it should be available at all times.

(xii) Fulfill any other conditions and requirements as may be prescribed from time to time by the Kassese District Local Government Authorities the Office of the Government Valuer, Electricity Regulatory Authority, the Ministry of Gender, Labor and Social Development, among others.

(xiii) Where required/necessary, restore sections of the project-affected area forfeited by the PAPs/PHAs laid bare during the implementation of the RCP, etc. in order to enhance aesthetics of the said affected areas.

(xiv) In accordance with Section 22(4) of the National Environment Act, Cap 153, take all reasonable measures to mitigate any other undesirable environmental impacts that may arise during the implementation of the RCP, but were not contemplated by the time of preparation/documentation of the RCP and by the time of issuing this approval.
1.3. CONDITIONS LAID DOWN BY DWD FOR SURFACE WATER ABSTRACTION
THE REPUBLIC OF UGANDA

SURFACE WATER ABSTRACTION PERMIT
(The Water Act Cap 152 and the Water Resources Regulations.)

In exercise of the powers conferred upon the Director by sections 5 and 18 of the Water Act Cap 152; and in accordance with regulations 5, 7 and 10 of the Water Resources Regulations, 1998, this is to grant a Surface Water Permit.

Number: KSE700978/ISWHDW 2012
To: ECO POWER HOLDING LTD
Rwenzori Courts, P.O Box 6074, Kampala

to abstract surface water in accordance with the terms and conditions of this permit.
The permit is granted in the terms and conditions set here, on the next page and in the Annex, which are part of this permit, and under all other terms and conditions set in the Water Act Cap 152 and the Water Resources Regulations, 1998.

This permit is granted for a period not exceeding 5 year(s), which come into force on Monday, December 03, 2012 until Saturday, December 02, 2017.

Issuance Date: Monday, December 03, 2012

Eng. Richard Cong
DIRECTOR OF WATER DEVELOPMENT

Monday, December 03, 2012
SURFACE WATER PERMIT - STANDARD CONDITIONS

1. Section 20 (a) A holder of a permit issued under this division of the Act shall:
   not cause or allow any water to be polluted;

2. Section 20 (b) prevent damage to the source from which water is taken, or to which water is discharged after use;

3. Section 20 (c) take precautions to ensure that no activities on the land where water is used result in the accumulation of any substance which may render water less fit for the purpose for which it may be reasonably used;

4. Section 22 (1) Where in the opinion of the Director the water available in the area is, or is likely to become, insufficient in quantity or quality for the needs of the persons using or seeking to use it from that source, the Director may, by notice in writing to the holder of a water permit for that area, suspend or vary the water permit.

5. Section 22 (2) The Director may impose conditions to any permit varied, suspended or granted under subsection (1) including requiring compensation to a holder of a water permit by another holder of a water permit.

6. Section 25 The Director may cancel a water permit where in his opinion the holder of a water permit has—
   (a) failed to comply with any express or implied condition to which the water permit is subject;
   (b) taken or used more water than he is entitled to take in any period;
   (c) taken or used water for a purpose other than that for which he is entitled;
   (d) failed to comply with any provision of this Act;
   (e) not made full beneficial use of the permit within the two preceding years.

7. Section 26 (1) Subject to section 33, where the Director is of the opinion that in order to make water available for a public purpose it is necessary to cancel or vary a water permit, the Director may cancel or vary the water permit.
   (2) The Minister may, by notice in the Gazette, declare any purpose to be a public purpose for purpose of this section.

8. Section 37 An authorised person may enter land for purposes of—
   (a) inspecting works or use of water, or
   (b) taking samples or making tests, to find out whether—
      (i) water is being wasted, misused or polluted;
      (ii) the terms of any water permit, waste discharge permit or any other permit granted under this Part of the Act are being complied with;
      (iii) an offence is being committed against this Part of the Act, or the Act is otherwise being complied with.

9. Section 37 (1) A grant of an application under this section does not imply any representation or guarantee by the Director, authorised person or public authority that water will be available at the place.

10. Section 31 (1) A person commits an offence who, unless authorised under this Part of the Act, causes or allows—
     (a) waste to come into contact with any water;
     (b) waste to be discharged directly or indirectly into water;
     (c) water to be polluted.

11. Section 31 (2) The provisions of subsection (1) shall apply to permits granted and works constructed before the commencement of this Act.

12. Section 31 (3) A person or public authority contravening the provisions of subsection (1) through which damage is caused, shall be liable to pay the cost of remedying the damage caused and reinstating the environment, as far as is possible, to the condition that would have existed if the damage was not caused.


13. Regulation 7 (3) A person who becomes the owner or occupier of any premises in respect of which a water permit exists shall continue to abstract water in accordance with the conditions and terms spelt out in that water permit for a period of three months from the date on which that person becomes the owner or occupier of the premises.

14. Regulation 8 (1) A holder of a water permit granted under regulation 3 or 10 may before the expiry of his permit, apply to the Director for the renewal of the permit.
   (2) An application referred to in sub-regulation (1) of this regulation shall—
      (a) be made in a form and manner determined by the Director;
      (b) contain such information as the Director may specify;
      (c) be accompanied by the fee specified in the Second Schedule to these regulations.
   (3) The Director, in considering an application referred to under this regulation, shall take into account the factors specified in regulation 6 of these regulations.
   (4) Where the Director refuses a permit he/she may renew such permit on such conditions, subject to these regulations, as he or she may determine.

Surface Water Abstraction Permit extra conditions

Allowed to abstract water, from River Rwimi at Kasanga, Kihonko Village, Kitchwamba Sub-County Kasese District, up to a maximum of 6.912x10^3 M^3/day for Hydropower generation subject to the following conditions;

1. Ensure that water channeled from Kasanga into Pipeline for power generation does not, at any given time, exceed 8 M^3/s,

2. Ensure that ALL water described under (1) is returned to the main river after use in power generation,

3. Ensure that water described under (1) passes through a gauging device in the diversion canal,

4. Maintain at all times, and more especially during critical low flow periods, a minimum flow of 0.25 M^3/s in the river section between the intake works and point of return of flow to the main Rwimi River for purposes of in stream water use.

5. Ensure that river discharge in excess of flow described in (1) and the flow described in (4) is freely allowed to pass through the overflow weir,

6. On daily basis, record water flow described in (1) and (5) in a format prescribed by the Director,

7. Submit information obtained under (6) to the Director on Quarterly basis;

8. Pay annual Fees of UGX 1,000,000/= 

Monday, December 03, 2012
06th August 2012

The Chief Executive Officer,
Eco Power Holdings Ltd,
KAMPALA

Re: CONSTRUCTION PERMIT AND SURFACE WATER ABSTRACTION PERMIT FOR RWIMI SMALL HYDROPOWER PROJECT

Reference is made to your applications for Construction Permit and surface water abstraction permit to use water for hydropower generation on River Rwimi in Kasese District.

Further to our letter of approval of your applications dated 2nd May 2012 under ref. WRD/06/250/06, your permits have already been processed from the effective date.

As issuance of the formal permits is being finalized, this letter serves to authorize you to i) carry out Construction of the Hydraulic Works on River Rwimi at Kasanga, Kihonko Village, Kicwamba Sub-county, Kasese District for use in Power generation and ii) abstraction of water from River Rwimi for hydro-electric power generation in accordance to the Water Act, Cap 152.

You will be informed by this office when the formal permit becomes ready for collection.

Eng. Mugisha Shillingi
DIRECTOR OF WATER RESOURCES MANAGEMENT
1.4 Scope of work

(Social and Environmental Management Consultant (SEMC))

Social and Environmental Management Consultant will be Responsible for Environmental, Social + OHS performance at the site as per the ESMP inter alia will

a. Guide the Developer to obtain all required permits (as per NEMA Conditions of approval)

b. Developing environmental and safety plans such as:

i. Environmental and social management plan and its periodical monitoring to ensure that the contractors and contractor comply with the requirement laid down in the ESMP

ii. Preparation and submission of quarterly reports to the key stakeholders

iii. Provide technical guidelines on matters of soil conservation, erosion control and slope protection while construction work is on-going and ensure that water bodies will not be polluted in the project location as a result of the construction activities.

iv. Provide any further conflict resolution measures on the follow up of the Resettlement Action Plan with matters arising from Land Acquisition/Resettlement and compensation processes and public safety, and Community Action Plans

v. Represent the developer at forum at which project related environmental matters are discussed

vi. Provide leadership to oversee the implementation of Occupational Health and Safety (OH&S) Plan and provide necessary guidelines to the contractor and sub-contractors

c. Make Periodical visits to the site, provide leadership to design and oversee the implementation of other supplementary management plans and guideline and strengthen the capacity of the site E&S Staff (CWO, Project Manager) on matters of E&S implementation.

d. Liaise with DEO, Contractors staff and communicate with independent consultants appointed by the Financier (on the advice of the Developer) on matters relating to ESMP Implementation, monitoring and reporting.
Site Community and Site Welfare Officer (CWO)

Reports to the Social and Environmental Compliance Manager and will assist him in discharging overall responsibilities in implementing the ESMP and with specific roles namely:

Take the appropriate environmental, health, safety and welfare related measures are taken to prevent or mitigate any adverse environmental, health & safety impacts arising from the construction of the project and to address all community grievances arising from any related activities.

These include any adverse impacts to the immediate surrounding settlements of the project area. Works in consultation with the Grievance Committee, the DEO and the officers assigned by the Civil Contractor to ensure that project affected community members are appropriately engaged and are able to amicably resolve any grievances that may arise due to construction activities.

Where necessary, the CWO will, in consultation with the Project Manager, organize and conduct training and awareness to the workers, community members and other project stakeholders on Environment, Health and Safety matters.

Other responsibilities include:

1. Being familiar with the project’s environmental and social documentation; (environmental and social impact assessment (ESIA), environmental management action plans (EMAP) & environmental and social management plans (ESMP) so as to assist the Project Manager with regular monitoring of all the aspects of environment, health and safety (this includes public safety).

2. Where necessary, in coordination with the contractor, the CWO will ensure that the required mitigation measures and corrective actions are undertaken by the contractor, and provide the feedback to the Project Manager.

3. Ensure the contractors and subcontractors adhere to the guidelines provided in the ESMP and supplemental plans such as the Slope Protection, Erosion Control and Soil Conservation plan, Solid Waste Management plan, Health, Safety and Public Safety Guidelines, etc. and report to the Project Manager on a daily basis.

4. The CWO will assist the EHS Manager in advising the contractor and/or sub-contractors on compliance with the requirements of the ESMP and associated plans such as the Traffic and Transportation Management plan, Emergency Response Plan.

5. The CWO will assist in undertaking community consultation and assist in monitoring and dealing with any grievances. The CWO will organize the Grievance Committee that will meet on a regular basis and will playing an active role in resolving community complaints and grievances.

6. The CWO will assist the Civil Contractor to supervise and train the contractor and subcontractors by:
a. Designing training (including training of trainers) modules and conducting training and awareness programmes;
b. Ensuring that the sub-contractors and the contractors adhere to the health and safety guidelines in their day to day operations;
c. Ensuring that records are maintained by the on the diseases, injuries, accidents;
d. Coordinating with institutions/individuals to undertake any specialized training such as health (malaria/HIV prevention/control) etc. targeting the workers and the community members;
e. Coordinating with relevant institutions (Local Police/Hospital/Local Councils/ on matters of health and safety;
f. Assisting the contractor and sub-contractors and the workers engaged; in ensuring that their working environment is safe and that labor camps, work sites are kept in hygienic condition.

7. The CWO will undertake regular site inspections and inform the respective technical supervisors, the site engineers and the other senior staff of any lapses, shortcomings or breach of safety regulations observed on site. (E.g. appropriate safety methods are adopted and sufficient PPE is used etc.).

8. The CWO will assist the Project Manager to prepare quarterly progress reports by collecting site data and information.

**E&S Officer (To be engaged by the Civil Contractor/s and Sub-Contractors)**

Following roles have been identified for persons to be engaged by the Civil Contractor;

Civil Contractor should appoint a suitably qualified officer to be in charge of the implementation of the contractual obligations pertaining to implementing the measures identified for E&S Risks and mitigation while undertaking all construction activities. He should be

- Responsible to liaise with Developer’s Community Welfare officer and the Project Manager for the discharge of the responsibilities stipulated in the contract where EHS is concerned
- He will assist the Community Welfare Officer to attend to all community grievances, community engagement health and safety compliances of the project with the assistance of following key officers.
- To attend to the grievance committee meetings and to take necessary follow up action
- To manage the grievance records
- Prepare communications that need local language assistance
- Responsible for contractor and subcontractors site safety, working environmental
- Ensures PPE is available for all workers and is being used correctly
- Undertakes periodic safety audits at the site
1.5 Civil Contractor’s Addendum to the Main Contract (Draft)

Implementation of the Social and Environmental Compliance

Purpose:

The purpose of this addendum is to ensure that the Civil Contractor (……………………………………………………………………………………………………) is aware of and agrees to implement the compliance requirements of the Social and Environmental Management Plan (ESMP, which is attached hereto, which will constitute a part of the Head Contract that provides stipulations to undertake the construction of Rwimi Small Hydro Power Project, under the Guidance of the Developer, Eco Power Holding Incorporated and the Financiers ………………………………………………………………………………………………

The ESMP has been prepared in keeping with the legal and regulatory requirements of the Government of Uganda as well as the environmental social safeguard policies of the International Finance Corporation’s (IFC) which are explained under IFC Performance Standards.

Accordingly, this addendum entered into ………………………………………..date, stipulates Social and Environmental compliances expected from the contractor as listed under section (1) the general conditions and under section (2) the specific conditions

Section I - General Conditions

1. The contractor shall abide by the clients commitment in managing the project activities in such a manner that all project activities direct and indirect will be carried out with least environmental and social damage/disturbance.

2. The contractor shall study the conditions and mitigation measures specified under the Social Environmental Impact Assessment (SEIA) which are now presented in the ESMP (Action Plan) with specific actions that need to be pursued in the hope that expected environmental social and risks and impacts are mitigated as per the requirements of National Environmental Management Authority, Electricity Authority and the DWD which have provided several permits and licenses to the developer in connection with the construction of the project. Any other condition laid out by any authority/line agency vested within the jurisdiction of the project area too should be adhered to.

3. In managing the proposed mitigation measures stipulated under the Environmental Social Management Plan, the Contactor shall act diligently and use the technical expertise within its purview to design and implement both technical and non-technical measures. In addition, the guidelines provided in the Supplemental Management Plans (provided in the ESMP) can be adopted. Where necessary, the Contractor has the discretion to adopt appropriate mitigation action in close collaboration with the site environmental and social experts, the design engineers and the District Environmental Officer and any such person with proven knowledge.

4. The Contractor shall abide by all national provincial and local authority laws and regulations guiding the social and environmental related actions ensuring that necessary permits, licenses required under national or local laws and regulations prior to or during implementation is the responsibility of the contractor. The contractor shall support the Developer (Eco Power Holdings) at all times to implement the project in keeping with
the social and environmental management system which is committed by the client’s to its Financiers and the Government of Uganda.

5. Contractor shall appoint a qualified environment and social supervisor/manager who shall take the responsibility of implementation of Social and Environmental Compliance/mitigation related activities to ensure that the project is implemented in a socially and environmentally acceptable manner and will carry out related social integration, monitoring activities and record keeping.

6. The Contractor shall not release any environmental documentation or related studies, reports, or other materials prepared under and discussed or required by this contract to any other entity (other than the staff engaged by the without prior written consent of the Developer.

7. Depending on the precision of the required mitigation action, the contractor shall include the same in to the construction schedule with a “Method Statement” appropriately prepared for such activity. Such methods statements shall be shared in advance with the relevant staff namely the Environmental Consultant.

8. The contractor shall assess the costs relevant for all Social and Environmental mitigation measures which should be included in the tendering rates unless not separately specified under specific items.

9. Contractor shall at all times adhere to/follow standard/national Health and Safety guidelines expected to follow.

10. Contractor shall at all times follow National/Local labor laws and regulations. Copies of all relevant local acts, ordinances, regulations should be collected and should avail in the site office for ready reference.

11. Contractor shall ensure to organize and conduct basic Environmental and Health & Safety training to its own and sub-contractors (if any) before mobilization.

12. Contractor shall ensure that all workers/sub-contractor workers are fully briefed and oriented immediately after recruitment or after assigning to a site about the environment, social and cultural values prevalent in the area and advise them to respect these values at all times.

Section II - Specific Conditions

The basic project specific mitigation measures/activities that should be followed by the contractor during different stages of construction are given below:

Abbreviations:  
BC = before construction, DC = during construction

1. General conditions
    a) All residential facilities should be planned, built and maintained adhering to National and Local environmental, labor, health and safety standards, laws and regulations of local line agencies.

2. Blocked Access
    a) Location of construction camp and residential colony to be selected in a manner that minimizes disruption of local routes (BC)
    b) Consultation with the communities to be undertaken if necessary regarding the location of the construction camp and residential colony (BC)
c) Alternate routes to be provided if routes are blocked because of construction activities \((DC)\)
d) Temporary alternate routes to be provided if required. \((BC, DC)\)
e) Road Bridge to be constructed over the headrace (for human crossing as well as small and large animals. \((DC)\)

3. Loss of Cultivation

a) Discussion with the affected households to be initiated as soon as possible to reach agreement on the appropriate mode of compensation \((BC)\)
b) Whenever possible Jobs to be offered to the affected persons during the construction and operation phases of the project \((DC)\)

4. Air quality Deterioration

a) Dust emissions to be minimized by spraying water on soil periodically, where required and appropriate \((DC)\)
b) Vehicular traffic through the communities to be avoided as far as possible. Vehicle speeds to be kept to the specified speed which should be determined before the site operation begins and the relevant sign boards should be erected showing the speed limits. Under any circumstances these speed limits should not exceed the national speed limits \((DC)\)
c) All vehicles should be serviced and maintained in good condition and the relevant certificates for exhaust emissions should be obtained. \((DC)\)
d) Necessary dust barriers should be established to arrest propagation of dust especially towards plant or human communities. \((DC)\)
e) Construction machinery and vehicles to be kept in good working condition and properly tuned to minimize the exhaust emissions. \((DC)\)
f) Equipment and vehicles to be kept in good working condition and properly tuned to minimize exhaust emissions. \((BC, DC)\)

5. Noise

a) All noise mitigations should be carried out according to local standards. \((BC, DC)\)
b) Vehicular traffic through the communities to be avoided as far as possible. \((BC, DC)\)
c) Vehicle speeds to be kept to the specified limits and honking while passing through or near the communities should be avoided. \((BC, DC)\)
d) Night work should only be undertaken with the permission of “Client” or “Engineer” as the case may be.
e) Community consultations are essential. \((DC)\)
f) Nighttime work to be avoided near the communities. Local population to be kept informed if such work is unavoidable. \((DC)\)
g) Local population to be informed if such work is unavoidable. \((BC, DC)\)
h) Construction machinery and vehicles to have exhaust mufflers to minimize noise. \((DC)\)
i) Generators to have exhaust mufflers to minimize noise. \((BC, DC)\)
j) Noise to be measured at site. If found more than 85 dB, appropriate sound reduction mechanisms to be put in place. \((DC)\)

6. Public Safety

a) Protective fencing to be installed around key project components to avoid any accidents. \((DC)\)
b) Road signage to be fixed at appropriate locations to reduce safety hazard associated with project-related vehicular traffic. (DC)
c) Project drivers to be trained on defensive driving. (DC)
d) Vehicle speeds near/within the communities to be kept below specified speed limits, to avoid safety hazard and dust emissions. (DC)
e) Display adequate signage in language understandable by the work force on safety precautions (BC, DC)
f) Have regular training/awareness sessions to educate and made aware the work force on compliance with safety and environmental standards. (BC, DC)
g) Strict compliance with local traffic rules are to be adhered (BC, DC)
h) Comply with the public safety requirement in handling explosives and blasting.

7. Soil erosion and/or contamination (BC, DC)
   a) Excavated slopes will not be left untreated and/or unattended for long durations.
   b) Appropriate slope stabilization measures to be taken (e.g., stone pitching, planting ground cover with native species etc.) almost immediately after excavation. (DC)
   c) Temporary soil stockpiles to be placed where there is no risk of soil erosion. (DC)
   d) Soil erosion and/or contamination causing increased turbidity in river tapped or tributary should be reduced (DC)
   e) All constructions works should be planned to minimize soil erosion and river water pollution.
   f) Measures to be adopted to minimize increased turbidity in the river (these will include minimizing excavation and/or dredging work in flowing water and building coffer dams) (DC)
   g) The embankment filling operation to be carried out in a manner that minimizes chances of soil erosion. This may include construction of the embankment in stages, and completing the side slopes of each segment before moving to the next segment.
   h) Vehicle and construction machinery movement very close to the canal and/or channel banks to be minimized, as these may cause soil erosion.
   i) Management practices to be employed to minimize leakage and spillage of solid materials, oils, chemicals and fuels.
   j) To include building containment dikes around fuels, oils, and/or chemical storage, storing these in covered areas, constructing a concrete pad for machinery and/or vehicle maintenance areas, inspecting machinery and vehicles for any leakage, and removing contaminated soils for appropriate disposal.

8. Surface Water and Soil Contamination
   a) Vehicles and construction machinery movement very close to the canal and/or channel banks to be minimized, as these may cause water contamination. (DC)
b) Vehicles and equipment will not be repaired in the field. If unavoidable, impervious sheathing to be used to avoid soil and water contamination. (DC)

c) Prepare separate temporary storage sites to stock material and carry out on site material handling activities so that the contamination potential due to spillages are contained in case of accident (DC)

d) Septic tanks and soaking pits to be constructed having adequate capacity. (BC, DC)

e) Septic tanks should not be located close to water bodies. (BC, DC)

f) Segregation of solid waste into recyclable and non-recyclable material. (BC, DC)

g) Disposing of the recyclable material to the recycling contractors. (BC, DC)

h) Composting the biodegradable waste. (BC, DC)

i) Prevent leachate of solid waste or degrading material into water ways. (BC, DC)

j) Prevent eroded material ingress to waterways/water bodies. (BC, DC)

k) Leakage of oil from equipment to water bodies should be avoided. (BC, DC)

l) Do not leave any foreign items/material after the construction is over on site (DC)

m) All hazardous material essential for the construction to be handled with adequate care on safety and environmental pollution (BC, DC)

n) Land filling the remaining waste with adequate precautions not to allow wildlife and human being to be infected with diseases or harmed with pollutants. (BC, DC)

o) Management practices to be employed to minimize leakage and spillage of oils, chemicals and fuels. (DC)

9. Loss of vegetation

a) A tree and shrub plantation plan to be developed and implemented at suitable locations within the project site. (DC)

b) Environmental Manager shall always be informed by the construction staff of any new clearing, tree felling if not planned in advance for purposes such as construction, excavation etc. This should precede site inspection by Environmental Manager to recommend alternatives if any and/or mitigation measures.

c) If a large tree need to be taken off is unmarked (as a protected tree) ensure that the PM or the environmental manager is consulted before felling the tree.

d) The construction work should be planned and adjusted accordingly. Tree surveys are very useful for this purpose. (BC, DC)

10. Loss of aquatic biota

a) Ensure stipulated/scientifically calculated surface water flow in the river is maintained as environmental flow at all times and not totally blocked due to project activities (DC)

b) Prepare separate temporary storage sites to stock material and carry out on site material handling activities so that the contamination potential due to spillages are contained in case of accident (DC)
c) Soil eroding into the river should be minimized. (DC)
d) Confine the clearing of shrub jungles only to the required areas and protect all other areas for animal habitat.

11. Conflicts with neighboring communities
   a) Camp location to be decided in consultation with the local population. (BC, DC)
   b) Construction crew to avoid entering the villages and settlements. (BC, DC)

12. Gender/Community issues
   a) Construction crew to avoid entering villages and settlements for unethical purposes. (DC)

13. Reporting requirements (BC, DC)
   a) All reporting requirements specified under the ESMP should be adhered to.
   b) Regular reporting of environmental and social issues encountered by the contractor in witting to the Client/PM
   c) Inform and seek clarifications from the PM if any instruction given is unclear

Above will be only a summary of the compliance requirements provided in the ESMP as well as the supplemental management plans. Nevertheless the contractor is expected to follow the guidelines, supplemental management plans and the full scale ESMP Action Plan when implementing site specific mitigation actions to cover all expected or likely to arise social and environmental impacts during the project’s construction phase.

Signed on this day ……………………………..
Conceptual Drawing of the proposed Fish Pass Ladder: