

Appendix-7. Certificate of Approval of EIA Report

Original



0010475

THE REPUBLIC OF UGANDA

THE NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)  
The National Environment Act Cap. 153  
The Environmental Impact Assessment Regulations, S.I. No. 13 of 1998

**Certificate of Approval of Environmental Impact Assessment**

Certificate No. NEMA/EIA/ 10475

*This is to certify that the Project Brief/Environmental Impact Statement\*\**

received from

M/s. MINISTRY OF AGRICULTURE, ANIMAL INDUSTRY & FISHERIES, & MINISTRY OF WATER AND ENVIRONMENT  
of P.O. BOX 102 ENTEBBE, TEL: +256 414 320004

submitted in accordance with the National Environment Statute to the National Environment Management Authority (NEMA) regarding:

ESIA FOR ATARI RIVER BASIN IRRIGATION SCHEME

(Title of Project)

briefly described as ATARI RIVER BASIN IRRIGATION SCHEME

(Nature, Purpose)

located at BUNAMBUTYE SUBCOUNTY, BULAMBULI DISTRICT AND NGENGE SUBCOUNTY, KWEEN DISTRICT

(District/Sub-county/City/Town/Ward)

has been reviewed and was found to:

~~\*\* have no significant environmental impacts and was approved~~

\*\* have significant environmental impacts and the following appropriate mitigation measures were identified and made a condition precedent for approval and implementation:

= PLEASE TURN OVER =

(Attach relevant details when required)

Dated at KAMPALA

2ND AUGUST, 2017

~~XXX~~

Executive Director (NEMA)

ORIGINAL: Developer; DUPLICATE: Lead

Authority: QUADRUPPLICATE: Any other relevant agency

\*\* Delete whichever is not applicable

**CONDITIONS OF APPROVAL**  
(Additional Information Sheet)

CONDITIONS OF APPROVAL FOR THE ESIA FOR ATARI RIVER BASIN

IRRIGATION SCHEME

In addition to implementing the mitigation measures outlined in the Environmental and Social Impact Assessment, this Certificate of Approval is granted on condition that the Developers,

MINISTRY OF AGRICULTURE, ANIMAL INDUSTRY AND FISHERIES; AND,

MINISTRY OF WATER AND ENVIRONMENT, shall comply with the

approval conditions stated below:

ADMINISTRATIVE CONDITIONS OF CERTIFICATE

1. This Certificate is issued in accordance with the requirements of the National Environment (Environment Impact Assessment) Regulations, SI. No. 153-1 and of the Physical Planning Act, 2010.

2. Issuance of this Certificate of Approval is based on the content of information contained in the Environmental and Social Impact Assessment as submitted by the Developer.

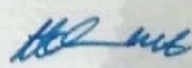
3. The Developer shall be held responsible for any omissions, falsified information or any other anomalies that are contrary to the provisions stipulated in the relevant laws governing the proposed project.

4. This Certificate of Approval is **VALID** for a period of **20 YEARS** - the period that covers both the construction and operational phases of the project.

5. The project must commence within the first **24 months** (from

Dated at KAMPALA on 2ND AUGUST, 2017 8x

Signed

  
\_\_\_\_\_  
Executive Director (NEMA)



## NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)

CONDITIONS OF APPROVAL FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PERTAINING TO ATARI RIVER BASIN IRRIGATION SCHEME, IN BUNAMBUTYE SUB-COUNTY, BULAMBULI DISTRICT AND NGENGE SUB-COUNTY, KWEEN DISTRICT (GPS COORDINATES: Latitude 1° 43' North and 1° 30' South and Longitude 34° 27' East and 34° 27' East)

### ADMINISTRATIVE CONDITIONS OF CERTIFICATE (Cont..d)

...the date of approval) of the validity period, failure of which the Certificate may be varied, cancelled or otherwise dealt with by this Authority.

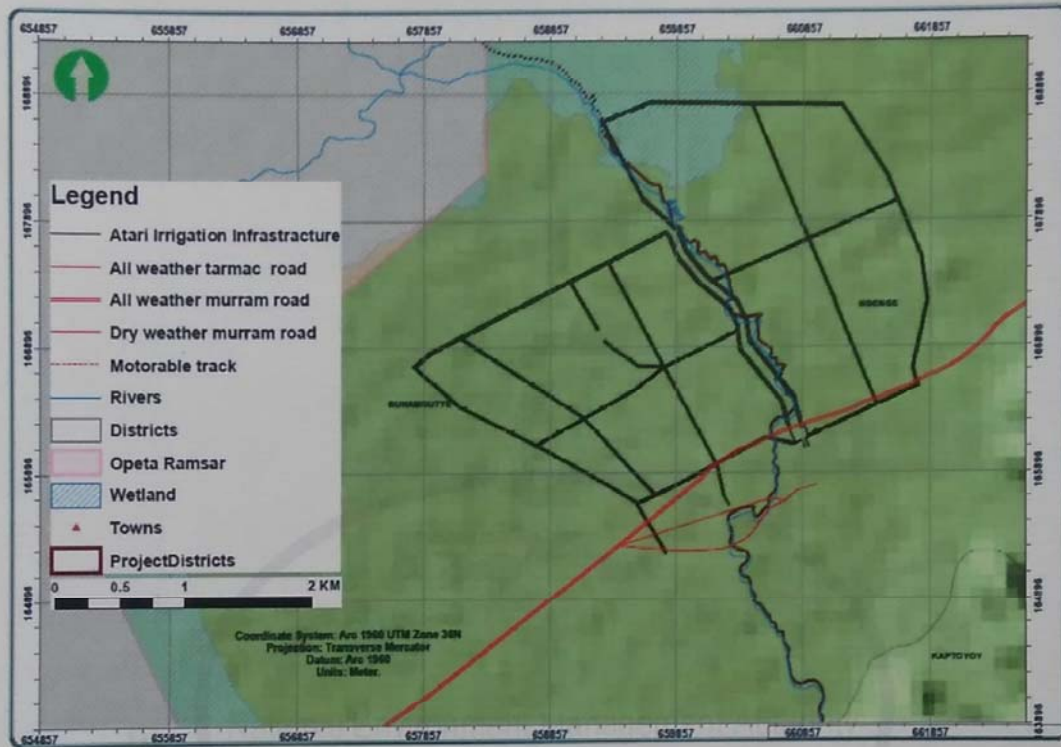
6. The Executive Director should be **NOTIFIED** of any transfer of ownership, variation/alteration of the project design or components, or surrender of this Certificate of Approval.

### 1.0 SPECIFIC CONDITIONS OF APPROVAL

- (i) Restrict project activities to the area shown in Figure 1, and ensure that project affected persons are compensated and/or resettled based upon mechanisms defined in a Resettlement Action Plan (RAP), which should be developed and approved by the relevant Lead Agency.
- (ii) Implement the project activities in conformity with the planning provisions for the area as provided for by the local government authorities of Bulambuli and Kween districts, and in accordance with the requirements under the Physical Planning Act, 2010, and other relevant laws.
- (iii) Ensure members of the community are represented at an appropriate level of project implementation, and that representation is balanced across gender, age and tribe.
- (iv) Put in place mechanisms – chance finds and avoidance procedures – to guide the management of tombs and human remains whenever they are found.
- (v) Ensure that the project benefits the community members, and where they are eligible, they should be employed to provide casual labour.
- (vi) Where water sources, such as springs and boreholes, are affected by the project, ensure you replace them as necessary. In addition, designate and install drinking water points and cattle paths for cattle keepers and their cattle, since the project area includes



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**Figure 1. Location of the project at the Bulambuli-Kween border**

original water points and cattle paths, and plan for the establishment of alternative grazing or fodder areas to sustain the livestock industry in the area.

- (vii) Seek guidance and approval from the Directorate of Water Resources Management to tap and divert water from River Atari, and ensure that the environmental flows of Atari River, both upstream and downstream, are observed and complied with as prescribed by the Directorate of Water Resources Management (DWRM), in accordance with the Water (Water Resources Regulations) S.I No. 152-1, in order to sustain the hydrological functions of the River.
- (viii) Ensure that works on the river, such as, flow intake, dykes, working platforms, sedimentation basin, screens at intake and fishways, which are intended to divert water to irrigation plots, avoid flooding, mitigate bank erosion and sediment input, guard against sediment transfer along the course of the river, avoid diversion of macro-aquatic



## NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)

fauna into irrigation canals, and avoid disrupting fish, respectively, are approved by NEMA.

- (ix) Obtain approvals of the structural and site layout plans, and alignments of the irrigation components/infrastructure from the relevant Lead Agencies, including the DWRM, Bulambuli and Kween Districts Local Government Authorities, and Ministry of Agriculture, Animal Industry and Fisheries (MAAIF). In doing so, ensure dykes **are placed 30 meters on either side of the course**, and that the design is the most appropriate to mitigate floods and limit encroachment of the floodplain and ecologically sensitive areas, but that it also takes into account the requirement for a proportionate amount of land for cultivation. Further, ensure you put in place mechanisms to protect the buffer along the river course, since this is a refugia for a host of fauna.
- (x) Seek approval from NEMA to use wetlands in the area, and ensure the project excludes ecologically sensitive areas, which were mapped during the Environmental and Social Impact Assessment study. Share the site map showing these areas with NEMA and Uganda Wildlife Authority, and monitor them for coverage and habitat quality.
- (xi) Conduct periodic water and soil quality tests of soil and water in the irrigation scheme area and of waters of Atari River, in order to minimize deterioration of soil and water quality in the project area and its environs, in accordance with the Water (Water Resources Regulations) S.I. No. 152-1 and other relevant laws and standards, and as shall be prescribed by the DWRM, among others.
- (xii) Obtain the necessary guidance and approval from MAAIF regarding the range of **agro-chemicals (artificial fertilisers, pesticides, among others) that are permitted for use** in crop farming activities, especially those applicable to irrigation schemes, but also institute a programme that will ensure the conduct of good farming practices, non-reliant on agro-chemicals and also less dependent on fertilizers.
- (xiii) In accordance with the National Environment (Waste Management) Regulations, 153-2, collect, sort and contain all solid waste (*e.g. construction debris, muck, excavated soil, metal scrap*) and garbage in a proper manner, and dispose of the waste in locations gazetted as waste dump-sites by the Local Authorities.
- (xiv) Contract only hazardous waste handlers licensed by the National Environment Management Authority (NEMA), to collect and dispose of hazardous waste including waste-oil, used plastics/polythene materials, contaminated materials, in line with the National Environment (Waste Management) Regulations, S.I 153-2.



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- (xv) Carry out annual environmental audits in accordance with the best available practices (taking into account advances in science and technology) as stipulated in Section 6 of the National Environment (Audits) Regulations, 2006; and submit the first environmental audit report by **August, 2018**.
- (xvi) Carryout separate Environmental and Social Impact Assessments for any planned components (such as, **processing facilities**) of the project that are not subject of this approval, in line with the Environmental Impact Assessment (EIA) Regulations, S.I.153-1.
- (xvii) In accordance with Section 22(4) of the National Environment Act (NEA), Cap. 153, take all reasonable measures and mitigate any other undesirable environmental impacts that may arise during the implementation of the project, but were not contemplated during the initial environment impact assessment and by the time of issuing this Certificate of Approval, and report on those measures to the relevant Lead Agencies and this Authority.

### 2.0 GENERAL CONDITIONS OF APPROVAL

- (xviii) Liaise with the Bulambuli and Kween Districts Local Government authorities to sensitize the concerned local communities about the Project and its associated impacts; and, put in place a grievance committee to address any issues that may arise during the project implementation phases.
- (xix) Ensure that matters pertaining to shared resources and services utilized by the local communities (*including access to public utilities and services, access road, water sources*) are handled in a proper manner, in liaison with the Local Authorities in order to minimize social conflict.
- (xx) Put in place adequate Occupational Health and Safety (OHS) measures and procedures to cater for workers during the implementation of the project, including training, first aid and barricades with warning tapes; and ensure that workers are adequately protected from exposure to excessive dust, noise, agrochemicals, or any other occupational hazards, as stipulated in the Occupational Safety and Health Act, 2007.
- (xxi) Institute a STD and HIV/AIDS awareness and prevention programme to sensitize project-related staff/workers, the community residing and/or working around the project, among others, on issues relevant public health issues related to the afore-mentioned subject.



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- (xxii) Control the levels of noise during construction and project implementation phases of the Project, and maintain the noise levels within limits stipulated in the National Environment (Noise Standards and Control) Regulations, S.I No. 30/2003.
- (xxiii) Put in place an appropriate and comprehensive **disaster-preparedness and emergency response plans**, to cater for both the construction and operational phases of the Project.
- (xxiv) Display copies of this Certificate of Approval in strategic locations at the project offices, and should be available at all times.
- (xxv) Fulfill any other conditions and requirements as may be prescribed from time to time by the Bulambuli and Kween Districts Local Government Authorities, NEMA, MAAIF, DWRM, and other relevant Lead Agencies.
- (xxvi) Implement the environmental and social management and monitoring plan as outlined in the Environmental and Social Impact Assessment report; and ensure record keeping as required under Section 77 of the National Environment Act, Cap. 153, and their transmission to this Authority as required under Section 78 of the Act.

### 3.0 CONSTRUCTION PHASE CONDITIONS OF APPROVAL

- (xxvii) Undertake construction activities during **day-time hours (7.00am to 6.00pm)**.
- (xxviii) Ensure community members continue to use the land during construction, and that where this is not possible, consider them as project affected persons and compensate them as guided by the RAP.
- (xxix) Construct canals using materials that protect against channel erosion, and during operation, stabilize canals to avoid seepage, hence waterlogging of fields, and locate canals and dykes where they do not obstruct natural drainage.
- (xxx) Conduct most of the construction activities during the dry season in order to minimize road damage, and seek the necessary approvals from the Uganda National Roads Authority (UNRA) to connect access roads to the main roads in the area.
- (xxxi) Use specially designed trucks to transport project-related materials and different kinds of waste, in order to prevent littering, spillage and leakage of such materials/substances; and the trucks should bear phrases that convey a message

*[Handwritten signature]*



## NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)

to the general public that the items being transported, can pose a risk to the safety of people, among others.

- (xxxii) Ensure hydrocarbons are not stored in and around fragile spots of the project area, and that servicing and maintenance of project equipment, including vehicles, is done at places designated by Bulambuli and Kween District Local Governments.
- (xxxiii) Liaise with the Uganda Traffic Police Authorities to install appropriate road signage (*that can also be illuminated during night hours*) along sections of the access road leading to the project sites, to draw attention of the drivers and other road users to danger points and ongoing activities, and where necessary, use flagmen to guide flow in and around high activity spots in the project area.
- (xxxiv) In accordance with the Road Act, Cap. 358, impose speed limits on truck drivers transporting project-related materials and equipment/machinery to and from the project sites, in order to minimize occurrence of accidents.

### 4.0 OPERATIONAL PHASE CONDITIONS OF APPROVAL

- (xxiv) Ensure farmers are trained on the use and operation of the irrigation system in order to avoid over-irrigation of field.
- (xxv) Put in place procedures for monitoring, control, inspections, and maintenance of the project components, and to enable detection of and timely remedial action in case of malfunctioning or departure from the anticipated functionality of the project components.
- (xxvi) Document and archive all critical data regarding the project area and activities, aspects of water and soil quality, and the hydrology of the micro-catchment of which the Project is a part, and ensure this data is made readily available to relevant Lead Agencies from time to time.
- (xxvii) Adopt practices that reduce anoxia and hence methane generation, such as periodically draining paddies and use of compounds that increase activity of microbes other than methanogens, among other, and encourage organic farming so as to reduce the use of agrochemicals that contribute greenhouse gases (GHGs).
- (xxviii) Plant indigenous trees and grasses across disturbed areas that will not be used for agriculture, as these will offer refuge to tree- and grass-birds, which will be affected when their niches are replaced by farmland.





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- (xxix) Encourage establishment of woodlots in upland locations around the project area, to supply energy to the community, since the project will take up part of the land that has historically provided wood fuel in the form of reeds and shrubs.
- (xxx) Put in place measures and programmes to manage water-borne diseases, characteristic of highly saturated areas, and ensure to undertake periodic water-borne diseases awareness campaigns in the project area.
- (xxxi) Seek permission from NEMA and other relevant Lead Agencies whenever repellents are to be used to repulse bird pests of rice fields.
- (xxxii) Ensure to maintain proper and up-to-date records of the agro-chemicals used, mindful that such records should be readily availed to the relevant Lead Agencies when required, to ensure proper monitoring of project operations.
- (xxxiii) These conditions of approval are in addition to any other applicable Condition in this Certificate or relevant law.

### 5.0 NOTIFICATION PHASE CONDITIONS OF APPROVAL

- (xxxiv) Seek written approval from this Authority for any operational changes under this Certificate.
- (xxxv) Ensure that this Authority is notified of any malfunction of any component of the Project within 12 hours, and mitigation measures put in place.
- (xxxvi) Submit to this Authority a written notice of intent to decommission project activities **3 (three) months** in advance.

### 6.0 DECOMMISSIONING AND RESTORATION PHASES CONDITIONS OF APPROVAL

- (xxxvii) Ensure that a decommissioning plan is submitted to this Authority for approval at least **3 (three) months** prior to decommissioning the project components.
- (xxxviii) Decommission the project components when their life-span come to an end as per the decommissioning plan, and/or as will be prescribed by the relevant Lead Agencies.



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- (xxxix) Restore all parts of the project site laid bare during the conduct of construction activities and decommissioning phase by proper landscaping and re-vegetation using suitable indigenous species of trees/grass.
- (xl) Ensure to avoid introduction to and spread of alien/invasive plant species across the project area.
- (xli) Ensure that all pollutants and polluted material is contained and adequate mitigation measures provided for safe disposal of the same during this phase of the project.

### 7.0 SUSPENSION / WITHDRAWAL / CANCELLATION CONDITIONS

- (xlii) This Certificate of Approval may be withdrawn or cancelled due to the following:
  - (a) if there is no compliance with any of the **Specific Conditions** set out in this Certificate in Section 1.0 above, and any other substantive general provisions of this Certificate;
  - (b) where there is a substantial modification of the project implementation or operations which may lead to the emergence of un-assessed adverse environmental impacts that were not evaluated at the time of issuing this Certificate of Approval; and,
  - (c) where there arise substantive undesirable effects that were not contemplated by the time of issuance of this Certificate of Approval.

DATED AT KAMPALA ON 2<sup>ND</sup> AUGUST, 2017

Signed:

EXECUTIVE DIRECTOR (NEMA)

c.c. The Permanent Secretary,  
Ministry of Agriculture, Animal Industry and Fisheries,  
**ENTEBBE.**

Attn: The Director, Directorate of Crop Resource.

c.c. The Director,  
Directorate of Water Resources Management,  
**ENTEBBE.**



## NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)

- c.c. The Chairperson LC-V,  
Bulambuli District Local Government,  
**BULAMBULI.**
- c.c. The Chairperson LC- V,  
Kween District Local Government,  
**KWEEN.**
- c.c. The Resident District Commissioner,  
Bulambuli District,  
**BULAMBULI.**
- c.c. The Resident District Commissioner,  
Kween District,  
**KWEEN.**
- c.c. The Chief Administrative Officer,  
Bulambuli District Local Government,  
**BULAMBULI.**
- c.c. The Chief Administrative Officer,  
Kween District Local Government,  
**KWEEN.**
- c.c. The District Environment Officer,  
Bulambuli District Local Government,  
**BULAMBULI.**
- c.c. The District Environment Officer,  
Kween District Local Government,  
**KWEEN.**
- c.c. The Sub-county Chief,  
Bunambutye Sub-county,  
**BULAMBULI.**
- c.c. The Sub-county Chief,  
Ngenge Sub-county,  
**NGENGE.**

## Appendix-8. Official Letter on Protected Zone from NEMA



### NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)

**NEMA/4.5**

Wednesday 8<sup>th</sup> August, 2018

The Permanent Secretary  
Ministry of Agriculture, Animal Industry and Fisheries,  
P. O. Box 102,  
**ENTEBBE**

Telephone: +267-414-531411 / 531135 / 320004

NEMA House  
Plot 17,19 & 21, Jinja Road.  
P.O.Box 22255, Kampala, UGANDA.

Tel: 256-414- 251064, 251065, 251068  
342758, 342759, 342717

Fax: 256-414-257521 / 232680


E-mail: [info@nemaug.org](mailto:info@nemaug.org)

Website: [www.nemaug.org](http://www.nemaug.org)

#### **ATARI RIVER PROTECTION ZONE**

Reference is made to your letter, dated 11<sup>th</sup> June, 2018, in which you sought clarity regarding your proposal to use the hypothetical centerline to demarcate the protection zone of River Atari in the project area.

During the review of the project environmental and social impact assessment (ESIA) report, we noted that River Atari is very sinuous, challenging the application of Regulation 29(2) of the National Environment (Wetlands, Riverbanks and Lakeshores Management) Regulations, 2000, especially where use of dykes requires that they do not follow a river's plan. It is against this background that we suggested use of the most appropriate design, such as what is contained in your proposal, in order to mitigate floods and reserve appreciable amount of land for all-year-round cultivation. **However, this will apply to the 3km section of the river in the project area, stretching from the headworks to the end of the project area, where the protection zone, either side of the centerline, should range from 30m to 40m.** It is important that the area outside this zone is put to agricultural use, or where necessary portions are reserved for conservation.


  
Dr. Jerome Sebadduka Lugumira

**For: EXECUTIVE DIRECTOR**


- c.c: The Commissioner  
Wetlands Management Department,  
Ministry of Water and Environment,  
**KAMPALA**
- c.c: The District Environment Officer  
Bulambuli District Local Government,  
**BULAMBULI**
- c.c: The District Environment Officer  
Kween District Local Government,  
**KWEEN**

## Appendix-9. Interview Memo

### 1 Methods of Bird Monitoring

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                       |                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 1-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Ramsar Center for Eastern Africa<br>(Ministry of Water and Environment <sup>1</sup> )                                                                                                                                                                                                                                 |  |
| Interviewees:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>- Ms. Lucy Iyango (Assistant Commissioner, Dept. of Wetland Management, MWE)</li> <li>- Mr. Vincent Barugahare (Principle Wetland Officer, Dept. of Wetland Management, MWE)</li> </ul>                                                                                        |                                                                                     |
| Participants:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>- Mr. Allan Ollando (Dept. of Agriculture Infrastructure, Mechanization &amp; Water for Agricultural Production (DAIMWAP), MAAIF)</li> <li>- Mr. Hideki ISHIKAWA (Environmental Considerations, JICA OD Team)</li> <li>- Ms. Adomo Esther (Assistant, JICA OD Team)</li> </ul> |                                                                                     |
| Date:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 15 <sup>th</sup> August 2018                                                                                                                                                                                                                                                                                          |                                                                                     |
| Venue:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | MWE Office (Kampala)                                                                                                                                                                                                                                                                                                  |                                                                                     |
| Contents:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                       |                                                                                     |
| <ul style="list-style-type: none"> <li>- Since this organization has not conducted bird monitoring in Atari area nor Lake Opeta, the method of bird monitoring should be confirmed with <i>Nature Uganda</i>.</li> <li>- Generally, it is anticipated that noise and night illumination during construction can affect the predation of birds. In addition, oil leaks from construction equipment can damage diversity significantly.</li> <li>- As of now, there is no mitigation measures which can be said as “good practice” for preventing these issues. It is awaited that Atari Project is appropriately implemented in considerations with these negative impacts. Moreover, it is needed to mitigate the disturbance of wildlife’s transferring by constructions of roads or canals.</li> <li>- From aspects of environment conservation, organic farming is the only effective mitigation measures.</li> </ul> |                                                                                                                                                                                                                                                                                                                       |                                                                                     |

<sup>1</sup> MWE is one of member of Ramsar Center for Eastern Africa.

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1-2                        | Nature Uganda (Birdlife International) <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Interviewee:               | – Mr. Achilles Byaruhanga (Executive Director)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Participants:              | – Mr. Allan Ollando (DAIMWAP, MAAIF)<br>– Mr. Hideki ISHIKAWA (Environmental Considerations, JICA OD Team)<br>– Ms. Adomo Esther (Assistant, JICA OD Team)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Date:                      | 15 <sup>th</sup> August 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Venue:                     | Nature Uganda Office (Kampala)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Contents:                  | <p>– Since the area in and around Bisina – Opeta Lake is one of Important Bird Area (IBA), Nature Uganda has conducted bird monitoring for twice in a year, namely January and July.</p> <p>– Especially, Fox’s Weaver (<i>Ploceus spekeoides</i>) has monitored as endemic species in Uganda. While “Global Threaten Species” and “Uganda List of Threatened Species” report its inhabitation, it has not observed by monitoring after 2008 in actual.</p> <p>– The monitoring in and around Lake Opeta by Atari Project is not necessary, since Nature Uganda has conducted it<sup>3</sup>.</p> <p>– While there are two methods for bird monitoring such as point census and line census, both of them is applicable for Atari Project.</p> <p>– When Atari Project will conduct point census, it is suggested that the points are put both of within and without the Project Site for comparing. The census points should be put in the Project Site (4 points as same as the Feasibility Study) and outside of the Project Site (2 points in which paddy fields where is apart 1 km from the Project Site). The same monitoring frequency as Nature Uganda, i.e., twice in a year (January and July) is applicable.</p> <p>– The concrete examples on mitigation measures for birds might be available from MAAIF.</p> <p>– (Note: Since MAAIF and NEMA has no experience on mitigation measures of birds, JICA OD Team could not reach the information.)</p> |
| List of Provided Material: | <p>– Results of Monitoring around Lake Opeta (as of Sep. 2018)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

<sup>2</sup> Nature Uganda is an environmental NGO in Uganda and a partner of Birdlife International. Additionally, it is a member of International Union for Conservation of Nature (IUCN).

<sup>3</sup> The results of monitoring which Nature Uganda has conducted are available by direct contact with them.

|     |                                                                                                                               |
|-----|-------------------------------------------------------------------------------------------------------------------------------|
| 1-3 | Makerere University  |
|-----|-------------------------------------------------------------------------------------------------------------------------------|

Interviewees: – Prof. Derek Pomeroy (Professor of Zoology)  
 – Dr. Herbert Tushabe (Manager, National Biodiversity Data Bank Department of Environmental Management (DEM))

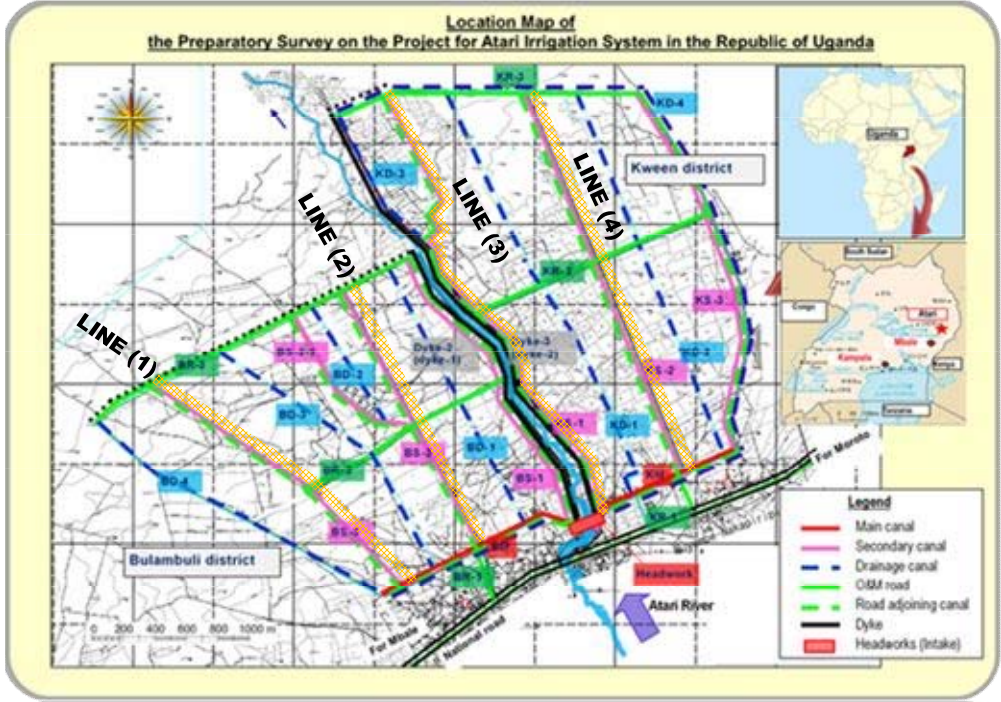
Participants: – Mr. Hideki ISHIKAWA (Environmental Considerations, JICA OD Team)  
 – Ms. Adomo Esther (Assistant, JICA OD Team)

Date: 22<sup>nd</sup> August 2018

Venue: Makerere University

Contents:

- The four species to be carefully monitored by Atari Project may exist, however, it is uncertain as of now. Regarding Fox’s Weaver (*Ploceus spekeiodes*), it is supposed that its population is decreasing. Pallid Harrier (*Circus macrourus*) and Shoebill (*Balaeniceps rex*) inhabit in and around Lake Opeta. In addition, Gray-crowned Crane (*Balearica regulorum*) was observed in Atari Area in the past.
- Nature Uganda has monitored by the method of line census survey. When line census survey will be conducted, the routes as shown in Fig. 1 can be applicable.
- The monitoring in and around Lake Opeta by Atari Project is not necessary, since Nature Uganda has conducted it.



**Fig. 1 Proposed Route for Line Census Survey**


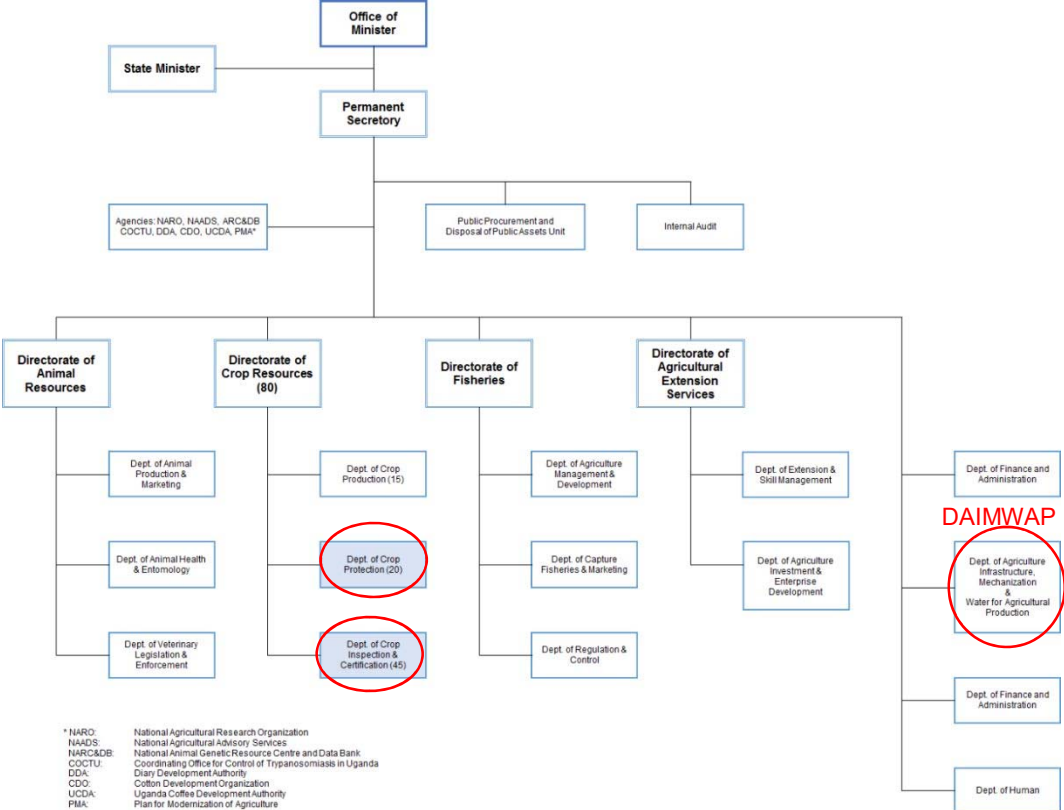
Attachment: Results of Monitoring around Lake Opeta provided by Nature Uganda


| Species Name               | Sum of Number of individuals |            |            |            |           |            |           |
|----------------------------|------------------------------|------------|------------|------------|-----------|------------|-----------|
|                            | 2014/2/13                    | 2014/8/14  | 2015/1/23  | 2015/7/31  | 2016/7/24 | 2018/2/19  | 2018/7/10 |
| African Fish Eagle         | 1                            |            |            |            |           |            |           |
| African Jacana             | 19                           | 2          | 42         | 3          | 9         | 8          | 6         |
| African Marsh Harrier      | 1                            |            |            | 1          |           |            |           |
| African Open-billed Stork  | 9                            | 3          | 16         | 4          | 2         |            |           |
| African Pygmy Goose        |                              |            | 23         |            |           |            |           |
| Black Crake                | 14                           | 1          | 12         | 4          |           | 4          | 7         |
| Black-headed Heron         | 2                            |            |            |            | 1         |            |           |
| Cattle Egret               | 4                            |            | 1          | 8          | 3         |            | 2         |
| Common Moorhen             | 2                            |            |            |            |           |            |           |
| Common Sandpiper           | 1                            |            |            |            |           |            |           |
| Common Squacco Heron       | 53                           | 10         | 40         | 2          | 2         | 16         | 1         |
| Eurasian Marsh Harrier     | 4                            |            | 1          |            |           |            |           |
| Fulvous Whistling Duck     |                              |            | 8          | 1          |           |            |           |
| Goliath Heron              | 3                            |            | 1          | 1          |           |            |           |
| Great Egret                |                              | 10         |            |            |           |            |           |
| Green-backed Heron         | 4                            | 1          | 1          | 4          | 3         | 1          |           |
| Grey Heron                 | 13                           |            |            |            |           |            |           |
| Gull-billed Tern           |                              |            |            |            |           | 3          |           |
| Hadada Ibis                | 1                            |            |            |            |           |            |           |
| Lesser Jacana              | 12                           | 4          | 10         | 2          | 4         | 11         |           |
| Little Bittern             | 4                            | 1          |            | 4          |           |            | 7         |
| Little Egret               |                              |            |            |            |           |            | 3         |
| Long-tailed Cormorant      | 216                          | 66         | 172        | 38         | 22        | 45         | 1         |
| Long-toed Plover           | 5                            | 4          | 9          |            |           | 2          | 3         |
| Malachite Kingfisher       | 15                           | 2          | 17         | 9          | 1         | 17         |           |
| Pied Kingfisher            | 24                           | 1          | 18         | 7          | 2         | 16         |           |
| Purple Gallinule           |                              |            |            |            |           |            | 2         |
| Purple Heron               | 15                           | 46         | 10         | 11         | 3         | 8          | 4         |
| Purple Swampphen           | 9                            |            |            |            |           |            |           |
| Whiskered Tern             |                              |            |            |            |           | 14         |           |
| White-faced Whistling Duck | 43                           |            | 79         | 2          |           |            |           |
| White-winged Tern          | 54                           |            | 111        |            |           | 10         |           |
| Wood Sandpiper             | 1                            |            | 1          |            |           | 1          |           |
| Yellow-billed Egret        |                              |            |            |            |           | 1          |           |
| <b>Grand Total</b>         | <b>529</b>                   | <b>151</b> | <b>572</b> | <b>101</b> | <b>52</b> | <b>157</b> | <b>36</b> |

Source: Nature Uganda (As of September, 2018)





## 2 Agricultural Chemicals Management Plan

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                         |                                                                                    |
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| 2-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Dept. of Agriculture Infrastructure, Mechanization & Water for Agricultural Production (DAIMWAP), MAAIF |  |
| Interviewee: – Mr. Allan Ollando (Engineer)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                         |                                                                                    |
| Participants: – Mr. Tatsuya IEIZUMI (Team Leader/ Irrigation Facility Planning, JICA OD Team)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                         |                                                                                    |
| – Mr. Hideki ISHIKAWA (Environmental Considerations, JICA OD Team)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                         |                                                                                    |
| – Ms. Ayumi SHIGA (Social Considerations, JICA OD Team)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                         |                                                                                    |
| – Ms. Adomo Esther (Assistant, JICA OD Team)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                         |                                                                                    |
| Date:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 23 <sup>rd</sup> August 2018                                                                            |                                                                                    |
| Venue:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | MAAIF Office (Entebbe)                                                                                  |                                                                                    |
| <p>Contents:</p> <ul style="list-style-type: none"> <li>– In the MAAIF structure, Dept. of Crop Protection and Dept. Crop Inspection &amp; Certification under Directorate of Crop Resources are responsible for issues on agricultural chemicals (see, Fig. 2).</li> <li>– In general, it is raised that lacking of farmers’ knowledge on proper use and safety use of agricultural chemicals and farmers’ accessibility to the information are challenges. Therefore, “sensitization” is necessary and important for farmers.</li> <li>– In accordance with “the Agricultural Chemicals (Control) Act, 2006,” the certification issued after the inspection conducted mainly by Dept. of Crop Inspection &amp; Certification is necessary when dealers sell agricultural chemicals in Uganda.</li> </ul> <div style="text-align: center;">  </div> <p>* NARO: National Agricultural Research Organization<br/>       NAADS: National Agricultural Advisory Services<br/>       NARC&amp;DB: National Animal Genetic Resource Centre and Data Bank<br/>       COCTU: Coordinating Office for Control of Trypanosomiasis in Uganda<br/>       DDA: Dairy Development Authority<br/>       CDO: Cotton Development Organization<br/>       UCDA: Uganda Coffee Development Authority<br/>       PMA: Plan for Modernization of Agriculture</p> |                                                                                                         |                                                                                    |
| <b>Fig. 2 Organization Structure of MAAIF</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                         |                                                                                    |

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| 2-2                         | Promotion of Rice Development (PRiDe) Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Interviewee:                | - Mr. Kisho MIYAMOTO (JICA Expert)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Participants:               | <ul style="list-style-type: none"> <li>- Mr. Tatsuya IEIZUMI (Team Leader/ Irrigation Facility Planning, JICA OD Team)</li> <li>- Mr. Hideki ISHIKAWA (Environmental Considerations, JICA OD Team)</li> <li>- Ms. Ayumi SHIGA (Social Considerations, JICA OD Team)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Date:                       | 24 <sup>th</sup> August 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Venue:                      | Institute of NaCRRRI (Kampala)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Contents:                   | <ul style="list-style-type: none"> <li>- In general, farmers' knowledge on proper and safety use of agricultural chemicals is not enough. Knowledge of Agricultural Officers (AO) and Assistant Agriculture Officers at District and Sub-county levels is not enough as well.</li> <li>- In accordance with "the Agricultural Chemicals (Control) Act, 2006," only agricultural chemicals listed and controlled by Dept. of Crop Inspection &amp; Certification can be supplied. In actual, however, agricultural chemicals which are not registered in above list are also around markets. It seems the factor is that monitoring and management structure for agricultural chemicals around markets is insufficiency.</li> <li>- Potential negative impacts on agricultural chemical use is not high with the conditions as far as the suitable application and suitable timing of agricultural chemicals use. Especially, for the pesticides use, water pollution is the concern, but high negative impact is not anticipated as far as not being heavy metal materials.</li> <li>- PRiDe has a plan to provide trainings on agricultural chemicals use for farmers since the trend of agricultural chemicals use is gradually increased in Uganda and farmers' request is exist.</li> <li>- PRiDe does not prohibit the use of agricultural chemicals in the "Handbook of Rice Cultivation". PRiDe recommends to use of the available agricultural chemicals in the market such as Urea and DAP for increase of rice productivity.</li> <li>- PRiDe usually requests AO and AAO to do the monitoring of farmers' farming condition after the trainings.</li> </ul> |
| List of Provided Materials: | <ul style="list-style-type: none"> <li>- PRiDe News Letter 1 ~ 5</li> <li>- PRiDe Brochure</li> <li>- PRiDe Magazine</li> <li>- Introduction of Diffusion Methods by PRiDe (in Japanese)</li> <li>- Training Material (Program Trainings of Trainer (TOT), TOT North 3 days), etc.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |


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| 2-3           | Dept. of Crop Inspection & Certification,<br>Directorate of Crop Resources, MAAIF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |
| Interviewees: | <ul style="list-style-type: none"> <li>- Mr. Mwanja John (Acting Assistant Commissioner)</li> <li>- Mr. Okello Deo (Agricultural Inspector)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                    |
| Participants: | <ul style="list-style-type: none"> <li>- Mr. Tatsuya IEIZUMI (Team Leader/ Irrigation Facility Planning, JICA OD Team)</li> <li>- Mr. Hideki ISHIKAWA (Environmental Considerations, JICA OD Team)</li> <li>- Ms. Ayumi SHIGA (Social Considerations, JICA OD Team)</li> <li>- Ms. Adomo Esther (Assistant, JICA OD Team)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                    |
| Date:         | 28 <sup>th</sup> August 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                    |
| Venue:        | MAAIF Office (Entebbe)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                    |
| Contents:     | <ul style="list-style-type: none"> <li>- There are three divisions: 1) National Seed Inspection &amp; Certification, 2) Phytosanitary &amp; Quarantine, and 3) Agrochemicals under Dept. of Crop Inspection &amp; Certification.</li> <li>- In accordance with “the Agricultural Chemicals (Control) Act, 2006,” Division of Agricultural Chemicals is responsible for Secretary of “Agricultural Chemicals Board (ACB)”.</li> <li>- Dept. of Crop Inspection &amp; Certification is involved in “Agricultural Cluster Development Project (ACDP)” funded by “World Bank (WB)”.</li> <li>- Since the imitation products of agricultural chemicals are exist in the markets, farmers sometimes choose uncertified products.</li> <li>- There is no effective system for checking imitation products as of now. However, there are cases that Agricultural Inspector finds imitation products in the markets and reports to police which is responsible for issues on agricultural chemicals. The police brings it to Directorate of Governmental Analytical Laboratory (DGAL) Under Ministry of Internal Affairs for inspection.</li> <li>- There are the laboratories under the Dept. of Crop Inspection &amp; Certification and under the NARO. However, the analytical equipment is not equipped sufficiently. In this reason, analytical samples are usually tested by the outside laboratories by the Directorate of Government Analytical Laboratory (hereinafter referred to as “DGAL”) in Ministry of Internal Affairs or laboratory of Uganda National Bureau of Standards.</li> <li>- Uganda relies agricultural chemicals products only on the imports, and there is no manufacture as of now in Uganda. On the other hand, there are three companies for re-packaging imported products, and all of them are officially registered by “the Agricultural Chemicals (Control) Act, 2006.”</li> <li>- As far as proper application of agricultural chemicals, there is no problem on use of agricultural chemical use. However, sensitization of farmers is necessary on the disposal of agricultural chemicals containers.</li> <li>- Proposed list of contents for the Agricultural Chemicals Management Plan (ACMP) in Atari Project seems no problem basically.</li> </ul> |                                                                                    |


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| 2-4           | Makerere University                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Interviewee:  | - Dr. Tenywa Moses (Professor Soil and Water Management)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Participants: | - Mr. Tatsuya IEIZUMI (Team Leader/ Irrigation Facility Planning, JICA OD Team)<br>- Ms. Ayumi SHIGA (Social Considerations, JICA OD Team)<br>- Ms. Adomo Esther (Assistant, JICA OD Team)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Date:         | 29 <sup>th</sup> August 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Venue:        | Makerere University                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Contents:     | <ul style="list-style-type: none"> <li>- If surplus fertilizers applied, it cannot be absorbed by plants and excess fertilizers will be transported to Lake Opeta, then the eutrophication can be caused finally. Additionally, there are fertilizers that cause acidification, when it leaches into groundwater and water bodies.</li> <li>- For mitigation of environmental impacts by usage of agricultural chemicals, there are physical, scientific, biological approaches and others.</li> <li>- When farmers conduct properly in terms of; 1) soil testing for determination of the ratio or amounts of fertilizers, 2) selection of type and application of proper fertilizers, and 3) timing of applying fertilizers, significant environmental damages are not anticipated.</li> <li>- Proposed list of contents for the Agricultural Chemicals Management Plan (ACMP) in Atari Project seems no problem basically.</li> </ul> |

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| 2-5           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Interviewee:  | - Mr. Oule Herbert (Senior Environmental Specialist)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Participants: | <ul style="list-style-type: none"> <li>- Mr. Allan Ollando (Engineer, DAIMWAP, MAAIF)</li> <li>- Mr. Tatsuya IEIZUMI (Team Leader/ Irrigation Facility Planning, JICA OD Team)</li> <li>- Ms. Ayumi SHIGA (Social Considerations, JICA OD Team)</li> <li>- Ms. Adomo Esther (Assistant, JICA OD Team)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Date:         | 29 <sup>th</sup> August 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Venue:        | WB Office (Kampala)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Contents:     | <ul style="list-style-type: none"> <li>- In August 2018, WB adopted the new policy called as “Environmental and Social Framework (ESF)”. While ESF will be applied to all the projects after October 2018, other projects before October 2018 apply the previous Environmental and Social Safeguard Policies composed by Operational Policies (OP 4.01 Environmental Assessment, OP 4.09 Pest Management, etc.).</li> <li>- In case of the projects which are assumed that dependency of agricultural chemicals is low or amount of agricultural chemicals use is low, the issues of pest management are described as a part of Environmental Impact Assessment (EIA) or Environmental and Social Management Framework (ESMF)<sup>1</sup>. On the other hand, in case of the projects which are assumed that dependency or amount of agricultural chemical use is high, Pest Management Plan (PMP) is prepared apart from EIA or ESMF. In case of ACDP, since the project supports farmer’s group for their procuring activity of agricultural inputs, it is expected the use of agricultural chemicals will be increased and PMP was prepared apart from ESMF<sup>2</sup>.</li> <li>- Regarding the projects which are necessary to prepare the PMP, PMP includes the issue of procurement, transportation, storage, input/ usage, and disposal of agricultural chemicals which are registered in accordance with “the Agricultural Chemicals (Control) Act, 2006”.</li> <li>- Although the amount of agricultural chemicals use is not high at present, ACDP conducted trainings of agricultural chemicals to the relevant central ministries and district government officers. Since WB enhances ownership of recipient countries, WB implements trainings to officers of the countries. In other words, WB does not train individual farmers.</li> <li>- WB pools training materials for capacity development of officers and use them with revisions as necessary. WB does not prepare training materials for capacity development of farmers.</li> <li>- Distribution of agricultural chemicals under registration of national law to the farmer’s groups is planned as one of ACDP’s component, however, it is not conducted yet.</li> <li>- Most of farmers do not know how to dispose agricultural chemical containers properly and do not wear protective tools.</li> </ul> |

<sup>1</sup> An instrument that examines the issues and impacts associated when a project consists of a program and/or series of sub-projects, and the impacts cannot be determined until the program or sub-project details have been identified. It sets out the principles, rules, guidelines and procedures to assess the environmental and social impacts. It contains measures and plans to reduce, mitigate and/or offset adverse impacts and enhance positive impacts, provisions for estimating and budgeting the costs of such measures, and information on the agency or agencies responsible for addressing project impacts.

<sup>2</sup> The detailed requirements on preparation of PMP is stipulated in Annex-C of Bank Procedures (BP) 4.01.

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| 2-5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |
| <ul style="list-style-type: none"> <li>- In Uganda, information related to the use of agricultural chemicals is insufficient and the safety use of agricultural chemicals is not monitored well..</li> <li>- When WB funds to recipient countries, WB firstly analyzes capacity of the recipient countries. Then, WB implements capacity development based on the results of capacity analysis. In case of Uganda, WB is enhancing capacity of MAAIF through dispatch of Environmental specialist in MAAIF.</li> <li>- The Environmental specialist dispatched by WB is responsible for environmental and social issues (especially for environmental issues) of the projects which are funded by WB. Terms of Reference (TOR) of environmental specialist is capacity development of MAAIF, and procurement and supervision of local consultants who implement environmental considerations.</li> <li>- WB accepts to use registered agricultural chemicals in accordance with national law (the Agricultural Chemicals (Control) Act, 2006). The list of registered agricultural chemicals can be obtained from MAAIF or ACB.</li> <li>- Proposed list of contents for the Agricultural Chemicals Management Plan (ACMP) in Atari Project seems no problem basically.</li> </ul> |                                                                                    |

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| 2-6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Dept. of Crop Protection,<br>Directorate of Crop Resources, MAAIF |  |
| Interviewee: – Mr. Kutunga David (Senior Agriculture Officer)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                   |                                                                                    |
| Participants: – Mr. Tatsuya IEIZUMI (Team Leader/ Irrigation Facility Planning, JICA OD Team)<br>– Ms. Ayumi SHIGA (Social Considerations, JICA OD Team)<br>– Ms. Adomo Esther (Assistant, JICA OD Team)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                   |                                                                                    |
| Date: 30 <sup>th</sup> August 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                   |                                                                                    |
| Venue: MAAIF Office (Entebbe)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                   |                                                                                    |
| <p>Contents:</p> <ul style="list-style-type: none"> <li>– There are two divisions such as 1) Pest and Disease Control, and 2) Diagnosis and Epidemiology, under Dept. of Crop Protection.</li> <li>– As same as Dept. of Crop Inspection &amp; Certification, Dept. of Crop Protection is one of member of ACDP, and Mr. Kutunga is the Component Manager.</li> <li>– Since Uganda has fertile soils originally, use of agricultural chemicals had not been needed. Nowadays, however, the Government of Uganda promotes changeover to commercial agriculture from subsistence agriculture, and increasing agricultural chemicals use is anticipated. In actual, inputs of agricultural chemicals had been seen for maize cultivation, however, it also seems to input for rice cultivation recently.</li> <li>– Regarding maize productivity, for example, farmers in European countries get 8ton/ ha in average, however, farmers in Uganda can get only 3 ton/ ha. Since decreasing of productivity due to degradation of soil are observed, it may not avoid use of agricultural chemicals (especially fertilizers) in the future.</li> <li>– Regarding fertilizers, Chinese company is constructing their factory in Tololo, in the eastern part of Uganda for the purpose of domestic producing. It is expected that this contributes for farmers to access to the affordable commodities more easily by escaping from the situation depending on import products.</li> <li>– Since it is anticipated that input of agricultural chemicals increase in the future, GoU prepared Fertilizer Policy. The Government does not prohibit use of agricultural chemicals, but has policies to manage through activities (sensitization to farmers, etc.) which enhance safety use (type, amount, and timing) in accordance with principles Integrated Pest management (IPM).</li> <li>– The contents of sensitization for farmers includes in terms of: 1) agricultural chemicals requires extreme caution in handling since they are harmful to environment and human health, 2) timing of input is important, and 3) enforcement for reducing residual agricultural chemicals is necessary in accordance with standards of European Union (EU) for export.</li> <li>– It focus on requirements (standards) of export destination, regarding residual agricultural chemicals of products. In addition, it is monitored in accordance with stipulated contents in Rotterdam Convention, other international conventions and national law (the Agricultural Chemicals (Control) Act, 2006).</li> <li>– Challenges of ACDP on pest management are follows: <ul style="list-style-type: none"> <li>1) It takes a lot of time for emergency measures for epidemic of pests.</li> <li>2) Equipment and human resources of analytical laboratories are insufficient.</li> </ul> </li> <li>– There is a possibility that use of agricultural chemicals may cause negative impacts to environment to water source through surface water and groundwater. Therefore, mitigation measures are taken. For examples, sensitization through radio broadcasting and trainings to agricultural extension officers are conducted.</li> <li>– Radio broadcasting can sensitize widely and directly to farmers, and it shares information about safety use of agricultural chemicals and plant health, etc. It is broadcasted at random times.</li> </ul> |                                                                   |                                                                                    |

2-6


Dept. of Crop Protection,  
Directorate of Crop Resources, MAAIF




**MAAIF**  
Ministry of Agriculture  
Animal Industry and Fisheries


- Regarding trainings to agricultural extension officers, the periodical training on safety use of agricultural chemicals from the points of crop cultivation and strategy of IPM, etc. has been conducted to AOs of Sub-county level assigned by department of crop protection at district level, through existing system for agricultural extension of MAAIF.
- Proposed list of contents for the Agricultural Chemicals Management Plan (ACMP) in Atari Project seems no problem basically.





|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                    |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| 2-7           | Dept. of Crop Inspection,<br>Directorate of Crop Resources, MAAIF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |
| Interviewee:  | – Mr. Otut Alex (Senior Agricultural Inspector)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                    |
| Participants: | – Mr. Tatsuya IEIZUMI (Team Leader/ Irrigation Facility Planning, JICA OD Team)<br>– Ms. Ayumi SHIGA (Social Considerations, JICA OD Team)<br>– Ms. Adomo Esther (Assistant, JICA OD Team)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                    |
| Date:         | 31 <sup>st</sup> August 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                    |
| Venue:        | MAAIF Office (Namarere)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                    |
| Contents:     | <ul style="list-style-type: none"> <li>– ACB is reviewing the latest training material on agricultural chemicals at present. While the previous version does not include fertilizers, the latest version includes it.</li> <li>– The epidemic of Fall Army Worm which affects maize production is the one of typical issues on pests in Uganda. The pest distribution map shows information on the area affected by pests, causes of epidemic, and measures to be taken. It is expected that the pest distribution map contributes avoidance of pests expansion to non-affected area.</li> <li>– As of now, there is no environmental standard on agricultural chemicals in Uganda. In addition, the Eastern African Community is developing the common standards at present. On the other hand, since type of agricultural chemicals is determined based on farmers' economic situation (income), the standards should be considered including aspects of farmers' economic in each area.</li> </ul> |                                                                                    |

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|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2-8           | National Water & Sewerage Corporation<br>(NWSC) <sup>3</sup> , MWE                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Interviewee:  | – Mr. Deake Mubiru (Principle Research Officer)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Participants: | – Mr. Tatsuya IEIZUMI (Team Leader/ Irrigation Facility Planning, JICA OD Team)<br>– Ms. Ayumi SHIGA (Social Considerations, JICA OD Team)<br>– Ms. Adomo Esther (Assistant, JICA OD Team)                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Date:         | 31 <sup>st</sup> August 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Venue:        | Institution of WSC (Kampala)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Contents:     | <ul style="list-style-type: none"> <li>– As of now, analysis of agricultural chemicals is not available in the NWSC. NWSC only analyze water quality samples.</li> <li>– NWSC is developing laboratory and pesticide analysis in water samples will be available by next year.</li> <li>– Regarding the issues on environment, NEMA is the responsible organization and they might have some standards.</li> <li>– Uganda National Bureau of Standards (UNBS) is responsible for establishment of the national standards, and they might have established environmental standards on agricultural chemicals.</li> </ul> |

<sup>3</sup> NWSC is a public utility company 100% owned by the Government of Uganda. In 1972, it was established in accordance with the national regulation. Currently, it is stipulated in amended regulation, named as “the National Water and Sewerage Corporation Act, 1995.” The responsible agency for the Act is NEMA.

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| 2-9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | National Agricultural Research Organization (NARO), MAAIF |  |
| Interviewee: – Mr. Deake Mubiru (Principle Research Officer)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                           |                                                                                    |
| Participants: – Mr. Tatsuya IEIZUMI (Team Leader/ Irrigation Facility Planning, JICA OD Team)<br>– Ms. Ayumi SHIGA (Social Considerations, JICA OD Team)<br>– Ms. Adomo Esther (Assistant, JICA OD Team)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                           |                                                                                    |
| Date: 3 <sup>rd</sup> September 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                           |                                                                                    |
| Venue: Institution of NARO (Kawanda)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                           |                                                                                    |
| <p>Contents:</p> <ul style="list-style-type: none"> <li>– NARO mainly analyses nutrient factors in soil. Monitoring focused on the environmental impacts by use of agricultural chemicals is not carried out.</li> <li>– Currently NARO has problems on facility and equipment, the laboratory has not worked enough. However, the procurement of necessary equipment is ongoing, and the analysis of food sampling test will be commenced after the equipment is installed.</li> <li>– From a policy aspect, the regulation regarding agricultural chemicals in Uganda is not enough and ACB is not functional well. On the other hand, chemicals for livestock has controlled well by the National Drug Authority. While dealers of Agricultural chemicals which are not registered by national laws are observed, their control is the duty of ACB.</li> <li>– Since some farmers cannot read the label on the agricultural chemical containers, misuse of agricultural chemicals is observed among such farmers. In addition, farmers do not know how to dispose the agricultural chemicals. It is observed that farmers wash agricultural chemicals container directory near water bodies which may cause the water contamination.</li> <li>– Usually, NARO applies the standards established by Environmental Protection Agency of the United States, or EU Standards as references.</li> </ul> |                                                           |                                                                                    |

| 2-10                 | <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p><b>MAAIF</b><br/>Ministry of Agriculture<br/>Animal Industry and Fisheries</p> </div> <div style="text-align: center;">  <p><b>THE WORLD BANK</b><br/>IBRD • IDA</p> </div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |        |      |                      |      |      |                      |      |      |                      |      |      |                      |       |     |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------|------|----------------------|------|------|----------------------|------|------|----------------------|------|------|----------------------|-------|-----|
| Interviewee:         | – Mr. Robert Charles Aguma (Environmentalist dispatched by WB)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      |        |      |                      |      |      |                      |      |      |                      |      |      |                      |       |     |
| Participants:        | <ul style="list-style-type: none"> <li>– Mr. Tatsuya IEIZUMI (Team Leader/ Irrigation Facility Planning, JICA OD Team)</li> <li>– Ms. Ayumi SHIGA (Social Considerations, JICA OD Team)</li> <li>– Ms. Adomo Esther (Assistant, JICA OD Team)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |        |      |                      |      |      |                      |      |      |                      |      |      |                      |       |     |
| Date:                | 3 <sup>rd</sup> September 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      |        |      |                      |      |      |                      |      |      |                      |      |      |                      |       |     |
| Venue:               | MAAIF Office (Entebbe)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |        |      |                      |      |      |                      |      |      |                      |      |      |                      |       |     |
| Contents:            | <ul style="list-style-type: none"> <li>– In recent year, use of agricultural chemicals is increasing in Uganda, however the subsistence farmers do not use agricultural chemicals very much. Mainly, large scale commercial farmers who cultivate horticulture products (such as sugarcane, etc.) are using agricultural chemicals. The main purpose of fertilizers usage is to improve soil fertility.</li> <li>– ACDP is the project for 6 years, and it was commenced in November 2017.</li> <li>– The project components of ACDP are as follows:             <ol style="list-style-type: none"> <li>1) Enhancement of agricultural productivity through the subsidy in 180 USD per farmer per season.                 <ul style="list-style-type: none"> <li>• The subsidy is going to provide by unit of farmer's group.</li> <li>• The cost demarcation between ACDP and Farmers are as follows:                     <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>Year</th> <th>Farmer</th> <th>ACDP</th> </tr> </thead> <tbody> <tr> <td>1<sup>st</sup> Year</td> <td>33 %</td> <td>67 %</td> </tr> <tr> <td>2<sup>nd</sup> Year</td> <td>50 %</td> <td>50 %</td> </tr> <tr> <td>3<sup>rd</sup> Year</td> <td>67 %</td> <td>33 %</td> </tr> <tr> <td>4<sup>th</sup> Year</td> <td>100 %</td> <td>- %</td> </tr> </tbody> </table> </li> </ul> </li> <li>• Agricultural inputs are provided by E-voucher. The tools for E-voucher is supplied to the registered dealers by ACDP, and they provide receipt when farmers purchase agricultural inputs. While it is expected that farmers mainly purchase agricultural chemicals, their purchasing is not proactively encouraged based on the WB's principles which aims IPM through cultural and biological approaches. In other words, the use of agricultural chemicals is the last option.</li> <li>• ACDP have a plan to conduct training on appropriate and necessary amount of agricultural chemicals for the product growth to farmer's group.</li> </ol> </li> <li>2) Consolidation of Access to the Markets             <ul style="list-style-type: none"> <li>• ACDP has a plan to enhance the productivity and support farmers to connect to markets.</li> <li>• ACDP rehabilitates 1,700 km of farm to market roads for smooth transportation of agricultural products.</li> <li>• ACDP will provide grants targeting rural producer organizations, farmer's groups, and Agricultural Commodity Cooperative Enterprise (ACCE), and support these to install equipment for processing and storage facilities at maximum 75,000 USD per organization. It is expected the contribution that farmers can get good prices (negotiation power) by increasing amount of selling products.</li> </ul> </li> <li>3) Enhancement of national policy and regulatory function of MAAIF             <ul style="list-style-type: none"> <li>• ACDP will enhance national policy and functions of MAAIF, since ACDP recognizes that quality management of selling agricultural products by MAAIF is important.</li> </ul> </li> </ul> | Year | Farmer | ACDP | 1 <sup>st</sup> Year | 33 % | 67 % | 2 <sup>nd</sup> Year | 50 % | 50 % | 3 <sup>rd</sup> Year | 67 % | 33 % | 4 <sup>th</sup> Year | 100 % | - % |
| Year                 | Farmer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ACDP |        |      |                      |      |      |                      |      |      |                      |      |      |                      |       |     |
| 1 <sup>st</sup> Year | 33 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 67 % |        |      |                      |      |      |                      |      |      |                      |      |      |                      |       |     |
| 2 <sup>nd</sup> Year | 50 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 50 % |        |      |                      |      |      |                      |      |      |                      |      |      |                      |       |     |
| 3 <sup>rd</sup> Year | 67 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 33 % |        |      |                      |      |      |                      |      |      |                      |      |      |                      |       |     |
| 4 <sup>th</sup> Year | 100 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | - %  |        |      |                      |      |      |                      |      |      |                      |      |      |                      |       |     |

2-10

MAAIF (WB)




**MAAIF**  
Ministry of Agriculture  
Animal Industry and Fisheries



#### 4) Irrigation Development

- Under “Agricultural Technology and Agribusiness Advisory Services Project (ATTAS),” Pre-Feasibility Study for evaluation of the potential on irrigation in 13 areas in 13 districts were conducted. As a result, 4 areas in Amuru District, Nwoya District, Iganga District, and Bugiri District were selected. Then, Feasibility Study and Facility Design under ACDP are going to implement.
- Regarding the epidemic of Fall Army Worm which significantly affected maize production and caused lean harvest in Uganda widely in 2017, ACDP provided financial support for its measures and farmers could reap a rich harvest in 2018.
- ACDP conducts activities by unit of farmer’s group, but not conducts support to individual farmers.
- The farmers who will participate into the registered farmer’s groups by ACDP have to -
  - 1) have farmlands at least 1 acre;
  - 2) are willing to participate into farmer’s group;
  - 3) pay 200,000 UGX per season for participation; and
  - 4) have the national ID.
- Although the use of agricultural chemicals is harmful for users, most of farmers do not wear protective tools, such as masks, gloves and so on. ACDP conducted pilot trainings on safety measures in the 30 districts of the pilot project area.
- Farmers do not know how to dispose agricultural chemical containers properly. Some of farmers reuse containers as for keeping seasoner, drinking water, etc.
- The capacity of monitoring environmental impacts by agricultural chemicals is not enough in Uganda. The agricultural chemicals use is not monitored appropriately, and related data is not stored sufficiently.
- In Uganda, standards of NEMA, FAO, WHO, etc. are applied. Then, standard to be applied is considered in each case. For example, NEMA regulates standards for discharge of effluent into water or on land, and Codex Alimentarius Commission which is organized by FAO and WHO regulates standards on agricultural chemicals from chemical residue aspects. Moreover, WHO has own standards for drinking water.
- Proposed list of contents for the Agricultural Chemicals Management Plan (ACMP) in Atari Project seems no problem basically.

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2-11          | Uganda National Bureau of Standards (UNBS) <sup>4</sup> , Ministry of Trade, Industry and Co-operatives  <b>UGANDA NATIONAL BUREAU OF STANDARDS</b><br>QUALITY IS LIFE, LIFE IS QUALITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Interviewees: | <ul style="list-style-type: none"> <li>- Mr. Hakim Mufumbiro (Manager Standard)</li> <li>- Mr. Maurice Musuga (Senior Information Officer)</li> <li>- Ms. Prossie Nabagala (Senior Standards Officer)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Participants: | <ul style="list-style-type: none"> <li>- Ms. Ayumi SHIGA (Social Considerations, JICA OD Team)</li> <li>- Ms. Adomo Esther (Assistant, JICA OD Team)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Date:         | 3 <sup>rd</sup> September 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Venue:        | UNBS Office (Kampala)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Contents:     | <ul style="list-style-type: none"> <li>- UNBS is involved in Agricultural Chemicals Technical Committee under ACB.</li> <li>- UNBS conducts technical report to ACB and reviews approval condition of dealers which apply for imports of products to Uganda.</li> <li>- GoU has plan to integrate several governmental institutions such as DGAL and UNBS.</li> <li>- Since certification is required for supplying agricultural chemicals in Uganda, the standards for the components of agricultural chemicals are set based on demands of dealers.</li> <li>- UNBS conducts monitoring of agricultural chemicals from the aspects of food security. The standard of Codex Alimentarius Commissions or EU are referred.</li> <li>- UNBS does not monitor agricultural chemicals in terms of environmental aspects since the environmental standards in Uganda has not established yet.</li> <li>- UNBS will consider/ establish the environmental standards if the relevant ministries request.</li> </ul> |

<sup>4</sup> UNBS is a semi-private institution which was established in accordance with “the Uganda National Bureau of Standards Act, 1983.” It is responsible for providing the national standard specifications and codes of commodities. In addition, it takes on responsibility on promotion of standardization of commerce, industry, health, safety, social welfare.

# Appendix 10.-Agricultural Chemicals Management Plan

**THE REPUBLIC OF UGANDA  
MINISTRY OF AGRICULTURE, ANIMAL  
INDUSTRY AND FISHERIES (MAAIF)**

**PREPARATORY SURVEY**

**ON**

**THE PROJECT FOR THE DEVELOPMENT OF  
IRRIGATION SYSTEM IN ATARI BASIN AREA**

**IN**

**THE REPUBLIC OF UGANDA**

**AGRICULTURAL CHEMICALS**

**MANAGEMENT PLAN IN ATARI AREA**



**OCTOBER 2018**

**JAPAN INTERNATIONAL COOPERATION AGENCY  
(JICA)**

**SANYU CONSULTANTS INC.**

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## ABBREVIATIONS

|                 |                                                                                              |
|-----------------|----------------------------------------------------------------------------------------------|
| ACB             | Agricultural Chemicals Board                                                                 |
| ACDP            | Agriculture Cluster Development Project                                                      |
| AO              | Agricultural Officer                                                                         |
| AAO             | Assistant Agricultural Officer                                                               |
| DCP             | Department of Crop Protection                                                                |
| DCIC            | Department of Crop Inspection and Certification                                              |
| DAIMWAP         | Department of Agriculture Infrastructure Mechanization and Water for Agricultural Production |
| DD              | Detailed Design                                                                              |
| DGAL            | Directorate of Government Analytical Laboratory                                              |
| EIA             | Environmental Impact Assessment                                                              |
| EMP             | Environmental Management Plan                                                                |
| EMoP            | Environmental Monitoring Plan                                                                |
| ESC             | Environmental and Social Considerations                                                      |
| EU              | European Unit                                                                                |
| FAO             | Food and Agriculture Organization of the United Nations                                      |
| FS              | Feasibility Study                                                                            |
| GoU             | Government of Uganda                                                                         |
| GoJ             | Government of Japan                                                                          |
| IMP             | Integrated Pest Management                                                                   |
| JICA            | Japan International Cooperation Agency                                                       |
| JICA Guidelines | JICA Guidelines for Environmental and Social Considerations                                  |
| NARO            | National Agricultural Research Organization                                                  |
| NGO             | Non-Governmental Organization                                                                |
| NEMA            | National Environment Management Authority                                                    |
| MWE             | Ministry of Water and Environment                                                            |
| OD              | Outline Design                                                                               |
| OP              | Operation Manual                                                                             |
| PACC            | Project Area Coordination Committee                                                          |
| PRiDe           | Promotion of Rice Development Project                                                        |
| TN              | Total Nitrogen                                                                               |
| TP              | Total Phosphorus                                                                             |
| USAID           | United States Agency for International Development                                           |
| WB              | World Bank                                                                                   |
| WHO             | World Health Organization                                                                    |

## CHAPTER 1 INTRODUCTION

### 1-1 The Project for the Development of Irrigation System in Atari Basin Area

#### 1-1-1 Project Background

Agriculture sector in the Republic of Uganda (hereinafter referred to as "Uganda") is the key industry, since it accounts for 24.5%, 46%<sup>2</sup> and 72%<sup>3</sup> of GDP, exports and employment population, respectively. In recent years, rain-fed agricultural activities were significantly affected, due to changes of rainfall pattern, seemingly by climate change. While the Government of Uganda (hereinafter referred to as "GoU") aims the continuous consolidation of irrigation facilities, it is still under development due to the limit of human resources of the Government and farmers' technical skills. Furthermore, the population increase rate with 3.2% is constitute a limiting factor for the development (2017: 43 million people, 2050: 106 million people estimated; Source United Nations (2017). World Population Prospects: The 2017 Revision). GoU has defined agriculture and irrigation as one of the development sectors with the highest priority in "the National Development Plan (2015/16 - 2019/20) (hereinafter referred to as "NDP II)", "The Agricultural Sector Strategic Plan (2015/16 - 2019/20) (hereinafter referred to as "ASSP")" also emphasizes the necessity of irrigation development and sets a goal of implementation of "competitiveness, profitability and sustainability." Additionally, the latter plan promotes to shift from subsistence agriculture to commercial agriculture through promoting production of rice which is one of commercial crop in Uganda.

In this regards, Japan International Cooperation Agency (hereinafter referred to as "JICA") conducted the Feasibility Study (hereinafter referred to as "the FS") named "The Project on Irrigation Scheme Development in Central and Eastern Uganda (2014-2016)." Atari Area was given the highest priority in 10 candidate sites by the FS, since it has rich water resources and comparative advantage in terms of costs for construction and Operation and Maintenance (hereinafter referred to as "O&M"). Based on the result of the FS, GoU officially requested the Government of Japan (hereinafter referred to as "GoJ") to implement the Outline Design Study (hereinafter referred to as "the OD") for "The Project for the Development of Irrigation System in Atari Basin Area (hereinafter referred to as "the Project")" as the Japanese Grant Aid Project. Currently, the OD has been conducted by JICA OD Team dispatched by JICA since June 2017.

#### 1-1-2 Location of Project Site

The Project Site called as "Atari Area" is located at the border between Bulambuli and Kween districts, where is in the eastern part of Uganda. Administratively, the target irrigation scheme is situated in the two sub-counties, namely, Bunambute Sub-county in Bulambuli District and Ngeenge Sub-county in Kween District.



Source: JICA OD Team

Fig.1-1-1. Location of the Project Site

1 The Central Intelligence Agency, the United State of America (hereinafter referred to as "CIA"), 2017  
 2 Central Intelligence Agency in the United States of America (hereinafter referred to as "CIA"), 2016  
 3 CIA, 2013

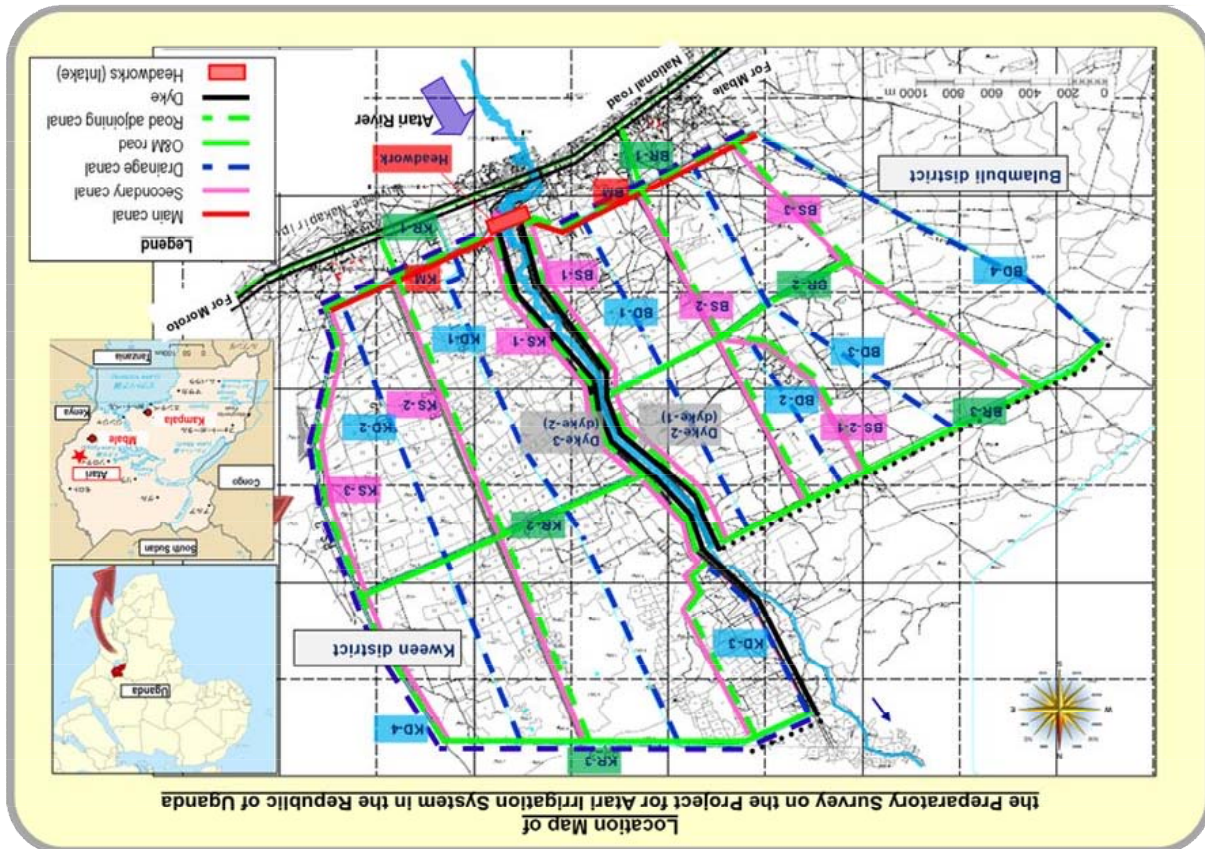


Table 1-1-1. Consist of Project Site

| District  | Sub-county | Parish   | Village   |
|-----------|------------|----------|-----------|
| Bulambuli | Bunambutye | Buwebele | Bunambale |
|           |            |          | Buwechalo |
|           |            |          | Bukhayaki |
| Kween     | Ngenge     | Sikwa    | Amukokel  |
|           |            |          | Sikwo     |
|           |            |          | Soset     |

Source: MAAIF (2018)

### 1-1-3 Project Component and Beneficiaries

Through the FS and the OD, the both sides of GoU and JICA agreed to promote productivity of agricultural products of the Project Site which has 680 ha, through construction of irrigation facilities as shown in below table and figure. Additionally, O&M structures will be enhanced. Herewith, it is expected that the stable supply of irrigation water will be emphasized, then the Project contributes to improve income in rural area through multiplication of rice product. Regarding beneficiary farmers, it is estimated at approximately 500 households in the Project Site of 680 ha.

Table 1-1-2. Project Component

| Component                            | Item                           | Amount  | Remarks                                          |
|--------------------------------------|--------------------------------|---------|--------------------------------------------------|
| Irrigation and Drainage              | Headwork                       | 1 place | Movable weir type, intake de-silting basin       |
|                                      | Main canal                     | 2.3 km  | Concrete blocking lining                         |
|                                      | Secondary canal                | 15.0 km | Concrete blocking lining                         |
|                                      | Tertiary canal                 | 23.5 km | Earth canal                                      |
|                                      | Drainage canal                 | 18.3 km | Earth canal                                      |
| Dyke                                 | River Dyke                     | 5.1 km  | Both sides, 1.4m height                          |
|                                      | Operation and Maintenance road | 7.7 km  | 4m width, laterite pavement with 10mm thickness. |
| Land Re-organization for model plots | Land leveling etc.             | 12.0 ha | Both sides, 6ha in each                          |

Source: JICA OD Team

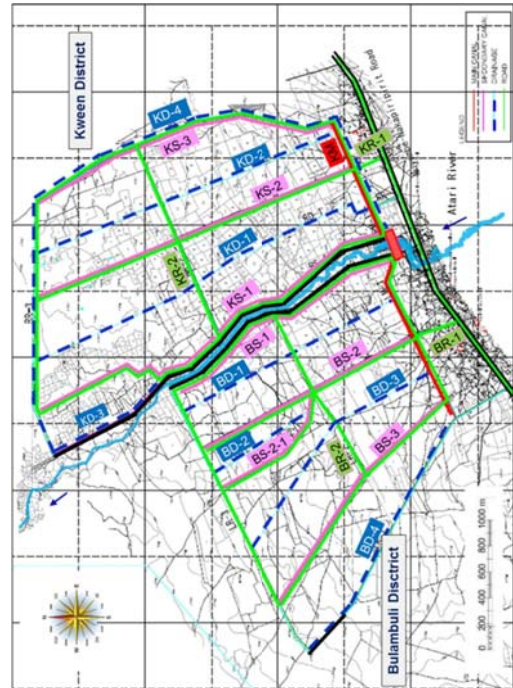
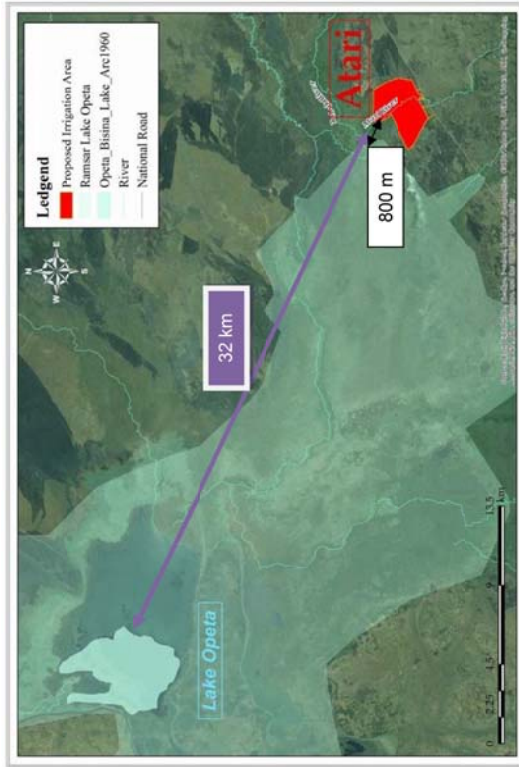


Fig. 1-1-2. Project Component

Source: JICA OD Team

### 1-1-4 Approval Status of Environment Impact Assessment for the Project

According to "the JICA Guidelines for the Environmental and Social Considerations (hereinafter referred to as "JICA Guidelines," published in April 2010)," the Project is subject to Category A since the Project Site is in neighbor with Lake Opeta which is the one of Ramsar Convention registered wetlands; and be subject to the "Sensitive Area" of the JICA Guidelines (see, Fig. 1-1-3). During the FS, Environment Impact Assessment (hereinafter referred to as "EIA") report was prepared in conformity with regulations of JICA Guidelines and the National Environment Act in Uganda.



Source: "FS Report (JICA)"

Fig. 1-1-3. Distance between Atari River, Ramsar Convention Wetland Area and Lake Opeta

On 2<sup>nd</sup> August 2017, EIA report for the Project was approved by National Environment Management Authority (hereinafter referred to as "NEMA"), the authorization agency for EIA in Uganda, with several conditions (see, Appendix-6). Through multiple discussions between Ministry of Agriculture, Animal Industry and Fisheries in Uganda (hereinafter referred to as "MAAIF") and JICA, both sides agreed that MAAIF will take action to meet the whole conditions as the implementation agency of the Project (see, Appendix-7). As one of condition described in the Certificate, NEMA pointed out the potential risk by usage of agricultural chemicals as below:

#### 1.0 SPECIFIC CONDITIONS OF APPROVAL

- (xii) Obtain the necessary guidance and approval from MAAIF regarding the range of agrochemicals (artificial fertilizers, pesticides, among others) that are permitted for use in crop farming activities, especially those applicable to irrigation schemes, but also institute a programme that will ensure the conduct of good farming practices, non-reliant on agrochemicals and also less dependent on fertilizers.

For dealing with this condition, both sides of MAAIF and JICA agreed to prepare the Agricultural Chemicals Management Plan for the Project (hereinafter referred to as "ACMP"), and MAAIF ensured to conduct the appropriate training program to farmers, in conjunction with technical supports from JICA (see, Appendix-7).

## 1-2 Purpose of Agricultural Chemicals Management Plan

Since the farmlands in Uganda are originally fertile in general, the agricultural chemicals have not been used very much historically. However, it is supposed that the application of agricultural chemicals could be increased since GoU emphasizes the change from the subsistence agriculture to commercial agriculture.

Currently, the agricultural chemicals are not used basically in and around the Project Site. However, there is a possibility that the use of agricultural chemicals could be gradually increased in the future due to the policy of conversion from the subsistence agriculture to the commercial agriculture in Atari Area through the development of irrigation facilities for sufficient and stable agricultural water supply by the Project.

The ACOMP is planned including the mitigation measures, training plan and monitoring plan considering anticipated environmental and social impacts of the use of agricultural chemicals in Atari Area. ACOMP covers both pesticides and fertilizers as the "Agricultural Chemicals" based on the definition of national law in Uganda<sup>4</sup>.

## 1-3 Information from Specialists or Government Officers in Uganda

Through multiple interviews with specialists or governmental officers in Uganda, the following information was given;

**Table 1-3-1. Information from Specialists or Government Officers on Management of Agricultural Chemicals in Uganda**

| No. | Item                  | Summarized Contents of Interview                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | General               | <ul style="list-style-type: none"> <li>Since the farmlands in Uganda are originally fertile in general, the agricultural chemicals have not been used very much historically. However, it is supposed that the application of agricultural chemicals could be increased since GoU emphasizes the change from the subsistence agriculture to commercial agriculture. <b>(MAAIF)</b></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 2   | MAAIF Organization    | <p>[Organization Structure]</p> <ul style="list-style-type: none"> <li>There are two departments on the management of agricultural chemicals in MAAIF, which are the Dept. of Crop Inspection &amp; Certification and the Dept. of Crop Protection under Directorate of Crop Resources. <b>(MAAIF)</b></li> </ul> <p>[Capacity of the Organization]</p> <ul style="list-style-type: none"> <li>Above two departments are member of the Agricultural Cluster Development Project (hereinafter referred to as "ACDP") financed by the World Bank (hereinafter referred to as "WB"). <b>(MAAIF)</b></li> <li>An environmental officer dispatched by WB is assigned for the ACDP project for the enhancement of management capacity of MAAIF on environmental and social consideration issues. Trainings of the MAAIF officers are planned with the perspective of the establishment of ownership. <b>(WB)</b></li> </ul>                                                                                         |
| 3   | Environmental Impacts | <ul style="list-style-type: none"> <li>There is a possibility that usage of agricultural chemicals may cause negative impacts to environment to water source through surface water and groundwater. <b>(MAAIF)</b></li> <li>If surplus fertilizers applied, it cannot be absorbed by plants and excess fertilizers will be transported to Lake Opeta, then the eutrophication can be caused finally. Additionally, there are fertilizers that cause acidification, when it leaches into groundwater and water bodies. <b>(Makerere University)</b></li> <li>Potential negative impacts on agricultural chemical use is not high with the conditions as far as the suitable application and suitable timing of agricultural chemicals use. Especially, for the pesticides use, water pollution is the concern, but high negative impact is not anticipated as far as not being heavy metal materials. <b>(Expert of Promotion of Rice Development Project (hereinafter referred to as "PRiDe"))</b></li> </ul> |
| 4   | Mitigation Principles | <p>[Overall]</p> <ul style="list-style-type: none"> <li>Principals of MAAIF does not prohibit the use of agricultural chemicals, but promotes proper use of agricultural chemicals with the idea of Integrated Pest Management (IPM) through the sensitization to the farmers. <b>(MAAIF)</b></li> <li>WB recommends not to rely only on the agricultural chemicals, but recommends multiple ways of the pest control such as the cultural approaches. <b>(WB Officer in</b></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

<sup>4</sup> The details are described in "3-1 Type of Agricultural Chemicals."

| No. | Item                       | Summarized Contents of Interview                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                            | <p><b>(MAAIF)</b></p> <ul style="list-style-type: none"> <li>PRiDe recommends to farmers in the rice cultivation handbook that the commonly used agricultural chemicals in the market are used and the proper application should be done in terms of suitable quantities and suitable timing with the idea of the increasing of rice production and mitigating the impact of environment in parallel. <b>(Expert of PRiDe)</b></li> </ul> <p>[Type of Agricultural Chemicals]</p> <ul style="list-style-type: none"> <li>WB recommends to use the agricultural chemicals which are registered by the Agricultural Chemicals Board. <b>(WB)</b></li> <li>There are the dealers which sell prohibited agricultural chemicals and the problem is that the farmers don't know that such agricultural chemicals are prohibited to use in farming. <b>(National Agricultural Research Organization (hereinafter referred to as "NARO"))</b></li> </ul> <p>[Proper Application and Handling of Agricultural Chemicals]</p> <ul style="list-style-type: none"> <li>Since some farmers cannot read the label on the agricultural chemical containers, misuse of agricultural chemicals is observed among such farmers. In addition, farmers do not know how to dispose the agricultural chemicals. It is observed that farmers wash agricultural chemicals container directory near water bodies which may cause the water contamination. <b>(NARO)</b></li> <li>Although the use of agricultural chemicals is harmful for users, most of farmers do not wear protective tools, such as masks, gloves and so on. In addition, some of farmers reuse containers as for keeping seasoener, drinking water, etc. that is dangerous. <b>(WB)</b></li> <li>Sensitization on the proper application and handling of agricultural chemicals is important since the knowledge of farmers and farmers' information accessibility are not sufficient. <b>(MAAIF)</b></li> <li>As the activity of the training and sensitization by MAAIF, the trainings of agricultural extension officers, and the sensitization through the radio program are conducted regularly. <b>(MAAIF)</b></li> </ul> |
| 5   | Training and Sensitization | <ul style="list-style-type: none"> <li>As the activity of the training and sensitization by MAAIF, the trainings of agricultural extension officers, and the sensitization through the radio program are conducted regularly. <b>(MAAIF)</b></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 6   | Monitoring                 | <p>[Organization Structure on Environment Analysis]</p> <ul style="list-style-type: none"> <li>There are the laboratories under the Dept. of Crop Inspection &amp; Certification and under the NARO. However, the analytical equipment is not equipped sufficiently. In this reason, analytical samples are usually tested by the outside laboratories by the Directorate of Government Analytical Laboratory (hereinafter referred to as "DGAL") in Ministry of Internal Affairs or laboratory of Uganda National Bureau of Standards. <b>(MAAIF)</b></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

Note: ( ) shows the organization which provides opinions and recommendations through the interview.

Source: JICA OD Team (2018)

## CHAPTER 2 ORGANIZATIONS, LEGAL AND REGULATIONS FRAMEWORKS ON AGRICULTURAL CHEMICALS

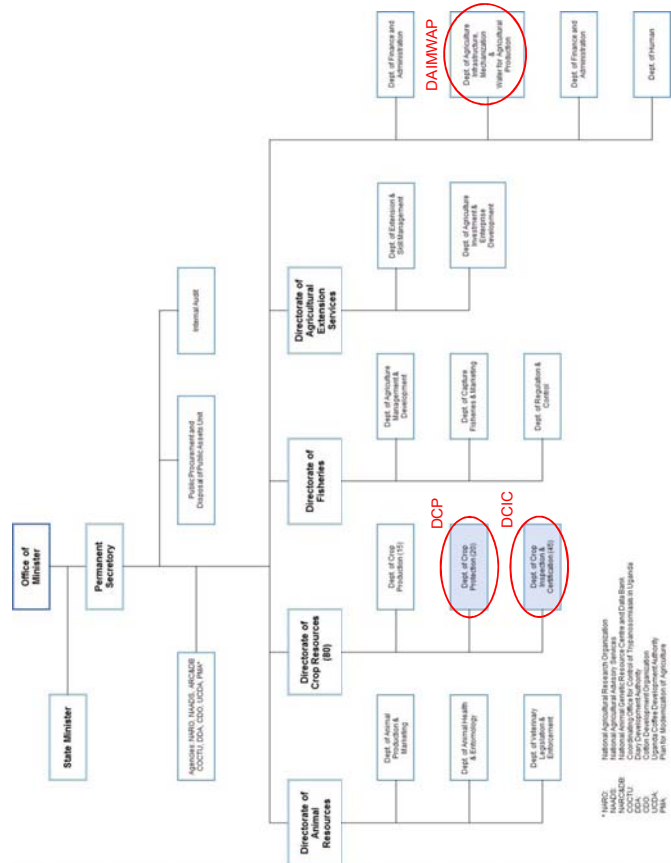
### 2-1 Organizations Relevant to Agricultural Chemicals in Uganda

There are several administrative agencies concerned for the management of agricultural chemicals in Uganda as follows;

#### 2-1-1 Ministry of Agriculture, Animal Industry and Fisheries

MAAIF is the implementation agency of the Project, and the organization structure is shown in Fig. 2-1-1. Department of Agriculture Infrastructure Mechanization and Water for Agricultural Production (hereinafter referred to as "DAIMWAP") is assigned as the project implementation unit mainly. On the other hand, Department of Crop Inspection and Certification (hereinafter referred to as "DCIC") and Department of Crop Protection (hereinafter referred to as "DCP") under Directorate of Crop Resources are responsible for the management of agricultural chemicals in Uganda. Since the both departments of DCP and DCIP have been as one department by 2013, the staff of both departments work together with exchanging information, knowledge and so on.

Aside from above, there is a research institute for agriculture, which is called as NARO, under MAAIF.



Source: MAAIF (June, 2018)

Fig. 2-1-1. Organization Structure of MAAIF

#### (1) Department of Crop Inspection and Certification

As of June 2018, there are 45 government officers under DCIC and the department is responsible for formulation of policy, regulations, and standards on agricultural chemicals. In addition, the department is responsible for managing of agricultural chemicals dealers in conformity with the Agricultural Chemicals (Control) Act, 2006. Under this department, there are three divisions as follows;

- Division of National Seed Inspection and Certification:

The division is responsible for the monitoring of seeds on the market level.

- Division of Phytosanitary and Quarantine:

The division is responsible for plant health, controls of pests and diseases for plant, including imports and exports.

- Division of Agricultural Chemicals:

The division works as the secretariat of Agricultural Chemicals Board (hereinafter referred to as "ACB," and the details are mentioned in below) which regulates agricultural chemicals in Uganda.

#### (2) Department of Crop Protection

As of June 2018, there are 20 government officers under DCP and the department is divided into two divisions, Division of Pest and Disease Control and Division of Diagnosis and Epidemiology, respectively.

The department is responsible for guidance and awareness creation on weeds, crop pests and diseases to the farmers and follow up. Training and building capacity for the local governments and farming communities in pest and disease epidemic control are also included in their responsibility. The department regularly conducts trainings to the agricultural extension workers as well as the awareness creation through radio program to the farmers, according to the hearing from them.

#### (3) National Agricultural Research Organization

NARO is a public institution established by "the National Agricultural Research Act, 2005". The NARO coordinates all agricultural research activities in the national agricultural research system in Uganda. NARO has the national research laboratories for the horticulture, root crops, post-harvest and so on.

#### 2-1-2 National Environment Management Authority

NEMA under Ministry of Water and Environment (hereinafter referred to as "MWE") is a semi-autonomous institution established in May 1995, based on "the National Environment Act, 1995." The authority is responsible for coordinating, monitoring, regulating and supervising environmental management in Uganda. In doing this, the authority contributes to socioeconomic development and wise use of natural resources, focusing on providing support to GoU's main goal of ensuring sustainable development contributing to the National Vision, the National Development Plan (hereinafter referred to as "NDP"), regional and global commitments including the Sustainable Development Goals (hereinafter referred to as "SDGs").

#### 2-1-3 Agricultural Chemicals Board

ACB was established by the "the Agricultural Chemical Act, 2006" and main functions of the board is to ensure that agricultural chemicals are duly registered and registered chemicals are used in a manner

consistent with the labelling and in conformity with the regulations made under this Act. ACB is in charge of ensuring that agricultural chemicals are properly managed through registration, leveling, issuance of licenses regulating quality and importation.

The Board consists of the chairperson appointed by the Minister of MAAIF and the representatives from the NARO, specific faculties of universities (Agriculture, Science, and Veterinary Medicine) in Uganda, farmers, private sectors of agricultural chemicals, and Uganda National Forestry Authority. In addition, the ex-officio members such as commissioner responsible for crop production, a register from MAAIF, the chairperson of Agricultural Technical Committee, etc. are also involved.

#### **2-1-4 Directorate of Government Analytical Laboratory**

DGAL under Ministry of Internal Affairs that provides specialized analytical and advisory services to the government agencies and private sector.

DGAL works frequently with MAAIF, ACB and other government agencies in terms of scientific analysis of the test samples. Pesticide analysis is carried out by the pesticide residues division in the laboratory. The capacity of the laboratory is sufficient for testing of environment samples. DGAL has been supported by United States Agency for International Development (hereinafter referred to as "USAID") and other international organization in terms of human resources and analytical equipment through the capacity enhancement from them.

### **2-2 Legal and Regulatory Frameworks for Agricultural Chemicals in Uganda**

The below indicates outline of relevant laws, regulations, and policies for the management of agricultural chemicals in Uganda;

#### **2-2-1 The Constitution of the Republic of Uganda, 1995**

The Constitution stipulates that the GoU shall protect important natural resources including land, water, wetlands, minerals, oil, fauna and flora on behalf of the people of Uganda, and promote suitable development and public awareness of the need to manage land, air, water resources, in a balanced and suitable manner for the present and future generation. In addition, GoU is also required to take all possible measures to prevent or minimize damage and destruction to land, air and water resources due to pollution, degradation and other cases, under the Constitution.

Paragraph 27 on the environment states that the GoU shall promote sustainable development and public awareness of the need to manage land, air, water resources in a balanced and sustainable manner for the present and future generation. Additionally, the GoU is also required to take all possible measures to prevent or minimize damage and destruction to land, air, and water resources due to pollution, degradation and other causes.

In "Article 17. Duties of citizens," people of Uganda has to create and protect a clean and healthy environment. On the other hand, the Constitution also states that people of Uganda has a right to a clean and healthy environment in "Article 39 Right to a clean and healthy environment." In short, people of Uganda has not only responsibilities, but also rights on the environment under the Constitution. Moreover, "Article 245 Protection and preservation of the environment" stipulates that parliament shall by law provide measures intended to protect and preserve the environment from abuse, pollution and degradation and to manage the environment for sustainable development. These constitutional provisions provide the basis for legal and policy action on pesticides management in Uganda.

#### **2-2-2 The National Environment Act, 1995**

The Act provides sustainable management of the environment; to establish an authority as a coordinating, monitoring and supervisory body for that purpose; and for other matters incidental to or connected with the foregoing. In this context, it is recognized that the Act is the most significant law on the environment and the usage of chemicals.

The Act also provides for Environmental Impact Assessment and Audits for projects seemingly to have a negative impact on the environment with below regulations;

- The Environmental Impact Assessment Regulations, 1999; and
- The National Environment (Audit) Regulations, 2006.

Regarding environmental standards, following regulations are provided under the Act;

#### **(1) The National Environment (Waste Management) Regulations, 1999**

The Regulations expound on management of hazardous wastes and hazardous characteristics, while the specific standards are regulated by the following National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations, 1999.

#### **(2) The National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations, 1999**

In accordance with Section of "the National Environment Act, 1995," "the National Environment (Standards for Discharge of Effluent into Water or Land) Regulations, 1999" are prescribed and the Regulations provide standards for effluent and waste discharge.

#### **2-2-3 The Water Act, 1997**

Section 5 of the Act vests all rights to investigate, control, protect and manage water in the GoU. Regarding pollution, Section 31 prohibits discharging directly or indirectly into water without authorized under the Act. The specific regulations under the Act are as follows;

#### **(1) The Water (Water Resources) Regulations, 1998**

Regarding usage of surface water in irrigation purpose, the developer is required to apply the Surface Water Permit in accordance with Form A (Part D) of First Schedule in the Act.

#### **(2) The Water (Waste Discharge) Regulations, 1998**

The Regulations stipulates the standards for treated effluent or waste before discharge into waste or on land is as established by the NEMA in consultation with the lead agency under Section 26 of "the National Environment Act, 1995." As mentioned above, the standards are provided by the National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations, 1999.

#### **2-2-4 The Agricultural Chemicals (Control) Act, 2006**

The Act controls and regulates the manufacture, storage, distribution and trade in, use, importation and exportation of agricultural chemicals and for other related matters, and the responsible ministry of this act is MAAIF. Under Section 3 and 4 of the Act, the requirement of packaging, labelling or advertisement of agricultural chemicals is relevant in pesticides management to prevent illegal activities related to mislabeling and mis-packaging. As mentioned above, while there is no agricultural chemicals manufactured or formulated in Uganda, more than 500 imported agricultural chemicals are registered

by the list in accordance with the Act. In Section 5 and 6, the Act also states the establishment of ACB and functions of the board.

## **2-3 International Policies**

### **2-3-1 Stockholm Convention**

“Stockholm Convention on Persistent Organic Pollutants (hereinafter referred to as “Stockholm Convention”) was adopted on 17<sup>th</sup> February 2004, and came into force on 17<sup>th</sup> May 2004. Uganda accepted the convention in 2004.

The purpose is to emphasize for protection of human health and conservation of the environment from negative impacts of Persistent Organic Pollutants (hereinafter referred to as “POPs”) with attention to the preventive approach which is described in Principle 15 of Rio Declaration on Environment and Development. The parties of the convention are required to take measures to eliminate/ restrict the production and use of the chemicals listed under Annex A/ B, or reduce unintentional production the unintentional releases of chemicals listed under Annex C with the goal of continuing minimization and, where feasible, ultimate elimination.

### **2-3-2 Basal Convention**

“Basel Convention on Controlling Transboundary Movements of Hazardous Wastes and their Disposal (hereinafter referred to as “Basal Convention”)” was adopted on 22<sup>nd</sup> March 1989, and came into force on 5<sup>th</sup> May 1992. Uganda accepted the convention in 1999.

The purpose is to protection of human health and the environment from risks caused by wastes through international framework on regulations of cross-border transportation and disposal of hazardous and other wastes.

### **2-3-3 Rotterdam Convention**

“Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (hereinafter referred to as “Rotterdam Convention”)” was adopted on 11<sup>th</sup> September 1998, and came into force on 24<sup>th</sup> February 2004.

The purpose is to establish the procedure of exports among signatories of the convention to avoid immoderate exports of harmful chemicals and expellant, which are prohibited or limited use strictly in developed countries, to developing countries. The secretariats are the United Nations Environment Programme (hereinafter referred to as “UNEP”) and Food and Agriculture Organization. As of September 2018, thirty nine (39) chemicals is subject to the convention. When a party agrees to import these chemicals, the convention promotes their safe use through labelling standards, technical assistance, and other forms of support, and ensures that exporters comply with the requirements.

## **2-4 Relevant Projects to be referred**

### **2-4-1 Agriculture Cluster Development Project**

ACDP financed by WB, has started since November 2017. Duration of the project is 6 years, and the main purpose of ACDP is to increase productivity, production, and commercialization of selected agricultural commodities, such as maize, beans, rice, cassava and coffee, in specified clusters of districts.

It is expected that the ACDP will raise farmers’ and agribusiness incomes while substantially lowering transactions costs in markets for agricultural commodities. The ACDP will be implemented in 35 districts in Uganda, while the Project Sites such as districts of Bulambuli nor Kween are not included.

According to the Environmental Specialist of MAAIF dispatched by WB, the specific components under ACDP are planned as follows;

#### Component 1: Enhancement of Agriculture through Finance Support to Farmer’s Group

- ACDP supports farmers financially for purchasing agricultural inputs through registered farmers’ group.
- The distribution way for above is E-voucher system. ACDP provides necessary tools of E-voucher system to the registered dealers and the farmer’s groups purchase agricultural inputs by E-voucher.

#### Component 2: Consolidation of Access to the Markets

- ACDP supports farmers through improvement of farmers’ access to the markets for increasing productivity.
- ACDP rehabilitates 1,700 km of farm to market roads for smooth transportation of agricultural products.
- ACDP funds to the rural producer’s groups, farmer’s groups, and agricultural commodity cooperative enterprises for purchasing the processing and storage equipment.

#### Component 3: Development of Policy and Regulatory Function of MAAIF

- ACDP supports MAAIF’s regulatory capacity for the monitoring of the products quality.

#### Component 4: Irrigation Development

- Feasibility studies and engineering design of four irrigation schemes in the districts of Amuru, Nwoya, Iganga, and Bugiri are conducted. Information and Communication Technologies (ICT) of irrigation facilities are included in the component.

As mentioned above, ACDP supports farmers groups in terms of agricultural input through E-voucher system. The trainings of agricultural chemicals are implemented by the project. Trainings on safe use of agricultural chemicals to government officers and farmer’s groups registered of pilot area have been conducted.

ACDP prepared the Pest Management Plan (PMP) of the project separately from the Environmental and Social Management Framework (ESMF) for the enhancement of the Integrated Pest Management (hereinafter as referred to “IPM”) within Uganda. As of September 2018, ACDP is at the initial stage since the project has just started in the last year. However, the lesson learns form ACDP as listed below are referred to the Agricultural Chemicals Management Plan (ACMP) in Atari Area;

- Although the use of agricultural chemicals is harmful for users, most of farmers does not wear protective tools, such as masks, gloves and so on. The ACDP conducted pilot trainings on safety measures in the districts of the project.
- Farmers does not know how to dispose agricultural chemical containers properly. Awareness creation for the handling of agricultural chemical containers is necessary since some of farmers reuse containers as for keeping seasoener, drinking water, etc.
- In Uganda, information related to the use of agricultural chemicals is insufficient and the safety use of agricultural chemicals is not monitored well.

## 2-4-2 Promotion of Rice Development Project

Since November 2011, JICA is currently conducting the PRiDe as a technical cooperation project in Uganda. The progress of the project is at the Phase I, as of September 2018, and the Phase II will be commenced soon.

The objective of PRiDe is to increase agricultural income of farmers through capacity enhancement on analysis of institutions regarding rice production in Uganda, and improvement of quality. The target areas are 40 districts and beneficial farmers' are estimated as approximately 40,000. In addition, about 400 specialists on rice farming and service providers are encouraged by PRiDe.

As the result of Phase I, the rice cultivation practices and knowledges have been introduced to the number of around 850 trainers, which are the agricultural officers and the assistant agricultural officers of the district and sub-county, and 5,000 farmers. The rice cultivation area was expanded and rice productivity was increased as the result of Phase I activity.

The "Rice Cultivation Handbook" was prepared and distributed to the trainers and farmers through the trainings conducted during Phase I. In this handbook, utilization of the chemical fertilizers, Urea and DAP (Diammonium Phosphate), is guided. On the other hand, the trainings on the pesticide use have not been conducted yet. According to the Japanese Expert of PRiDe, it will be planned to conduct the trainings on pesticide use by PRiDe because the training needs are high based on the requests from farmers.

## CHAPTER 3 OUTLINE OF THE ENVIRONMENTAL IMPACTS ON AGRICULTURAL CHEMICALS USE

### 3-1 Type of Agricultural Chemicals

"The Agricultural Chemicals (Control) Act, 2006" in Uganda stipulates that "Agricultural Chemicals" includes insecticides, fungicides, insecticide- fungicide combinations, herbicides, rodenticides, nematocide, antibiotics, plant growth regulators, fertilizers, etc. The purpose of agricultural chemicals are mainly 1) crop protection from damages by pests, weeds, rats, etc., 2) increasing yields, 3) quality control, and 4) supplementation of nutrition elements.

**Table 3-1-1. Characteristics of Agricultural Chemicals**

| Item                                     | Characteristics                                                                                                   |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Insecticide                              | It is used for extermination of pests.                                                                            |
| Fungicide                                | It is used for extermination of diseases.                                                                         |
| Insecticide - fungicide combination      | It is produced by mixing insecticide and fungicide, and can simultaneously exterminate pests and diseases.        |
| Herbicide                                | It is used for extermination of weeds.                                                                            |
| Rodenticide                              | It is used for extermination of rats, etc.                                                                        |
| Plant growth regulators                  | It is used for acceleration and/ or inhibition of plant growth.                                                   |
| Attractant                               | It is mainly used to attractant pests by its smells.                                                              |
| Spreading agent                          | It is used to enhance adherability of other pesticides.                                                           |
| Predator                                 | It is used to control pests by using predator of pests.                                                           |
| Microbiologic agent                      | It is used to control pests and diseases by using microbes.                                                       |
| Organic fertilizer                       | It is made from substance derived from flora and fauna, and has types of delayed effectivity and delayed release. |
| Mineral fertilizer                       | It is scientifically elaborated and has types of immediate effectivity and delayed release.                       |
| Organic - mineral combination fertilizer | It is produced by mixing Organic fertilizer with Mineral fertilizer.                                              |

Source: "General Information of Agricultural Chemicals (2017, Japan Plant Protection Association)"

### 3-2 Accessibility of Agricultural Chemicals

In conformity with the Agricultural Chemicals (Control) Act, 2006 in Uganda, more than 500 agricultural chemicals products are registered to import, export, and sale by the list, as of 26<sup>th</sup> June 2018 (see, Attachment). There is no agricultural chemicals manufactured or formulated in Uganda<sup>5</sup>. The main suppliers of imported pesticides are coming from India, China, Taiwan, Israel, Europe countries, United States of America (hereinafter referred to as "USA"), or branch offices of international companies in Kenya. Based on the Section 4 of the above Act, no person is not allowed to import into or sell in Uganda any agricultural chemicals unless that it has been registered, packed and labelled in accordance with regulations.

### 3-3 Risks of Agricultural Chemicals

#### 3-3-1 Potential Risks of Pesticide Use

The pesticides spraying in the farm field firstly drop to the soil surface and most of those are decomposed and disappeared. However, there is still a risk the remained pesticides in the long period on the soil surface may flow into water system by rains, etc. In case of using pesticides in the rice field, it is

<sup>5</sup> Environmental and Social Management Framework – Pest Management Plan and Climate Change Risk Analysis and GHG, Regional Eastern and Central Africa Agricultural Transformation Project (May, 2018)



## CHAPTER 4 AGRICULTURAL CHEMICAL MANAGEMENT PLAN in ATARI AREA

The scope of the Project is limited to irrigation facilities development and does not include the promotion of the use of agricultural chemicals since it is assumed that the existing cultivation practices (non-pesticide use, reduced pesticide use) will continue in the area.

Accordingly, it is assumed that the use of agricultural chemicals will be not actively increased by implementation of the Project, and based on this recognition, the ACMP is formulated with the core activities for sensitization and dissemination to the farmers and the extension officers on the farming practices for minimization of environmental impacts.

The following criteria apply to the selection and use of agricultural chemicals for ACMP;

- They must have negligible adverse human health effects.
- They must be shown to be effective against the target species.
- They must have minimal effect on non-target species and the natural environment. The methods, timing, and frequency of pesticide application are aimed to minimize damage to natural enemies.
- Their use must take into account the need to prevent the development of resistance in pests.

There is a registration system for agricultural chemicals by ACB in Uganda. Technical expert of the agricultural chemicals will confirm with ACB that the pesticides including class IA, IB and II listed up by WHO guideline<sup>6</sup> are approved or not for use in the ACB during the detail design survey stage. If there are such pesticides, training for proper storage, handling and use of agricultural chemicals will be conducted to the farmers and extension officers and sensitization will be conducted for prevention of misuse by farmers without proper knowledge.

### 4-1 Anticipated Negative Impacts of the Natural and Social Environment

Anticipated negative impacts of the natural and social environment concerning on the use of agricultural chemicals are shown in table 4-1-1.

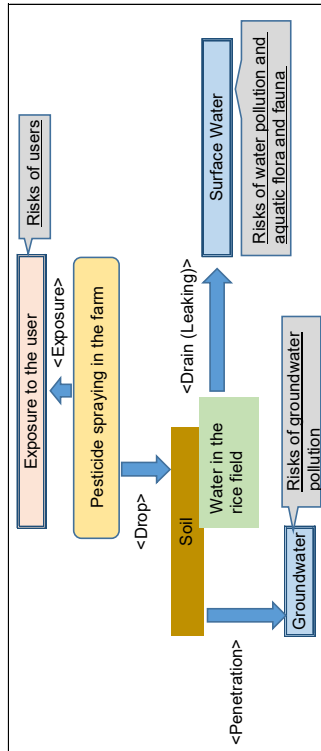
Table 4-1-1. Anticipated Negative Impacts of the Social and Natural Environment on the use of Agricultural

| Chemicals in Atari Area                |                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Anticipated Impacts of the Environment |                                                                                                                                                                                                                                                                                                                                        |
| 1. Natural Environment                 | (Operation Phase)                                                                                                                                                                                                                                                                                                                      |
| a) Surface Water                       | <ul style="list-style-type: none"> <li>There is a possibility of the leaking of residual pesticides by the drain from rice field.</li> <li>Exceeded inputs of the chemical fertilizers may affect to the water pollution in terms of nutrients (Nitrogen and Phosphorus) in the surface water by the drain from rice field.</li> </ul> |
| b) Groundwater                         | (Operation Phase) <ul style="list-style-type: none"> <li>There is a possibility of the penetration of residual pesticides to the groundwater.</li> <li>Exceeded inputs of the chemical fertilizers may affect to the water pollution in terms of Nitrate (NO<sub>3</sub>) and Nitrite (NO<sub>2</sub>) in the groundwater.</li> </ul>  |
| c) Ecosystem                           | (Operation Phase) <p>If in case the residual pesticides exist in the downstream, it may affect adverse impacts to the aquatic flora and fauna.</p>                                                                                                                                                                                     |
| 2. Social Environment                  | (Operation Phase)                                                                                                                                                                                                                                                                                                                      |
| a) Work Environment                    | During the spraying of pesticides, incorrect use of pesticides leads to hazardous risk for users and neighbors.                                                                                                                                                                                                                        |

Source: JICA OD Team (2018)

necessary to be careful of drain since the drain water may contain remained pesticides. Pesticides leaking in the surface water may affect to the aquatic flora and fauna in the downstream.

When the farmer sprays pesticides in the farm field, there is a risk of exposure for users by touching or inhalation of sprayed pesticides.



Source: JICA OD Team (2018)

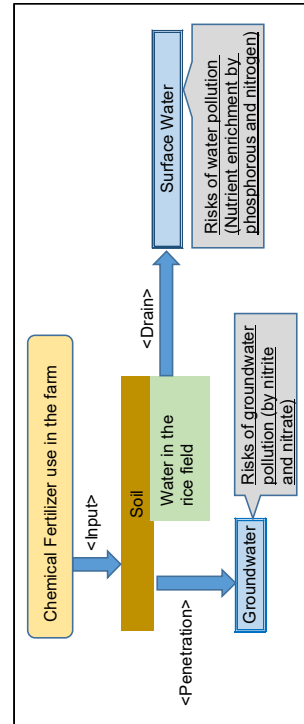
Fig. 3-3-1. Risks of the Pesticides Use in the Environment

### 3-3-2 Potential Risks of the Fertilizer Use

Excess chemical fertilizers not being absorbed by the agricultural crops flow into the surface water by the drain from rice field and penetrate into the groundwater. Nitrogen (N) and phosphorus (P) compounds in the surface water are the one of substances being caused of the nutrient enrichment in the surface water.

Nitrogen (N) compounds in the soil are decomposed to the nitrite (NO<sub>2</sub>) compounds and nitrate (NO<sub>3</sub>) compounds by the microorganism mechanism with the passage of time and finally reach to the groundwater. The groundwater with high dissolved concentration of nitrite (NO<sub>2</sub>) and nitrate (NO<sub>3</sub>) is difficult to use for drinking water because the risk of waterborne diseases (methemoglobinemia diseases) for baby is indicated.

On the other hand, these compounds (N and P) are already contained in the irrigation water and the agricultural crop usually absorbs such nutrients from them, especially in case of the rice field. Hence, significant pollution is not expected as far as normal fertilizer usage by small farmer consumption basis.



Source: JICA OD Team (2018)

Fig. 3-3-2. Risks of the Fertilizers Use in the Environment

<sup>6</sup> The WHO Recommended Classification of Pesticides by Hazard and Guidelines to Classification 2009

#### 4-2 Principles on Mitigation Measures

Proposed mitigation measures are planned as the practical farming practices which can be applied to farmers in Atari Area for minimization of environmental impacts with considering the idea of the IPM.

##### 4-2-1 Promotion of the Eco-friendly Farming Practice

###### (1) Proper Water Management during Pesticide Use

Pesticide concentration of the water in the rice field keeps being high during several days after spraying pesticides. Proper water management is necessary for preventing pesticide containing water leakage to the surface water until most of the pesticide compounds are being stable on the soil surface.

Otherwise, discharging of water containing pesticide elements will have a negative effect on the water environment in and around the Atari area. To be concrete, setting the water stoppage period and complying the period is one of effective method to keep the water containing pesticide elements during a certain period in the rice field. In addition, the levees should be arranged properly for keeping water in the rice field and preventing leaking water. Knowledge of the proper water management during pesticide use is enlightened to the farmers in Atari Area.

The detailed methods of proper water management in the rice field are shown in Table 4-2-1.

**Table 4-2-1. Proper Water Management during Pesticide Use**

| Items                                              | Explanations                                                                                                                                                                                                                     |
|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Water stoppage period during water stoppage period | Setting the water stoppage period after pesticide use (one week)<br>Do not discharge water from rice field during the water stoppage period (Prohibition of the continuous water discharge or water removal from the rice field) |
| Levee and ridge arrangement                        | Proper levee arrangement is necessary for prevention of leakage from rice field and improving pesticide effect.                                                                                                                  |
|                                                    |                                                                                                                                                                                                                                  |

Source of Illustrations and Pictures: Japan Crop Protection Association  
Source: JICA OD Team (2018)

###### (2) Compost Use for Farming

Compost fertilizers are made by the animal wastes and agricultural residues generating in Atari Area. Utilization of compost fertilizers are effective on the reduction of use frequency of chemical fertilizers as well as effective on the soil productivity being improved.

As the side effect of compost fertilizer use, it is expected to improve water quality of the irrigation and drainage canals since the compost making contributes to reduce throwing of organic matters into canal by utilization of excess animal wastes and agricultural residues in the area, effectively. Knowledge of the compost making is sensitized to the farmers in Atari Area.

**Table 4-2-2. Utilization of Compost Fertilizers for Reducing Agricultural Chemicals Usage**

| Item                                        | Explanations                                                                                                                                                                                                                                                                         |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Utilization of compost fertilizers          | <ul style="list-style-type: none"> <li>Utilization of animal wastes and agricultural residues generating in the area as the compost fertilizers</li> <li>Mix use of compost fertilizers and chemical fertilizers to prevent the excess usage of the chemical fertilizers.</li> </ul> |
| [An example of know-how for Compost Making] |                                                                                                                                                                                                                                                                                      |

Source of Illustrations: Ministry of Agriculture, Forestry and Fisheries, Japan  
Source: JICA OD Team (2018)

### (3) Creating a Farm Field Environment for Less Pest Generation

As one of the practical ways of the crop protection measures without pesticides use, the cultural practices are effective for creating a farm field environment for less pest generation. Such cultural practices which can be conducted by farmers are introduced and sensitized to the farmers in Atari Area.

**Table 4-2-3. Cultural Practices for Creating a Farm Field Environment for Less Pest Generation**

| Items                                               | Explanations                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Puddling                                            | Puddling rice field equally and carefully.                                                                                                                                                                                                                                                                          |
| Seed selection                                      | Selection of the resistant seed species.                                                                                                                                                                                                                                                                            |
| Seed disinfection                                   | Conducting hot water disinfection.                                                                                                                                                                                                                                                                                  |
| Pest Prevention                                     | Removing seed plants after transplanting immediately for prevention of the leaf stripe diseases generation.<br>Removing weeds in the wet land area frequently for prevention of the insect generation.                                                                                                              |
| Crop Rotation                                       | Conducting crop rotation which is effective to reduce pest generation.<br>Cleaning and removing of weeds in the levees, roads and idle farmlands.<br>Cultivating and mixing of soil after harvesting for prevention of perennial weed generation.<br>Physical weed removal by hand or using paper multi-transplant. |
| Weed control of the rice field and neighboring area |                                                                                                                                                                                                                                                                                                                     |
| Bird Scaring                                        | Putting the build scares to keep birds off in rice field and bird repellents are not used.                                                                                                                                                                                                                          |

Source of Pictures: Agricultural Department, Toyama Prefecture, Japan  
Source: JICA OD Team (2018)

#### 4-2-2 Promotion of the Proper Application and Safety Use of Agricultural Chemicals

##### (1) Proper Application of Pesticides

Proper application of pesticides is necessary for preventing exceeded pesticide usage in Atari Area. Proper knowledge for using pesticides such as type of pesticides, applicable crops, recording, etc. are sensitized to the farmers in Atari Area.

**Table 4-2-4. Consideration on Proper Application of Pesticides**

| Items                 | Explanations                                                                                                                                                                                                                                                                                                                         |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type of pesticides    | To use resisted pesticides in Uganda.                                                                                                                                                                                                                                                                                                |
| Method of application | To understand the purpose, applicable crops, use amount, dilution concentration and frequency of use.<br>To understand how to use record book for managing pesticide usage.                                                                                                                                                          |
| Recording             | [Examples to be recorded]<br>Date of use, place of use, applied crops, type and name of pesticides, amount and dilution concentration of pesticides.                                                                                                                                                                                 |
| Attentions            | <ul style="list-style-type: none"> <li>To confirm the label of pesticide containers for understanding the applicable crops, amount and dilution concentration, use season and frequency before using pesticides.</li> <li>To confirm the use times by checking of label and record book before using pesticides.</li> </ul>          |
| Prohibited matters    | <ul style="list-style-type: none"> <li>Do not use for inapplicable crops.</li> <li>Do not use beyond the indicated amount of use and concentration of use.</li> <li>Do not use inapplicable time of use (e.g. Indicated number of days before harvesting).</li> <li>Do not use beyond the indicated total number of uses.</li> </ul> |


Source of Pictures: JICA Promotion of Rice Development (PRiDe) Project

Source: JICA OD Team (2018)

##### (2) Safety Use of Pesticides

Safety use of pesticides is important for preventing hazardous risk of users and neighbors. Proper handling including storage and disposal of the pesticides are also important to prevent leaking of disposal pesticides to the environment. Proper knowledge for safety use and proper handling of pesticides are sensitized to the farmers in Atari Area.

**Table 4-2-5. Considerations on Safety use, Storage and Disposal of Pesticides**

| Items                                                   | Explanations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Understanding of the explanation of label on containers | <ul style="list-style-type: none"> <li>To confirm and understand the explanation of label on pesticide containers completely.</li> <li>To confirm using pesticide is registered.</li> <li>To confirm using pesticide is not expired.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Storage and disposal                                    | <ul style="list-style-type: none"> <li>To keep the pesticide container in the storage with key locked.</li> <li>To keep the pesticide liquid in original container (do not transfer pesticide liquid to other container for prevention of incorrect use).</li> <li>To finish the pesticide liquid completely (do not leave pesticide liquid in the container and do not dispose to drain).</li> <li>To wash empty container carefully before disposal.</li> <li>To use washed water as the dilution water of the pesticide preparation.</li> </ul> <p>Procedure of the washing and disposal of pesticide containers</p>  |

| Items                                                            | Explanations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Protective tools                                                 | To use the protective mask, clothes and gloves.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Consideration on spraying work of pesticides                     | <p><b>(a) Time zone of the pesticide spraying</b><br/>Pesticide spraying should be done during morning or evening (avoiding daytime). In the morning, sprayed pesticides are easy to fall down with the downdrafts while in the daytime, sprayed pesticides fly up in the sky with the updrafts. In the rainy day, pesticide spraying should not be done.</p> <p><b>(b) Work hours</b><br/>Pesticide spraying work requires physical strength. Time of work must be within two hours and take rest frequently.</p> <p><b>(c) Eating and drinking during spraying</b><br/>Eating, drinking and smoking during spraying work should be avoided because it is dangerous for health.</p> <p><b>(d) Exercises not taking pesticide</b><br/>It is important to avoid exposure of the pesticide fogs as much as possible during pesticide spraying work. Pesticide should not be sprayed with walking forward because sprayed pesticide is being drifted. Pesticide should be sprayed with walking backward for minimization of exposures.</p> <p><b>(e) After the pesticide spraying work</b><br/>Remained pesticide liquid should be kept with sealed container and the original label should be attached on container.</p> <ul style="list-style-type: none"> <li>Washing hands and mouth, etc., carefully after spraying work for health.</li> <li>If user feels any abnormality in the body, get a doctor's diagnosis immediately with bringing the pesticide container.</li> </ul> |
| Consideration on preventing of the drift hazard of the pesticide | <ul style="list-style-type: none"> <li>To notice to the neighbor farmers in advance about the purpose, date, time, and type of pesticides.</li> <li>To coordinate with neighbor farmers closely about the timing of harvesting and timing of pesticide spraying.</li> <li>To secure buffer area for non-spraying</li> <li>To take care of the wind strength and direction. In the day of strong wind, pesticide spraying should not be done.</li> <li>To use proper nozzles for pesticide spraying.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

Source of Illustrations: Kyoto Prefecture Web Site, Japan

Source: JICA OD Team (2018)

#### 4-2-3 Role of Concerning Organizations

It is proposed that the role of the concerning organization related to the implementation of the mitigation measures are shown as follows;

##### (1) Central Level Concerning Organization

##### a) Department of Agriculture Infrastructure Mechanization and Water for Agricultural Production

As the main implementation unit of the Project, DAMWAP is in charge of coordinating concerned organizations and arranging activities.

##### b) Department of Crop Protection

DCP is currently responsible for guidance and awareness creation on weeds, crop pests and diseases to the farmers and follow up. With respect to the function of department, DCP is suitable position being in charge of the overall management for implementing the mitigation measures. DCP will evaluate the plan of mitigation measures technically and implement trainings to the district level concerning persons with the DD/SV consultant.

During the operation phase, DCP supports agricultural extension officers' training activity for farmers in Atari Area through the coordination of Crop Production Department in District.

Coordination with the related organization, such as the NARO, local NGOs, etc., will be also the responsibility of DCP, if necessary.

**c) Department of Crop Inspection & Certification**

DCIC is currently responsible for formulation of policy, regulations, and standards on agricultural chemicals. Division of Agricultural Chemicals under this department works as the secretariat of ACB which controls the registration of Agricultural Chemicals in Uganda. With respect to the function of department, DCIC will be involved as the position of giving technical advice in terms of the application and selection of proper agricultural chemicals.

**(2) District Level Concerning Organizations**

**a) Department of Crop Production in District**

Department of Crop Production is responsible for managing the activities of Agricultural Officers (hereinafter referred to as “AOs”) and Assistant Agricultural Officers (hereinafter referred to as “AAOs”). The Department of Crop Production in District will be involved as the trainers of farmers with AO and AAOs.

**b) Agricultural Extension Officers**

MAAIF has the extension system of farmers by AOs and AAOs. They have some knowledge regarding safe use of agricultural chemicals through the regularly trainings by the DCP based on the hearing from them.

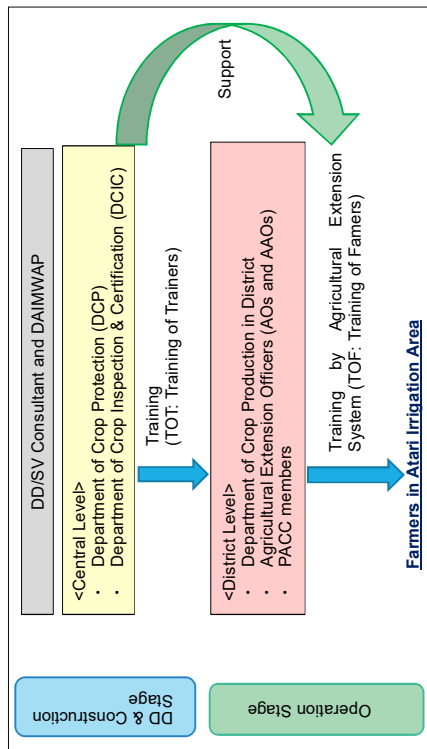
With respect to their roles, AOs and AAOs will be in charge of the trainers of farmers in the system of existing agricultural extension service.

**c) Project Area Coordination Committee**

There are farmers’ committees called as the “Project Area Coordination Committee (PACC)” which is organized by the farmers in Atari Area. The members of PACC will be involved as the trainers of farmers with AOs and AAOs.

**4-3 Mitigation Measures Training Plan**

As shown in the Fig. 4-3-1, the DD/ SV consultant will conduct trainings together with the DCP and DCIC to the persons in charge of the district level. Persons in charge of the district level will continue the training to the farmers by the existing agricultural extension system. DCP will support technically during such trainings by the agricultural extension system. Proposed training plan for the mitigation measures for Atari Area is shown in Table 4-3-1.



Source: JICA OD Team (2018)

Fig. 4-3-1. Concept of the Training Plan

Table 4-3-1. Training Plan of the Mitigation Measures for Atari Area

| Duration            | Activities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Implementers                                       | Estimated Days                   |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|----------------------------------|
| Detail Design Stage | Preparation of training materials                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | • DD/ SV Consultant and DAIMWAP                    | 3 days                           |
| Construction Stage  | Implementation of the two times trainings to the district level concerning persons in Bulambuli District and Kween District:<br><b>(Method)</b> <ul style="list-style-type: none"> <li>• Class room lectures (1 day)</li> <li>• Field exercises (2 days)</li> </ul> <b>(Contents)</b> <ul style="list-style-type: none"> <li>• Promotion of the Eco-friendly Farming Practice</li> <li>• Proper Application and Safety Use of Agricultural Chemicals</li> </ul> <b>Training Program of Class Room Lectures (1 day) (Draft)</b> <ol style="list-style-type: none"> <li>Day1 am <ul style="list-style-type: none"> <li>• Theme-1: Water management in the rice field during the period of pesticide use</li> </ul> </li> <li>• Training contents are: <ol style="list-style-type: none"> <li>1) Reasons of proper water management is needed in the rice field</li> <li>2) Methods to manage the water in the rice field during the period of pesticide use</li> <li>3) Days to keep the irrigation water in the rice field</li> </ol> </li> </ol> | • DD/ SV Consultant and DAIMWAP<br>• DCP<br>• DCIC | 6 days (3 days in each district) |
|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Ditto                                              |                                  |

| Duration | Activities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Implementers | Estimated Days |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------|
|          | <p>after pesticide spraying</p> <ul style="list-style-type: none"> <li>Theme-2: Compost Use to reduce the frequency of chemical fertilizers</li> <li>Training contents are:               <ol style="list-style-type: none"> <li>Effects of compost</li> <li>How to make the compost</li> <li>Mix use of compost and chemical fertilizer</li> </ol> </li> </ul> <p>Day1 pm</p> <ul style="list-style-type: none"> <li>Theme-3: Creation of the farm field environment for less pest generation</li> <li>Training contents are:               <ol style="list-style-type: none"> <li>Effects of creation of the farm field environment</li> <li>Methods for creation of the farm field environment</li> </ol> </li> </ul> <p>Day 1 pm</p> <ul style="list-style-type: none"> <li>Theme-4: Proper application and safety use of agricultural chemicals</li> <li>Training contents are:               <ol style="list-style-type: none"> <li>Type of pesticide, applicable crop, record keeping, etc.</li> <li>Methods of application of pesticide</li> <li>Methods of safety use of pesticide</li> </ol> </li> </ul> <p><b>Training Program of Field Exercises (2 days) (Draft)</b></p> <p>Day1 am</p> <ul style="list-style-type: none"> <li>Theme-1: Water management in the rice field during the period of pesticide use</li> <li>Training contents are:               <ol style="list-style-type: none"> <li>Practice to manage the water in the rice field during the period of pesticide use by using stop logs</li> <li>Practice to arrange the levee and ridge</li> </ol> </li> </ul> <p>Day1 pm</p> <ul style="list-style-type: none"> <li>Theme-2: Compost Use to reduce the frequency of chemical fertilizers</li> <li>Training contents are:               <ol style="list-style-type: none"> <li>Practice of compost making</li> <li>Practice of mixed use of compost and agricultural chemicals</li> </ol> </li> </ul> <p>Day2 am</p> <ul style="list-style-type: none"> <li>Theme-3: Creation of the farm field environment for less pest generation</li> <li>Training contents are:               <ol style="list-style-type: none"> <li>Practice of creation of the farm field environment such as puddling, seed selection, crop rotation, Bird scaring, etc</li> </ol> </li> </ul> <p>Day2 pm</p> <ul style="list-style-type: none"> <li>Theme-4: Proper application and safety use of agricultural chemicals</li> <li>Training contents are:               <ol style="list-style-type: none"> <li>Practice of pesticide application</li> <li>Practice of safety use of pesticide</li> </ol> </li> </ul> <p><b>(Timing)</b></p> <p>1 time before completion of irrigation facilities construction in each district</p> |              |                |

| Duration                      | Activities                                                                                                                                                                                    | Implementers                                                                                                                                                                                                                | Estimated Days |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Operation Stage <sup>*1</sup> | <p>Training of farmers by the agricultural extension system:<br/> <b>(Contents)</b></p> <ul style="list-style-type: none"> <li>Same contents as the training on construction stage</li> </ul> | <p>District level concerning person (20 numbers) in each district:</p> <ul style="list-style-type: none"> <li>Department of Crop Production in District (3)</li> <li>AOs and AAOs (2)</li> <li>PACC members (15)</li> </ul> | As necessary   |

\*1: Trainings after handing over of the facilities will be conducted by the existing agricultural extension system.  
Source: JICA OD Team (2018)

#### 4-3-2 Monitoring Plan

Water quality monitoring of the surface water and groundwater is planned as a part of the environmental monitoring for the impact of agricultural chemicals use in Atari Area.

##### (1) Monitoring of Surface Water

###### a) Pesticides (Surface Water)

The "Water (Waste Discharge) Regulations, 1998 under the Water Act. Cap 152" in Uganda regulates the type of pesticides which is required for waste discharge permit in the water environment, although the allowable maximum limit is not shown in the regulation. On the other hand, the pesticides regulated by the Japanese environmental standard are not adapted with those regulated by above Ugandan regulation in terms of the type of pesticides.

In this reason, the environmental water quality standard for pesticides of European Union (hereinafter referred to as "EU") is chosen as the international standard to be referred. The water quality monitoring standard and monitoring frequency for the impact of pesticide use on surface water in Atari Area are shown in Table 4-3-2.

Table 4-3-2. Monitoring Plan of Surface Water (For Pesticides Use)

| No.                                                                                                                                             | Item        | Unit   | International Standard <sup>*1</sup> (EU) | Monitoring Plan          |                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------|-------------------------------------------|--------------------------|------------------------------------------|
|                                                                                                                                                 |             |        |                                           | Standard for the Project | Frequency                                |
| 1                                                                                                                                               | Aldrin      | (µg/l) | 0.01                                      | 0.01                     | 2 times/year<br>(1 time x 2 farm season) |
| 2                                                                                                                                               | Atrazine    | (µg/l) | 2.0                                       | 2.0                      |                                          |
| 3                                                                                                                                               | DDT         | (µg/l) | 0.025                                     | 0.025                    |                                          |
| 4                                                                                                                                               | Endosulfan  | (µg/l) | 0.01                                      | 0.01                     |                                          |
| 5                                                                                                                                               | Endrin      | (µg/l) | 0.01                                      | 0.01                     |                                          |
| 6                                                                                                                                               | Simaxine    | (µg/l) | 4                                         | 4                        |                                          |
| 7                                                                                                                                               | Trifluralin | (µg/l) | 0.03                                      | 0.03                     |                                          |
| <b>[Implementer]</b><br>During construction: Contractor, During operation: MAAIF                                                                |             |        |                                           |                          |                                          |
| <b>[Responsibility]</b><br>During construction: MAAIF, During Operation: MAAIF                                                                  |             |        |                                           |                          |                                          |
| <b>[Sampling place]</b><br>3 points (Upstream of Headworks, Confluence point of drainage canal and Atari River, Downstream of confluence point) |             |        |                                           |                          |                                          |
| <b>[Measurement method]</b><br>Laboratory Analysis                                                                                              |             |        |                                           |                          |                                          |

\*1: Environmental Quality Standard for Substances and Certain Other Pollutants, EU  
Source: JICA OD Team (2018)

###### b) Fertilizers (Surface Water)

The "Standards for Discharge of Effluent into Water or Land, 1999 under the National Environment Act.

Cap 153” in Uganda regulates the effluent water quality from the establishments such as the wastewater treatment plant. The effluent water quality standard regulates the pollutant effluent from the establishment into surface water, but does not indicate the desirable water quality of the surface water (river) itself. So that, the effluent water quality standard is not suitable to apply as the monitoring standard on the surface water (river) quality for the impact of fertilizer use.

In this reason, the Japanese environmental standard on river is chosen as the international standard to be referred as the monitoring water quality standard of the surface water. However, the existing water quality of the Atari River is already exceeded in terms of some parameters than the indicators of Japanese environmental standard. Due to these circumstances, the baseline data (the existing water quality of the Atari River) is chosen as the water quality monitoring standard. The water quality monitoring standard and monitoring frequency are shown in Table 4-3-3.

**Table 4-3-3. Monitoring Plan of Surface Water (For Fertilizers Use)**

| No. | Item | Unit   | Atari River water quality in F/S Survey <sup>*1</sup> |            | International Standard <sup>*2</sup> (Japan) | Standard for the Project | Monitoring Plan Frequency                                   |
|-----|------|--------|-------------------------------------------------------|------------|----------------------------------------------|--------------------------|-------------------------------------------------------------|
|     |      |        | Dry season                                            | Wet season |                                              |                          |                                                             |
| 1   | pH   | -      | -                                                     | -          | 6.5 – 8.5                                    | 6.5 – 8.5                | Every month<br><br>2 times/year<br>(1 time x 2 farm season) |
| 2   | DO   | (mg/l) | 4.7                                                   | 5.9        | above 5.0                                    | above 4.7                |                                                             |
| 3   | BOD  | (mg/l) | 3.6                                                   | 14.0       | 5.0                                          | 14.0                     |                                                             |
| 4   | T-N  | (mg/l) | 11.3                                                  | 0.96       | 0.4                                          | 11.3                     |                                                             |
| 5   | T-P  | (mg/l) | 1.0                                                   | 0.23       | 0.03                                         | 1.0                      |                                                             |

**【Implementer】** During construction: Contractor, During operation: MAAIF  
**【Responsibility】** During construction: MAAIF, During Operation: MAAIF  
**【Sampling place】** 3 points (Upstream of Headworks, Confluence point of drainage canal and Atari River, Downstream of confluence point)  
**【Measurement method】** Laboratory Analysis

\*1: Average of actual measurement in upstream, midstream and downstream of Atari River (Table 1.1.15, P.1-33, ANNEX III-8, F/S Report)

\*2: Category C, environmental standards relating to the protection of the living environment on river in Japan (pH, DO, BOD) and same standards on pond (T-N, T-P)  
Source: JICA OD Team (2018)

## (2) Monitoring of Groundwater

### a) Pesticides (Groundwater)

Monitoring items for the pesticide of groundwater are adapted same items of the surface water since the water quality standard is not exist. Baseline data (existing water quality) will be measured during the Detail Design survey. The water quality monitoring standard and monitoring frequency for the impact of pesticide use on groundwater in Atari Area are shown in Table 4-3-4.

**Table 4-3-4. Monitoring Plan of Groundwater (For Pesticide Use)**

| No. | Item        | Unit   | Baseline data                          | International Standard <sup>*1</sup> (EU) (Same as surface water) | Monitoring Plan          |                                          |
|-----|-------------|--------|----------------------------------------|-------------------------------------------------------------------|--------------------------|------------------------------------------|
|     |             |        |                                        |                                                                   | Standard for the Project | Frequency                                |
| 1   | Aldrin      | (µg/l) | To be measured by Detail Design Survey | 0.01                                                              | 0.01                     | 2 times/year<br>(1 time x 2 farm season) |
| 2   | Atrazine    | (µg/l) |                                        | 2.0                                                               | 2.0                      |                                          |
| 3   | DDT         | (µg/l) |                                        | 0.025                                                             | 0.025                    |                                          |
| 4   | Endsulfan   | (µg/l) |                                        | 0.01                                                              | 0.01                     |                                          |
| 5   | Endrin      | (µg/l) |                                        | 0.01                                                              | 0.01                     |                                          |
| 6   | Simaxine    | (µg/l) |                                        | 4                                                                 | 4                        |                                          |
| 7   | Trifluralin | (µg/l) |                                        | 0.03                                                              | 0.03                     |                                          |

**【Implementer】** During construction: Contractor, During operation: MAAIF  
**【Responsibility】** During construction: MAAIF, During Operation: MAAIF  
**【Sampling place】** 2 boreholes in Atari Area  
**【Measurement method】** Laboratory Analysis

\*1: Environmental Quality Standard for Substances And Certain Other Pollutions, European Union  
Source: JICA OD Team (2018)

### b) Fertilizers (Groundwater)

In the same reason as the case of surface water, the Japanese environmental standard is chosen as the international standard to be referred. In case of the groundwater, Japanese environmental standard on groundwater is applied. Baseline data (existing water quality) will be measured during the Detail Design survey.

The water quality monitoring standard and monitoring frequency for the impact of fertilizer use on groundwater are shown in Table 4-3-5.

**Table 4-3-5. Monitoring Plan of Groundwater (For Fertilizers Use)**

| No. | Item                                  | Unit   | Baseline data                          | International Standard <sup>*1</sup> (Japan) | Monitoring Plan          |                                          |
|-----|---------------------------------------|--------|----------------------------------------|----------------------------------------------|--------------------------|------------------------------------------|
|     |                                       |        |                                        |                                              | Standard for the Project | Frequency                                |
| 1   | NO <sub>3</sub> -N Nitrogen           | (mg/l) | To be measured by Detail Design Survey | 10.0 <sup>*2</sup>                           | 10.0                     | 2 times/year<br>(1 time x 2 farm season) |
| 2   | NO <sub>2</sub> -N (Nitrite Nitrogen) | (mg/l) |                                        |                                              |                          |                                          |

**【Implementer】** During construction: Contractor, During operation: MAAIF  
**【Responsibility】** During construction: MAAIF, During Operation: MAAIF  
**【Sampling place】** 2 boreholes in Atari Area  
**【Measurement method】** Laboratory Analysis

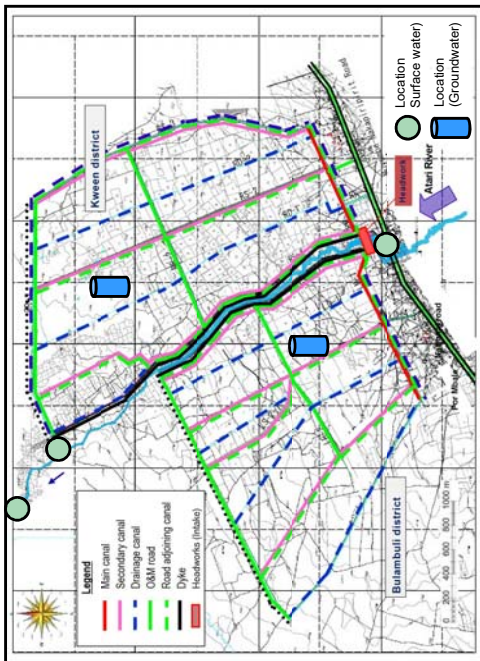
\*1: Environmental standards relating to the water pollution of groundwater in Japan

\*2: Concentration in total as N

Source: JICA OD Team (2018)

## (3) Location of Water Quality Monitoring

Monitoring location of the water quality monitoring is planned in Atari Area as shown in Fig. 4-3-2. Three points (upstream, confluence point of drainage canal, downstream) in the Atari River are planned for the monitoring of surface water and two boreholes are planned for the monitoring of groundwater.



Source: JICA OD Team (2018)

Fig. 4-3-2. Location of Water Quality Monitoring

#### (4) Analytical Laboratory

Water quality analysis including the pesticide analysis is available by the laboratories in Uganda. The DGAL is capable to conduct water quality analysis including pesticides. The service cost of the pesticides analysis by the DGAL is shown in the Table 4-3-6. The analysis cost for the water samples will be borne by the contractor during construction phase and by MAAIF during operation phase.

Table 4-3-6. Cost of Water Quality Analysis for Pesticides in DGAL

| Service                            | Analysis Item                                        | Cost (UGX/ sample) |
|------------------------------------|------------------------------------------------------|--------------------|
| Pesticides Analysis (Water Sample) | Organochlorinated Pesticides (Simultaneous Analysis) | 200,000            |
|                                    | Organophosphorus Pesticides (Simultaneous Analysis)  | 200,000            |

Source: Web site of the Directorate of Government Analytical Laboratory (DGAL), Ministry of Internal Affairs

#### (5) EMoP and Monitoring Form concerning the Water Quality

It is proposed to revise the Environmental Monitoring Plan (hereinafter referred to as "EMoP") and Environmental Monitoring Form from the version of Minutes of Discussion on the Preparatory Survey for the Project for Atari Irrigation System<sup>7</sup> issued on 14<sup>th</sup> June 2018.

##### a) EMoP (Environmental Monitoring Plan)

It is proposed to revise the EMoP concerning the water quality as follows;

Table 4-3-7. Environmental Monitoring Plan

| No. | Item            | Parameter                                              | Method                                                                      | Location                                                                                                                                                      | Frequency                               | Responsibility             |
|-----|-----------------|--------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------|
| 2   | Water Pollution | PH, DO, BOD, TN, TP, Turbidity & oil                   | Sampling test                                                               | 2 points:<br>1) Upstream of Headworks to be constructed<br>2) After drainage canal to be constructed                                                          | Monthly (except TN, TP)                 | Contractor & Subcontractor |
|     |                 |                                                        | Visual inspection                                                           |                                                                                                                                                               | Biannually (TN, TP)                     |                            |
| 1   | Water Pollution | Quantitative<br>PH, DO, BOD, TN, TP                    | Sampling test                                                               | 3 points:<br>1) Upstream of Headworks<br>2) Confluence point of drainage canal and Alari River<br>3) Downstream of confluence point                           | Monthly (except TN & TP)                | MAAIF                      |
|     |                 |                                                        | Visual inspection                                                           |                                                                                                                                                               | Biannually (TN & TP)                    |                            |
|     |                 |                                                        | Quantitative<br>Adin, Atazine, DDT, Simazine, Endrin, Simazine, Trifluralin |                                                                                                                                                               | Sampling test                           |                            |
| 6   | Groundwater     | Quantitative<br>NO <sub>3</sub> -N, NO <sub>2</sub> -N | Visual inspection                                                           | Two points of existing wells:<br>1) upstream of the Project Site (outside of the Project Site)<br>2) downstream of the Project Site (within the Project Site) | Biannually (1 time x 2 farming seasons) | MAAIF                      |
|     |                 |                                                        | Sampling test                                                               |                                                                                                                                                               | Biannually (1 time x 2 farming seasons) |                            |
|     |                 |                                                        | Quantitative<br>Adin, Atazine, DDT, Simazine, Endrin, Simazine, Trifluralin |                                                                                                                                                               | Sampling test                           |                            |

Remarks:

- DO: Dissolved Oxygen
- BOD: Biological Oxygen Demand
- TN: Total Nitrogen
- TP: Total Phosphorous
- NO<sub>3</sub>-N: Nitrate Nitrogen
- NO<sub>2</sub>-N: Nitrite Nitrogen

#### b) Environmental Monitoring Form on Agricultural Chemicals

It is proposed to revise the Environmental Monitoring Form on agricultural chemicals concerning the water quality as follows;

### ENVIRONMENTAL MONITORING FORM ON AGRICULTURAL CHEMICALS

#### Construction Phase

##### 2. Pollution

| Item                  | Unit | Measured Value (mean) | Measured value (max) | Project Standard     | Measurement point                                                                                    | Frequency                                         |
|-----------------------|------|-----------------------|----------------------|----------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| Water Quality         |      |                       |                      |                      |                                                                                                      |                                                   |
| Quantitative Analysis |      |                       |                      |                      |                                                                                                      |                                                   |
| pH                    | -    | -                     | -                    | 6.5-8.5 <sup>2</sup> | 2 points:<br>1) Upstream of Headworks to be constructed<br>2) After drainage canal to be constructed | Monthly (except TN & TP),<br>Biannually (TN & TP) |
| DO                    | mg/L | -                     | -                    | 4.7 <sup>1</sup>     |                                                                                                      |                                                   |
| BOD                   | mg/L | -                     | -                    | 14.0 <sup>1</sup>    |                                                                                                      |                                                   |
| TN                    | mg/L | -                     | -                    | 11.3 <sup>1</sup>    |                                                                                                      |                                                   |
| TP                    | mg/L | -                     | -                    | 1.0 <sup>1</sup>     |                                                                                                      |                                                   |
| Qualitative Analysis  |      |                       |                      |                      |                                                                                                      |                                                   |
| Item                  | -    | Monitoring result     | -                    | -                    | Measurement point                                                                                    |                                                   |
| Turbidity             | -    | -                     | -                    | -                    | -                                                                                                    |                                                   |
| Oil                   | -    | -                     | -                    | -                    | -                                                                                                    |                                                   |

<sup>1</sup>: Maximum values obtained by baseline survey described in EIA (2017).

<sup>2</sup>: Japan's environmental standards for type-C river water (3rd class for fishery and 1st for industrial water)

<sup>7</sup> After the conclusion of minutes, the project name was changed to as "the Project for the Development of Irrigation System in Atari Basin Area".

**Operation Phase**

**2. Pollution**

| Item                                     | Unit | Measured Value (mean) | Measured value (max) | Project Standard      | Measurement point                                    | Frequency                                      |
|------------------------------------------|------|-----------------------|----------------------|-----------------------|------------------------------------------------------|------------------------------------------------|
| <b>Water Quality</b>                     |      |                       |                      |                       |                                                      |                                                |
| <b>Quantitative Analysis</b>             |      |                       |                      |                       |                                                      |                                                |
| pH                                       | -    |                       |                      | 6.5-8.5 <sup>*2</sup> | 3 points:<br>1)Upstream of Headworks                 |                                                |
| DO                                       | mg/L |                       |                      | 4.7 <sup>1</sup>      | 2)Confluence point of drainage canal and Alari River | Monthly (except TN & TP), Biannually (TN & TP) |
| TN                                       | mg/L |                       |                      | 11.3 <sup>1</sup>     | 3)Downstream of confluence point                     |                                                |
| TP                                       | mg/L |                       |                      | 1.0 <sup>1</sup>      |                                                      |                                                |
| <b>Qualitative Analysis</b>              |      |                       |                      |                       |                                                      |                                                |
| Turbidity                                |      |                       |                      | -                     |                                                      |                                                |
| Oil                                      |      |                       |                      | -                     |                                                      |                                                |
| <b>Monitoring for the pesticides use</b> |      |                       |                      |                       |                                                      |                                                |
| Aldrin                                   | µg/  |                       |                      | 0.01 <sup>*3</sup>    | 3 points:<br>1)Upstream of Headworks                 |                                                |
| Atrazine                                 | µg/  |                       |                      | 2.0 <sup>*3</sup>     | 2)Confluence point of drainage canal and Alari River | Biannually (1 time x 2 farming seasons)        |
| DDT                                      | µg/  |                       |                      | 0.025 <sup>*3</sup>   | 3)Downstream of confluence point                     |                                                |
| Endsulfan                                | µg/  |                       |                      | 0.01 <sup>*3</sup>    |                                                      |                                                |
| Endrin                                   | µg/  |                       |                      | 0.01 <sup>*3</sup>    |                                                      |                                                |
| Simaxine                                 | µg/  |                       |                      | 4 <sup>*3</sup>       |                                                      |                                                |
| Trifluralin                              | µg/  |                       |                      | 0.03 <sup>*3</sup>    |                                                      |                                                |

\*1: Maximum values obtained by baseline survey described in EIA (2017).

\*2: Japan's environmental standards for type-C river water (3rd class for fishery and 1st for industrial water)

\*3: Environmental Quality Standard for Substances And Certain Other Pollutants, European Union

**3. Natural Environment**

**Groundwater**

| Item                                     | Unit | Measured Value (mean) | Measured value (max) | Project Standard                   | Measurement point                                                                                                                                           | Frequency                               |
|------------------------------------------|------|-----------------------|----------------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| <b>Quantitative Analysis</b>             |      |                       |                      |                                    |                                                                                                                                                             |                                         |
| NO <sub>2</sub> -N                       | mg/L |                       |                      | 10 <sup>1</sup><br>(in total as N) | Two points of existing wells:<br>1)upstream of the Project Site (outside of the Project Site)<br>2)downstream of the Project Site (within the Project Site) | Biannually                              |
| NO <sub>3</sub> -N                       | mg/L |                       |                      |                                    | Two points of existing wells:<br>1)upstream of the Project Site (outside of the Project Site)<br>2)downstream of the Project Site (within the Project Site) | Biannually (1 time x 2 farming seasons) |
| <b>Qualitative Analysis</b>              |      |                       |                      |                                    |                                                                                                                                                             |                                         |
| Turbidity                                | -    |                       |                      | -                                  |                                                                                                                                                             |                                         |
| Oil                                      | -    |                       |                      | -                                  |                                                                                                                                                             |                                         |
| <b>Monitoring for the pesticides use</b> |      |                       |                      |                                    |                                                                                                                                                             |                                         |
| Aldrin                                   | µg/  |                       |                      | 0.01 <sup>*2</sup>                 | 2 points of existing wells:<br>1)upstream of the Project Site (outside of the Project Site)<br>2)downstream of the Project Site (within the Project Site)   | Biannually (1 time x 2 farming seasons) |
| Atrazine                                 | µg/  |                       |                      | 2.0 <sup>*2</sup>                  |                                                                                                                                                             |                                         |
| DDT                                      | µg/  |                       |                      | 0.025 <sup>*2</sup>                |                                                                                                                                                             |                                         |
| Endsulfan                                | µg/  |                       |                      | 0.01 <sup>*2</sup>                 |                                                                                                                                                             |                                         |
| Endrin                                   | µg/  |                       |                      | 0.01 <sup>*2</sup>                 |                                                                                                                                                             |                                         |
| Simaxine                                 | µg/  |                       |                      | 4 <sup>*2</sup>                    |                                                                                                                                                             |                                         |
| Trifluralin                              | µg/  |                       |                      | 0.03 <sup>*2</sup>                 |                                                                                                                                                             |                                         |

\*1: Japan's environmental standards for groundwater

\*2: Environmental Quality Standard for Substances And Certain Other Pollutants, European Union

**REFERENCE**

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- The National Environment Act, 1995
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- The National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations, 1999
- The National Environment (Impacts Assessment) Regulations, 1998
- The National Environment (Waste Management) Regulations, 1999
- The Water Act,
- The Water (Water Resources) Regulations, 1998
- The Water (Waste Discharge) Regulations, 1998
- The Agricultural Chemicals (Control) Act, 2006
- Register of Agricultural Chemical Registered Under Section 4 of the Agricultural Chemicals (Control) Act, 2006 as at 26<sup>th</sup> June, 2018
- Environmental Quality Standard for Substances And Certain Other Pollutants, European Union, 2008
- Environmental Standard for Water Pollution in Japan



## Attachment Active List of Registered Pesticides in Uganda



## MINISTRY OF AGRICULTURE ANIMAL INDUSTRY AND FISHERIES

REGISTER OF AGRICULTURAL CHEMICAL REGISTERED  
UNDER SECTION 4 OF THE AGRICULTURAL CHEMICALS (CONTROL) ACT, 2006 AS AT 26<sup>TH</sup> JUNE, 2018

| PERIOD OF REGISTRATION | THE REGISTRATION NUMBER | TRADE NAME/COMMERCIAL NAME | NAME OF THE ACTIVE INGREDIENT(S) AND CONCENTRATION | NAME OF THE REGISTRANT                         |
|------------------------|-------------------------|----------------------------|----------------------------------------------------|------------------------------------------------|
| 26/6/2018              | UgC/2018/001889/He/RR   | STELLAR STAR 210SL         | Topramezone 50g/l + Dicamba 160g/l                 | BASF SE                                        |
| 26/6/2018              | UgC/2018/001889/He/RR   | STOMP 455SC                | Pendimethalin 455g/l                               | BASF SE                                        |
| 26/6/2018              | UgC/2018/001891/He/RR   | INTEGRITY 668 EC           | Saflufenacil 68g/l + Dimethenamid-P 600g/l         | BASF SE                                        |
| 26/6/2018              | UgC/2018/001890/Fu/RR   | OPERA 183SE                | Pyraclostrobin 133g/l + Epoxiconazole 50g/l        | BASF SE                                        |
| 14/6/2018              | UgC/2018/001889/Fe/R    | MAXICARE                   | N 20% + P2O5 20% + K2O 20% + TE                    | ASTRA INDUSTRIES COMPLEX Co. LTD               |
| 11/6/2018              | UgC/2018/001888/He/RR   | SUPANIL 70SL               | Butachlor 350g/l + Propanil 350g/l                 | IPROCHEM COMPANY LTD, CHINA                    |
| 7/6/2018               | UgC/2018/001887/He/RR   | 2,4-D SUPA AMINE 72SL      | 2,4-D Amine 720g/l                                 | HANGZHOU QUINFENG AGROCHEMICALS Co. LTD, CHINA |
| 7/6/2018               | UgC/2018/001886/He/RR   | SUPASATE 48SL              | Glyphosate 480g/l                                  | HANGZHOU QUINFENG AGROCHEMICALS Co. LTD, CHINA |

1

|           |                             |                        |                                                                                            |                                          |
|-----------|-----------------------------|------------------------|--------------------------------------------------------------------------------------------|------------------------------------------|
| 1/6/2018  | UgC/2018/001885/In/RRR      | SEKAPYRIFOS 48EC       | Chlorpyrifos 480g/l                                                                        | SINOCEM SHANGAI, CHINA                   |
| 1/6/2018  | UgC/2018/001884/Fu/RRR      | SEKAZEB 80WP           | Mancozeb 800g/kg                                                                           | SINOCEM SHANGAI, CHINA                   |
| 1/6/2018  | UgC/2018/001883/He/RRR      | SEKASATE 36SL          | Glyphosate 360g/l                                                                          | SINOCEM SHANGAI, CHINA                   |
| 1/6/2018  | UgC/2018/001882/He/RRR      | SEKA 2,4-D AMINE 720SL | 2,4-D Amine 720g/kg                                                                        | SINOCEM SHANGAI, CHINA                   |
| 1/6/2018  | UgC/2018/001881/In/R        | EMINENT 5WDG           | Emamectin Benzoate 50g/kg                                                                  |                                          |
| 1/6/2018  | UgC/2018/001880/He/RR       | HERBISATE 48SL         | Glyphosate 480g/l                                                                          | SINOCEM NINGBO LTD, CHINA                |
| 1/6/2018  | UgC/2018/001879/He/RR       | HERBKILL 72SL          | 2,4-D Amine 720g/l                                                                         | SINOCEM NINGBO LTD CHINA                 |
| 30/5/2018 | UgC/2018/001878/In/RRR      | DERA BLUE CROSS        | Malathion 2%                                                                               | DERA CHEMICALS INDUSTRIES NAIROBI, KENYA |
| 29/5/2018 | UgC/2018/001877/Fu/RR       | FUNGCUR 50WP           | Copper oxychloride 500g/kg                                                                 | SINOCEM NINGBO LTD CHINA                 |
| 25/5/2018 | UgC/2018/001876/In/RRRRR    | AGRO-DETRIN 2.5EC      | Deltamethrin 25g/l                                                                         | ASIATIC AGRO INDUSTRIES (PTE) SINGAPORE  |
| 25/5/2018 | UgC/2018/001875/In/RRRRR    | AGRO-ALPHACYPER 10EC   | Cypermethrin 100g/l                                                                        | ASIATIC AGRO INDUSTRIES (PTE) SINGAPORE  |
| 25/5/2018 | UgC/2018/001874/In/RRRRRRRR | AGRO-MALON 57EC        | Malathion 570g/l                                                                           | ASIATIC AGRO INDUSTRIES (PTE) SINGAPORE  |
| 24/5/2018 | UgC/2018/001873/He/RR       | MILSATE 41SL           | Glyphosate 410g/l                                                                          | HANGZHOU WEIYUAN CHEMICAL Co. LTD        |
| 24/5/2018 | UgC/2018/001872/In/RR       | MILCYPER 5EC           | Cypermethrin 50g/l                                                                         | HANGZHOU WEIYUAN CHEMICAL Co. LTD        |
| 24/5/2018 | UgC/2018/001871/He/RR       | MIL- 2,4-D 72SL        | 2,4-D Amine 720g/l                                                                         | HANGZHOU WEIYUAN CHEMICAL Co. LTD        |
| 23/5/2018 | UgC/2018/001870/He/RR       | AFRI-SATE 48SL         | Glyphosate 480g/l                                                                          | ANHUI YOUNGSUN PESTICIDE Co LTD          |
| 23/5/2018 | UgC/2018/001869/He/RR       | AFRI-2,4-D AMINE 72SL  | 2,4-D Amine 720g/l                                                                         | ANHUI YOUNGSUN PESTICIDE Co LTD          |
| 23/5/2018 | UgC/2018/001868/He/RR       | ROUND ALL 48SL         | Glyphosate IPA salt 480g/l                                                                 | SHENZHEN KING QUENSON INDUSTRY Co. LTD   |
| 21/5/2018 | UgC/2018/001867/Fu/RR       | T-BUZZ 25 SC           | Tebuconazole 250g/l                                                                        | ZAGRO (U) LTD                            |
| 21/5/2018 | UgC/2018/001866/In/RR       | FEZIDOL 12.5% WDG      | Thiamethoxam 125g/kg                                                                       | ZAGRO (U) LTD                            |
| 15/5/2018 | UgC/2018/001865/Fe/R        | KARA                   | N 8.96% + P2O5 5.2% + K2O 17.8 + B 0.13% + Fe 0.48% + Zn 0.33% + Ascophyllum nodosum 10g/l | SUSTAINABLE AGRO-SOLUTIONS S.A SPAIN     |
| 15/5/2018 | UgC/2018/001864/Fe/R        | FOLCROP B-Mo           | N 6.3% + B 6.5% + Mo 0.23%                                                                 | SUSTAINABLE AGRO-                        |

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Attachment Active List of Registered Pesticides in Uganda

|           |                          |                        |                                                                                     |                                                             |
|-----------|--------------------------|------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------|
| 15/5/2018 | UgC/2018/001863/Fe/R     | FORCROP 4-16-28        | N 6.3% + P2O5 16.9% + K2O 28.6% + B 0.3% + Mo 0.02%                                 | SOLUTIONS S.A SPAIN<br>SUSTAINABLE AGRO-SOLUTIONS S.A SPAIN |
| 15/5/2018 | UgC/2018/001862/Fe/R     | FORCROP GOLDEN 10-14-4 | N 10.46% + P2O5 14.4% + K2O 3.9% + MgO 0.4% + B 0.14% + Zn 0.7% + Amino acids 10.7% | SUSTAINABLE AGRO-SOLUTIONS S.A SPAIN                        |
| 10/5/2018 | UgC/2018/001861/In/R     | MD THOATE 40EC         | Dimethoate 400g/l                                                                   | WEMAX AGRO LTD SHENZHEN, CHINA                              |
| 10/5/2018 | UgC/2018/001860/Fu/R     | TOPLAXYL-M 72WP        | Metalaxyl 80g/kg + Mancozeb 640g/kg                                                 | WEMAX AGRO LTD SHENZHEN, CHINA                              |
| 10/5/2018 | UgC/2018/001859/In/R     | CYPERFORCE 5EC         | Cypermethrin 50g/l                                                                  | BHARAT INSECTICIDE LTD, NEW DELHI, INDIA                    |
| 10/5/2018 | UgC/2018/001858/In/RR    | DIMETHRIN 28EC         | Cypermethrin 30g/l + Dimethoate 250g/l                                              | MAGHMANI ORGANICS LTD, INDIA                                |
| 10/5/2018 | UgC/2018/001857/In/RR    | CYPERSCOPE 5EC         | Cypermethrin 50g/l                                                                  | HERANBA INDUSTRIES LTD, MUMBAI INDIA                        |
| 10/5/2018 | UgC/2018/001856/He/R     | AMINEGLYPHO 360 SL     | 2,4-D Amine 120g/l + Glyphosate 240g/l                                              | ANHUI ZHONGSHAN CHEMICAL INDUSTRY CO. LTD CHINA             |
| 10/5/2018 | UgC/2018/001855/Fu/R     | METALAMANCO 72WP       | Metalaxyl 80g/Kg + Mancozeb 640g/kg                                                 | ANHUI ZHONGSHAN CHEMICAL INDUSTRY CO. LTD CHINA             |
| 10/5/2018 | UgC/2018/001854/Fu/RR    | HANGMANCOZEB 80WP      | Mancozeb 800g/kg                                                                    | HANGZHOU JIKE TRADE CO. CHINA                               |
| 9/5/2018  | UgC/2018/001853/He/RRR   | AMETREX 50SC           | Ametryn 500g/Kg                                                                     | HANGZHOU JIKE TRADE CO. CHINA                               |
| 9/5/2018  | UgC/2018/001852/Fu/RRR   | UGONALL 58WP           | Mancozeb 480g/Kg + Metalaxyl 100g/Kg                                                | HANGZHOU JIKE TRADE CO. CHINA                               |
| 8/5/2018  | UgC/2018/001851/He/RRR   | ERAMINE 2,4-D 72SL     | 2,4-D Amine 720g/l                                                                  | SINOCHEM SHANGHAI CORP, CHINA                               |
| 8/5/2018  | UgC/2018/001850/In/RRR   | LB-AMBUSH 5EC          | Cypermethrin 50g/l                                                                  | MODERN INSECTICIDE INDIA                                    |
| 7/5/2018  | UgC/2018/001849/He/RRRRR | AGRO-STOMP 330EC       | Pendimethalin 330g/l                                                                | ASIATIC AGRICULTURAL INDUSTRY SINGAPORE                     |
| 7/5/2018  | UgC/2018/001848/In/RRRRR | VALUE 5EC              | Cypermethrin 50g/l                                                                  | ASIATIC AGRICULTURAL INDUSTRY SINGAPORE                     |
| 7/5/2018  | UgC/2018/001847/In/RRRRR | AGRO-LAMBACIN 3.5EC    | Lambda-cyhalothrin 30g/l + Profenofos 5g/l                                          | ASIATIC AGRICULTURAL INDUSTRY SINGAPORE                     |

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|          |                               |                            |                                                                                  |                                         |
|----------|-------------------------------|----------------------------|----------------------------------------------------------------------------------|-----------------------------------------|
| 7/5/2018 | UgC/2018/001846/Fu/RRRRRRRRRR | AGRO-ZEB 80WP              | Mancozeb 800g/kg                                                                 | ASIATIC AGRICULTURAL INDUSTRY SINGAPORE |
| 7/5/2018 | UgC/2018/001845/In/RRRRRRRRR  | AGRO-PYRIFOS 48EC          | Chlorpyrifos 480g/l                                                              | ASIATIC AGRICULTURAL INDUSTRY SINGAPORE |
| 7/5/2018 | UgC/2018/001844/He/RRRRRRRRR  | AGRO-2,4-D AMINE 72SL      | 2,4-D Amine 720g/l                                                               | ASIATIC AGRICULTURAL INDUSTRY SINGAPORE |
| 7/5/2018 | UgC/2018/001843/He/RRRRRRRRRR | AGRO-SATE 36SL             | Glyphosate 360g/l                                                                | ASIATIC AGRICULTURAL INDUSTRY SINGAPORE |
| 7/5/2018 | UgC/2018/001842/In/RRRRR      | STA 1.8EC                  | Abamectin 18g/l                                                                  | ASIATIC AGRICULTURAL INDUSTRY SINGAPORE |
| 7/5/2018 | UgC/2018/001841/In/RRRRRR     | AGRO-DELLIC RAIN DUST 1.8% | Pirimiphos methyl 16g/kg + Permethrin 3g/kg                                      | ASIATIC AGRICULTURAL INDUSTRY SINGAPORE |
| 7/5/2018 | UgC/2018/001840/In/RRRRRRRRRR | AGRO-CYTHRIN 5EC           | Cypermethrin 50g/l                                                               | ASIATIC AGRICULTURAL INDUSTRY SINGAPORE |
| 7/5/2018 | UgC/2018/001839/In/RRRRRRRR   | AGRO-CYPRO 440 EC          | Cypermethrin 40g/l + Profenofos 400g/l                                           | ASIATIC AGRICULTURAL INDUSTRY SINGAPORE |
| 7/5/2018 | UgC/2018/001838/In/RRRRRRRRRR | AGRO-CHLORDI 500EC         | Chlorpyrifos 278g/l + Dimethoate 222g/l                                          | ASIATIC AGRICULTURAL INDUSTRY SINGAPORE |
| 7/5/2018 | UgC/2018/001837/In/RRRRRRRRRR | AGRO-THOATE 40EC           | Dimethoate 400g/l                                                                | ASIATIC AGRICULTURAL INDUSTRY SINGAPORE |
| 7/5/2018 | UgC/2018/001836/In/RRRR       | AGRO-LAMBDA 2.5EC          | Lambdacyhalothrin 250g/l                                                         | ASIATIC AGRICULTURAL INDUSTRY SINGAPORE |
| 7/5/2018 | UgC/2018/001835/In/RRRRR      | TERMINATOR 480EC           | Chlorpyrifos 480g/l                                                              | ASIATIC AGRICULTURAL INDUSTRY SINGAPORE |
| 7/5/2018 | UgC/2018/001834/In/RRRRRR     | FENDAGRO 6SC               | Alpha-Cypermethrin 60g/l                                                         | ASIATIC AGRICULTURAL INDUSTRY SINGAPORE |
| 4/5/2018 | UgC/2018/001833/Fe/R          | VERNO                      | Copper 300g/kg + Zinc 300g/kg                                                    | NORDOX A.S OSLO NORWAY                  |
| 4/5/2018 | UgC/2018/001832/He/RR         | WEED END XI 75.7           | Ammonium salt of Glyphosate 757g/kg                                              | CROP STAR CHEMICALS LTD, CHINA          |
| 4/5/2018 | UgC/2018/001831/Ph/R          | SEED BOOSTER               | Cytokines                                                                        | OSHO CHEMICAL INDUSTRIES LTD            |
| 4/5/2018 | UgC/2018/001830/Fe/R          | SYMBION VAM PLUS           | Glomus fasciculatum + Gigaspora species                                          | OSHO CHEMICAL INDUSTRIES LTD            |
| 4/5/2018 | UgC/2018/001829/Fe/R          | SUNGUARD                   | Fatty alcohol (80%) + Ethoxylated Caster oil (5%) + Lime solution (10%) + Sesame | OSHO CHEMICAL INDUSTRIES LTD            |

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Attachment Active List of Registered Pesticides in Uganda

|            |                         |                      |                                                      |                                                   |
|------------|-------------------------|----------------------|------------------------------------------------------|---------------------------------------------------|
|            |                         |                      | oil (5%)                                             |                                                   |
| 4/5/2018   | UgC/2018/001828/Fe/R    | OSHOZYME             | 4.78%N + 2.81%P + 3.09%K + 0.1%Zn + Mo + B + Mg + Ca | OSHO CHEMICAL INDUSTRIES LTD                      |
| 4/5/2018   | UgC/2018/001827/Ph/R    | PLANTONE 4.5SL       | 1-Naphthyl acetic acid 45g/l                         | OSHO CHEMICAL INDUSTRIES LTD                      |
| 4/5/2018   | UgC/2018/001826/Ph/R    | ROOTEX-IBA 0.6%      | Indole butyric acid 0.6%                             | OSHO CHEMICAL INDUSTRIES LTD                      |
| 4/5/2018   | UgC/2018/001825/Fu/R    | SULCOP 50DF          | Copper oxychloride 500g/kg                           | OSHO CHEMICAL INDUSTRIES LTD                      |
| 4/5/2018   | UgC/2018/001824/In/R    | SULBAN 48EC          | Chlorpyrifos 480g/l                                  | OSHO CHEMICAL INDUSTRIES LTD                      |
| 4/5/2018   | UgC/2018/001823/He/R    | OSHOTHION 52.5EC     | Malathion 525g/l                                     | OSHO CHEMICAL INDUSTRIES LTD                      |
| 4/5/2018   | UgC/2018/001822/He/R    | OCELAMECTIN 4.8EC    | Abamectin 18g/l + Acetamiprid 30g/l                  | OSHO CHEMICAL INDUSTRIES LTD                      |
| 4/5/2018   | UgC/2018/001821/He/R    | AFRI XL 75.7WSG      | Ammonium salt of Glyphosate 757g/kg                  | ANHUI RUIFENG AGROCHEMICALS Co. LTD, CHINA        |
| 4/5/2018   | UgC/2018/001820/In/R    | ROUND-ALL MAX 75.7SG | Glyphosate Ammonium salt 757g/kg                     | SHENZHEN KING QUENSON INDUSTRY Co. LTD CHINA      |
| 4/5/2018   | UgC/2018/001819/In/R    | RWENZOMECTIN 4.8EC   | Abamectin 18g/l + 30g/l Acetamiprid                  | NANJING BESTGREEN CHEMICAL Co. LTD, NANJING CHINA |
| 03/05/2018 | UgC/2018/001818/In/R    | TARGET 50WDG         | Emamectin 50g/Kg                                     | CRYSTAL CROP PROTECTION PRIVATE LTD, DELHI INDIA  |
| 03/05/2018 | UgC/2018/001817/In/R    | JUDO PLUS 5EC        | Lambda-cyhalothrin 50g/l                             | CRYSTAL CROP PROTECTION PRIVATE LTD, DELHI INDIA  |
| 03/05/2018 | UgC/2018/001816/He/RRR  | WEED END 41SL        | Glyphosate 410g/l                                    | CROPSTAR CHEMICAL INDUSTRY                        |
| 03/05/2018 | UgC/2018/001815/He/RR   | WEED FIGHTER 48SL    | Glyphosate 480g/l                                    | SHANGHAI AGRO-CHINA CHEMICAL Co. LTD              |
| 30/4/2018  | UgC/2018/001813/He/RRRR | SELECT 120EC         | Clethodium 120g/l                                    | TOMEN AGRO INC. C/O CALLIOPE FRANCE               |
| 26/4/2018  | UgC/2018/001812/He/R    | RWENZO-SATE 480SL    | Glyphosate 480g/l                                    | NANJING BEST GREEN CHEMICALS Co. LTD              |
| 26/4/2018  | UgC/2018/001811/He/R    | RWENZO-2,4-D 72SL    | 2,4-D amine 720g/l                                   | NANJING BEST GREEN                                |

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|            |                             |                       |                                                                 |                                               |
|------------|-----------------------------|-----------------------|-----------------------------------------------------------------|-----------------------------------------------|
|            |                             |                       |                                                                 | CHEMICALS Co. LTD                             |
| 26/4/2018  | UgC/2018/001810/Fu/R        | RWENZO-MANCOZEB 80WP  | Mancozeb 800g/kg                                                | NANJING BEST GREEN CHEMICALS Co. LTD          |
| 26/4/2018  | UgC/2018/001809/Fu/RRRR     | MANCODOSE             | Mancozeb 800g/kg                                                | ZAGRO PTE SINGAPORE                           |
| 20/04/2018 | UgC/2018/001808/Fe/RR       | BIOTRENT              |                                                                 | PT BIOSINDO MITRAJAYA INDONESIA               |
| 11/04/2018 | UgC/2018/001807/In/RRR      | ACTARA 25 WG          | Thiamethoxam 250g/l                                             | SYNGENTA AGRO CROP                            |
| 11/4/2018  | UgC/2018/001806/Fu/RRRRRRRR | RIDOMIL GOLD MZ 68 WG | Mancozeb 64% + Metalaxyl-M 4%                                   | SYNGENTA CROP PROTECTION                      |
| 11/4/2018  | UgC/2018/001805/He/RRRRR    | LUMAX                 | S-Metolachlor 375g/l + Terbutylazine 125g/l + Mesotrion 37.5g/l | SYNGENTA CROP PROTECTION                      |
| 11/4/2018  | UgC/2018/001804/He/RRRRR    | FUSILADE FORTE        | Fluozifop-P-butyl 150g/l                                        | SYNGENTA CROP PROTECTION                      |
| 11/4/2018  | UgC/2018/001803/Fu/RRRRR    | APRON STAR            | Difenoconazole 2% + Thiamethoxam 2% + Metalaxyl 20%             | SYNGENTA CROP PROTECTION                      |
| 11/4/2018  | UgC/2018/001802/Fu/RRRRR    | MAXIM XL 035 FS       | Fludioxonil + Metalaxyl                                         | SYNGENTA CROP PROTECTION                      |
| 11/4/2018  | UgC/2018/001801/He/RRRRRRRR | PRIMAGRAM GOLD 660 SC | Atrazine 370g/l + S-Metachlor 290g/l                            | SYNGENTA CROP PROTECTION                      |
| 11/4/2018  | UgC/2018/001800/In/RRRRR    | CRUISER 350 FS        | Thiamethoxam 350g/l                                             | SYNGENTA CROP PROTECTION                      |
| 11/4/2018  | UgC/2018/001799/Fu/RRRRR    | THIOVIT 80WP          | Sulphur 800g/Kg                                                 | SYGENTA CROP PROTECTION                       |
| 11/4/2018  | UgC/2018/001798/He/RRRRR    | DUAL GOLD 960 EC      | Metalachlor + Chloroacetamid                                    | SYNGENTA CROP PROTECTION                      |
| 11/4/2018  | UgC/2018/001797/In/RRRRR    | DYNAMEC 1.8EC         | Abamectin 18g/l                                                 | SYNGENTA CROP PROTECTION                      |
| 10/4/2018  | UgC/2018/001796/He/RR       | D AMINE 72SL          | 2,4-D Amine 720g/l                                              | OSHO CHEMICAL INDUSTRIES LTD                  |
| 10/4/2018  | UgC/2018/001795/Fu/RR       | QSHOTHANE 80WP        | Mancozeb 800g/Kg                                                | OSHO CHEMICAL INDUSTRIES LTD                  |
| 10/4/2018  | UgC/2018/001794/In/RR       | ALPHA 10EC            | Alpha-cypermethrin 100g/l                                       | OSHO CHEMICAL INDUSTRIES LTD                  |
| 10/04/2018 | UgC/2018/001793/In/RR       | CYCLONE 505EC         | Cypermethrin 10% + Chlorpyrifos 35%                             | OSHO CHEMICAL INDUSTRIES LTD                  |
| 06/04/2018 | UgC/2018/001792/He/RR       | KUU 2,4-D 72SL        | 2,4-D Amine 720g/l                                              | HANGZHOU TIANLONG BIOTECHNOLOGY Co. LTD CHINA |
| 06/04/2018 | UgC/2018/001791/He/RRR      | KUUPHOSATE            | Glyphosate 480g/l                                               | SHANGHAI AGRO CHINA                           |

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## Attachment Active List of Registered Pesticides in Uganda

|            |                              |                   |                                        |                                               |
|------------|------------------------------|-------------------|----------------------------------------|-----------------------------------------------|
|            |                              |                   |                                        | INTERNATIONAL TRADE LTD                       |
| 06/04/2018 | UgC/2018/001790/In/RR        | KUU CYPER         | Cypermethrin 50g/l                     | HANGZHOU TIANLONG BIOTECHNOLOGY Co. LTD CHINA |
| 03/04/2018 | UgC/2018/001789/In/RRR       | ALPHOS 56%        | Aluminium phosphide 56%                | UNITED PHOSPHOROUS LTD, INDIA                 |
| 29/03/2018 | UgC/2018/001788/Fu/RR        | METALAXEB 72WP    | Metalaxyl 40g/kg + Mancozeb 680g/kg    | HANGZHOU TIANLONG BIOTECH Co. LTD, CHINA      |
| 29/03/2018 | UgC/2018/001787/He/RR        | WEED ROUND 48SL   | Glyphosate 480g/l                      | HANGZHOU TIANLONG BIOTECH Co. LTD, CHINA      |
| 29/03/2018 | UgC/2018/001786/In/R         | SAFURAN 3G        | Carbofuran 30g/kg                      | NINGBO SYNAROCHEM Co. LTD, CHINA              |
| 29/03/2018 | UgC/2018/001785/In/R         | NSANJA CYPER 10EC | Cypermethrin 100g/l                    | FORWARD CROP PROTECTION PRIVATE LTD, CHINA    |
| 29/03/2018 | UgC/2018/001784/He/RR        | HERBISATE 48SL    | Glyphosate 480g/l                      | SINOCHEM NINGBO LTD, CHINA                    |
| 29/03/2018 | UgC/2018/001783/He/RR        | HERBICILL 720SL   | 2,4-D Amine 720g/l                     | SINOCHEM NINGBO LTD, CHINA                    |
| 26/03/2018 | UgC/2018/001782/Fe/R         | LEGUMEFIX         | Bradyrhizobia japonicum                | LEGUME TECHNOLOGY LTD, UNITED KINGDOM         |
| 16/03/2018 | UgC/2018/001781/Fu/RRRR      | RODAZIM 500SC     | Carbendazim 500g/l                     | ROTAM AGRO-CHEMICALS LTD, HONGKONG            |
| 16/03/2018 | UgC/2018/001780/Fu/RRRR      | VOLAR 690WP       | Dimetomorph 90g/kg + Mancozeb 600g/kg  | ROTAM AGRO-CHEMICALS LTD, HONGKONG            |
| 16/03/2018 | UgC/2018/001779/In/RRRR      | JACKPOT 50EC      | Lambda cyhalothrin 50g/l               | ROTAM AGRO-CHEMICALS LTD, HONGKONG            |
| 27/02/2018 | UgC/2018/001778/Fe/R         | FERTIPLUS         | NPK 4:3:3 + 65 OM                      | FERM O FEED, NETHERLANDS                      |
| 27/02/2018 | UgC/2018/001777/In/RR        | IMITRUST 70WG     | Imidacloprid 700g/kg                   | KING QUESON INDUSTRY GROUP, SHENZHEN CHINA    |
| 27/02/2018 | UgC/2018/001776/In/RRRRR     | ROCKETT 44EC      | Profenofos 400g/l + Cypermethrin 40g/l | PI INDUSTRIES, INDIA                          |
| 27/02/2018 | UgC/2018/001775/In/RR        | FENVEERELALE 20EC | Fenverelate 200g/l                     | ISAGRO ASIA, INDIA                            |
| 27/02/2018 | UgC/2018/001774/In/RRRRRRR   | CYPERLACER 5EC    | Cypermethrin 50g/l                     | ISAGRO ASIA, INDIA                            |
| 27/02/2018 | UgC/2018/001773/Fu/RRRRRRR   | EMTHANE M45       | Mancozeb 800g/kg                       | COROMANDEL INDIA                              |
| 27/02/2018 | UgC/2018/001772/Fu/RRRRRRRRR | MANCOFIL 80WP     | Mancozeb 800g/kg                       | MS INDOFIL INDUSTRIES LTD, INDIA              |
| 12/02/2018 | UgC/2018/001771/In/R         | LARVET 44EC       | Profenofos 400g/l +                    | MS FORWARD CROP                               |

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|            |                         |                           |                                                       |                                                     |
|------------|-------------------------|---------------------------|-------------------------------------------------------|-----------------------------------------------------|
|            |                         |                           | Cypermethrin 40g/l                                    | PROTECTION PRIVATE LTD, INDIA                       |
| 07/02/2018 | UgC/2018/001770/Fu/R    | BUZZ 250EC                | Tebuconazole 250g/l                                   | M/S SULPHUR MILLS LTD, INDIA                        |
| 07/02/2018 | UgC/2018/001769/In/R    | SPIKE 250WG               | Thiamethoxam 250g/kg                                  | M/S SULPHUR MILLS LTD, INDIA                        |
| 07/02/2018 | UgC/2018/001768/In/R    | PRONTO 70WDG              | Imidacloprid 700g/kg                                  | M/S SULPHUR MILLS LTD, INDIA                        |
| 07/02/2018 | UgC/2018/001767/Fu/R    | METALMAN 72 WG            | Metalaxyl 8g/kg + Mancozeb 640g/kg                    | M/S SULPHUR MILLS LTD, INDIA                        |
| 07/02/2018 | UgC/2018/001766/In/R    | TWINS 60WG                | Lambda cyhalothrin 15g/kg + Imidacloprid 450g/kg      | M/S SULPHUR MILLS LTD, INDIA                        |
| 31/01/2018 | UgC/2018/001765/Fe/R    | COMBI FA                  | EDTA (Iron 4% + Mn 3% + Zn 4% + WS B 0.5% + Mo 0.05%) | SENFA TARIMSAL URUNLER LTD TURKEY- 0772818397       |
| 24/01/2018 | UgC/2018/001764/He/RRR  | ASCOMINE 72SL             | 2,4-D Amine 720g/l                                    | HANGZHOU YILONG CHEMICAL INDUSTRIES CHINA           |
| 24/01/2018 | UgC/2018/001763/In/RR   | SICOTHOATE 40EC           | Dimethoate 400g/l                                     | SINOCHEM SHANGAI Co LTD CHINA 0774609299            |
| 19/01/2018 | UgC/2018/001762/In/RRRR | HANGTHOATE 40EC           | Dimethoate 400g/l                                     | HANGZHOU AGROCHEMICAL INDUSTRIES, CHINA 0757-771550 |
| 19/01/2018 | UgC/2018/001761/In/RRRR | DUDU ALL 45EC             | Cypermethrin 100g/l + Chlorpyrifos 350g/l             | HANGZHOU AGROCHEMICAL INDUSTRIES, CHINA 0757-771550 |
| 19/01/2018 | UgC/2018/001760/He/RRRR | HURROW 80SC               | Diuron 800g/l                                         | HANGZHOU AGROCHEMICAL INDUSTRIES, CHINA 0757-771550 |
| 19/01/2018 | UgC/2018/001759/He/RRRR | HASUNIL 60EC              | Thiobencarb 400g/l + Propanil 200g/l                  | HANGZHOU AGROCHEMICAL INDUSTRIES, CHINA 0757-771550 |
| 19/01/2018 | UgC/2018/001758/He/RRRR | HANGZHOU 2,4-D AMINE 72SL | 2,4-D Amine 720g/l                                    | HANGZHOU AGROCHEMICAL INDUSTRIES, CHINA 0757-771550 |
| 19/01/2018 | UgC/2018/001757/He/RR   | OXYFEN 24EC               | Oxflufen 240g/l                                       | HANGZHOU AGROCHEMICAL INDUSTRIES, CHINA 0757-771550 |

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Attachment Active List of Registered Pesticides in Uganda

|            |                            |                             |                                                |                                                     |
|------------|----------------------------|-----------------------------|------------------------------------------------|-----------------------------------------------------|
| 19/01/2018 | UgC/2018/001756/He/RR      | BEANSCLEAN SUPER 15.5EC     | Bentazone 155g/l                               | HANGZHOU AGROCHEMICAL INDUSTRIES, CHINA 0757-771550 |
| 18/01/2018 | UgC/2018/001755/He/R       | TRAST 20SL                  | Glufosinate Ammonium 200g/l                    | ZAGRO SINGAPORE PTE LTD                             |
| 18/01/2018 | UgC/2018/001754/He/R       | ZAZONE 48SL                 | Bentazone 480g/l                               | ZAGRO SINGAPORE PTE LTD                             |
| 18/01/2018 | UgC/2018/001753/He/R       | ZAMASIN 10SL                | Imazethapyr 100g/l                             | ZAGRO SINGAPORE PTE LTD                             |
| 18/01/2018 | UgC/2018/001752/He/R       | ZADIM 24SC                  | Clethodim 240g/l                               | ZAGRO SINGAPORE PTE LTD                             |
| 18/01/2018 | UgC/2018/001751/He/R       | CHOICE 2,4-D AMINE 720SL    | 2,4-D Amine 720g/l                             | SHENZHEN KING QUENSON INDUSTRY Co LTD               |
| 17/01/2018 | UgC/2018/001750/Fu/RRRRRRR | UTHANE 80WP                 | Mancozeb 800g/kg                               | UPL LIMITED, INDIA                                  |
| 15/01/2018 | UgC/2018/001749/He/RRRR    | WEEDMASTER 50SL             | Glyphosate 500g/lP                             | KING TECH CORP CHINA                                |
| 15/01/2018 | UgC/2018/001748/He/RRRR    | BUTANIL 70EC                | Propanil 350g/l + Butachlor 350g/l             | KING TECH CORP CHINA                                |
| 15/01/2018 | UgC/2018/001747/Fu/RRR     | INDOFIL 80WP                | Mancozeb 800g/kg                               | INDOFIL INDUSTRY LTD, INDIA                         |
| 15/01/2018 | UgC/2018/001746/In/RRRR    | DUDU CYPHER 5EC             | Cypermethrin 50g/l                             | M/S MEGHMAN ORGANICS, INDIA                         |
| 12/01/2018 | UgC/2018/001745/In/R       | BASH 247 SC                 | Lambdacyhalothrin 106g/l + Thiamethoxam 141g/l | MS FORWARD SHANGHAI LTD, CHINA                      |
| 12/01/2018 | UgC/2018/001744/In/R       | EXTREME 44EC                | Profenofos 400g/l + Cypermethrin 40g/l         | MS FORWARD SHANGHAI LTD, CHINA                      |
| 11/01/2018 | UgC/2018/001743/He/R       | OXYGOLD 24EC                | Oxyfloufen 240g/l                              | M/S OSHO CHEMICAL INDUSTRIES LTD, NAIROBI KENYA     |
| 11/01/2018 | UgC/2018/001742/In/R       | PEARL 500SC                 | Carbendazim 500g/l                             | M/S OSHO CHEMICAL INDUSTRIES LTD, NAIROBI KENYA     |
| 11/01/2018 | UgC/2018/001741/Fu/R       | CONTROL 70WDG               | Thiophanate-methyl 700g/kg                     | M/S OSHO CHEMICAL INDUSTRIES LTD, NAIROBI KENYA     |
| 11/01/2018 | UgC/2018/001740/In/R       | MIDA 200SL                  | Imidacloprid 200g/l                            | M/S OSHO CHEMICAL INDUSTRIES LTD, NAIROBI KENYA     |
| 11/01/2018 | UgC/2018/001739/In/R       | SKANA SUPER GRAIN DUST 2.3% | Malathion 20g/kg + Permethrin 3g/kg            | M/S OSHO CHEMICAL INDUSTRIES LTD, NAIROBI           |

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|            |                        |                         |                                                                                                              |                                                          |
|------------|------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| 11/01/2018 | UgC/2018/001738/In/R   | UMEME TOP 5EC           | Lambdacyhalothrin 50g/l                                                                                      | KENYA<br>M/S OSHO CHEMICAL INDUSTRIES LTD, NAIROBI KENYA |
| 11/01/2018 | UgC/2018/001737/Fe/R   | AGROFEED                | NPK 12:10:8 + TE                                                                                             | M/S OSHO CHEMICAL INDUSTRIES LTD, NAIROBI KENYA          |
| 11/01/2018 | UgC/2018/001736/Fe/R   | EASYGRO CALCIUM         | NPK14: 0:2 + TE                                                                                              | M/S OSHO CHEMICAL INDUSTRIES LTD, NAIROBI KENYA          |
| 11/01/2018 | UgC/2018/001735/Fe/R   | EASYGRO FLOWER & FRUITS | NPK 14:11:33 + TE                                                                                            | M/S OSHO CHEMICAL INDUSTRIES LTD, NAIROBI KENYA          |
| 11/01/2018 | UgC/2018/001734/Fe/R   | EASYGRO VEGETABLE       | NPK 27:10:16 + TE                                                                                            | M/S OSHO CHEMICAL INDUSTRIES LTD, NAIROBI KENYA          |
| 11/01/2018 | UgC/2018/001733/Fe/R   | EASYGRO STARTER         | NPK18:20: 21 + TE                                                                                            | M/S OSHO CHEMICAL INDUSTRIES LTD, NAIROBI KENYA          |
| 11/01/2018 | UgC/2018/001732/Fe/R   | POTPHOS                 | NPK 0:5:30 + TE                                                                                              | M/S OSHO CHEMICAL INDUSTRIES LTD, NAIROBI KENYA          |
| 08/01/2018 | UgC/2018/001731/Fe/R   | COMPOST PRODUCT AGROW   | C 9% + N 0.9% + P 0.3% + K 1.3% + Ca 1.1% + Mg 0.2% + TE (Cu 8.6ppm + Fe 51.2ppm + Zn 25.8ppm + Mn 15.8ppm ) | M/S AFRICAN POWER INITIATIVE                             |
| 08/01/2018 | UgC/2018/001730/He/R   | THRASH 56EC             | 2,4-D Amine 200g/l + Propanil 360g/l                                                                         | M/S BHARAT INSECTICIDES LTD                              |
| 08/01/2018 | UgC/2018/001729/Fe/R   | MERLO Q                 | Organic matter 40% + Nitrogen 4% + Organic P18%                                                              | M/S SENFA TARIMSAL URUNLER LTD, TURKEY                   |
| 08/01/2018 | UgC/2018/001728/He/R   | MAIZE PLUS 40 OD        | Nicosulfuron400g/l                                                                                           | M/S WEMAX AGRO LTD                                       |
| 05/01/2018 | UgC/2018/001727/In/R   | SELECT PLUS 315EC       | Lambdacyhalothrin 15g/l + Profenofos 300g/l                                                                  | ASIATIC AGRICULTURALINDUSTRIES PTE, LTD SINGAPORE        |
| 22/12/2017 | UgC/2017/001726/He/RRR | WEED END 41SL           | Glyphosate 410g/l                                                                                            | CROP STAR CHEMICALS INDUSTRY                             |

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## Attachment Active List of Registered Pesticides in Uganda

|            |                         |                          |                                             |                                                    |
|------------|-------------------------|--------------------------|---------------------------------------------|----------------------------------------------------|
| 12/12/2017 | UgC/2017/001725/AD/RR   | SUPER GRO                | Wetting agent & Adjuvant                    | NEOLIFE INTERNATIONAL (PTY) LTD                    |
| 15/11/2017 | UgC/2017/001724/He/R    | VIRON 80WDG              | Diuron 800g/kg                              | ASIATIC AGRICULTURAL INDUSTRIES, PTE LTD-SINGAPORE |
| 15/11/2017 | UgC/2017/001723/Fu/R    | NUTHANE 80WP             | Mancozeb 800g/kg                            | COROMANDEL INTERNATIONAL LTD, INDIA                |
| 15/11/2017 | UgC/2017/001722/Fu/R    | GLORY 75WG               | Mancozeb 700g/kg + Azoxystrobin 50g/kg      | UNITED PHOSPHORUS LTD, INDIA                       |
| 15/11/2017 | UgC/2017/001721/Fu/R    | ELIXIR 75WG              | Mancozeb 625g/kg + Chlorothalonil 125g/kg   | UNITED PHOSPHORUS LTD, INDIA                       |
| 15/11/2017 | UgC/2017/001720/In/R    | BANTER 50WG              | Bifenazate 500g/kg                          | UNITED PHOSPHORUS LTD, INDIA                       |
| 24/10/2017 | UgC/2017/001719/In/R    | ACTELLIC GOLD DUST 1.96D | Pyrimiphos-methyl 1.6% + Thiamethoxam 0.36% | SYNGENTA AGRO AG, SWITZERLAND                      |
| 24/10/2017 | UgC/2017/001718/In/R    | SOLVIGO 108SC            | Abamectin + Thiamethoxam                    | SYNGENTA AGRO AG, SWITZERLAND                      |
| 18/10/2017 | UgC/2017/001717/Fu/R    | MITAZEB 80WP             | Mancozeb 800g/kg                            | SHANGHAI E-TONG CHEMICAL Co. LTD, CHINA            |
| 18/10/2017 | UgC/2017/001716/In/R    | ALBAZ 10EC               | Alpha cypermethrin 100g/l                   | CMI LTD, ENGLAND                                   |
| 18/10/2017 | UgC/2017/001715/He/R    | HIGH STOP 48SL           | Glyphosate isopropyl ammonium 480g/l        | ANHUI HUAXING CHEMICAL INDUSTRY Co. LTD, CHINA     |
| 18/10/2017 | UgC/2017/001714/He/RRRR | BUTANIL 70SL             | Propanil 350g/l + Butachlor 350g/l          | KING TECH CORPORATION, CHINA                       |
| 18/10/2017 | UgC/2017/001713/In/RRRR | DUDU CYPER 5EC           | Cypermethrin 50g/l                          | KING TECH CORPORATION, CHINA                       |
| 18/10/2017 | UgC/2017/001712/He/RRRR | WEEEDMASTER 50SL         | Glyphosate 500g/l                           | KING TECH CORPORATION, CHINA                       |
| 18/10/2017 | UgC/2017/001711/Fu/RRR  | INDOFIL M45              | Mancozeb 800g/kg                            | INDOFIL CHEMICAL Co. INDIA                         |
| 06/10/2017 | UgC/2017/001710/Fu/RRR  | UNILAX 72WP              | Metalaxyl 80g/kg + Mancozeb 640g/kg         | UNITED PHOSPHORUS, INDIA                           |
| 06/10/2017 | UgC/2017/001709/In/RRR  | UTHOATE 40EC             | Dimethoate 400g/l                           | UNITED PHOSPHORUS, INDIA                           |
| 06/10/2017 | UgC/2017/001708/In/RRR  | UCHLORVOS 100EC          | Dichlorvos 1000g/l                          | UNITED PHOSPHORUS, INDIA                           |
| 06/10/2017 | UgC/2017/001707/He/RRR  | UPHOSATE 48SL            | Glyphosate 480g/l                           | UNITED PHOSPHORUS, INDIA                           |
| 06/10/2017 | UgC/2017/001706/In/RRR  | UMETHRIN 5EC             | Cypermethrin 50g/l                          | UNITED PHOSPHORUS, INDIA                           |

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|            |                         |                          |                                                                           |                                                                            |
|------------|-------------------------|--------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------|
| 04/10/2017 | UgC/2017/001705/He/RR   | BORAL 480SC              | Sulfentrazone 480g/l                                                      | MS FMC CORPORATION USA                                                     |
| 04/10/2017 | UgC/2017/001704/In/RRRR | PYGAR 35EC               | Pyrethrin 10g/l + Garlic extracts 340g/l                                  | JUANCO SPS LTD, NAIROBI KENYA                                              |
| 04/10/2017 | UgC/2017/001703/In/RRRR | MARSHAL 25EC             | Carbosulfan 250g/l                                                        | JUANCO SPS LTD, NAIROBI KENYA                                              |
| 04/10/2017 | UgC/2017/001702/In/RRRR | DRAGNET FT               | Permethrin 380g/l                                                         | JUANCO SPS LTD, NAIROBI KENYA                                              |
| 2/10/2017  | UgC/2017/001701/He/R    | WEED ROUND TURBO 75.7 SG | Glyphosate ammonium salt 757g/l                                           | AGRICORE CHEMICAL INDUSTRY Co. LTD                                         |
| 2/10/2017  | UgC/2017/001700/In/R    | KUU-ACELAMECTIN 4.8EC    | Abamectin 18g/l + Acetamiprid 30g/l                                       | AGRICORE CHEMICAL INDUSTRY Co.LTD                                          |
| 21/09/2017 | UgC/2017/001699/He/R    | TILLER GOLD 164 0D       | Ethoxy-sulfuron 20g/l + Fenoxaprop-p-ethyl 69g/l + Isoxadifen-ethyl 75g/l | BAYER EAST AFRICA                                                          |
| 21/09/2017 | UgC/2017/001698/Fu/R    | NATIVO 300SC             | Tebuconazole 200g/l + Trifloxystrobin 100g/l                              | BAYER EAST AFRICA                                                          |
| 21/09/2017 | UgC/2017/001697/In/RR   | GARNET 20SC              | Fipronil 200g/l                                                           | VETERINARY AND AGRICULTURAL PRODUCT MFG Co. LTD P.O.BOX 17058 AMMAN-JORDAN |
| 21/09/2017 | UgC/2017/001696/In/RR   | CYPERMETHRIN 5EC         | Cypermethrin 50g/l                                                        | VETERINARY AND AGRICULTURAL PRODUCT MFG Co. LTD P.O.BOX 17058 AMMAN-JORDAN |
| 21/09/2017 | UgC/2017/001695/In/RR   | CHLOROFET 48EC           | Chlorpyrifos 480g/l                                                       | VETERINARY AND AGRICULTURAL PRODUCT MFG Co. LTD P.O.BOX 17058 AMMAN-JORDAN |
| 21/09/2017 | UgC/2017/001694/In/RR   | SPORNEB 70WP             | Propineb 700g/kg                                                          | VETERINARY AND AGRICULTURAL PRODUCT MFG Co. LTD P.O.BOX 17058 AMMAN-JORDAN |
| 21/09/2017 | UgC/2017/001693/In/RR   | VAPCOMORE 20SP           | Acetamiprid 200g/kg                                                       | VETERINARY AND AGRICULTURAL PRODUCT MFG Co. LTD P.O.BOX 17058 AMMAN-JORDAN |

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Attachment Active List of Registered Pesticides in Uganda

|            |                            |                      |                                                                          |                                                                               |
|------------|----------------------------|----------------------|--------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| 21/09/2017 | UgC/2017/001692/In/RR      | COMMANDO 20SL        | Imidacloprid 200g/l                                                      | VETERINARY AND AGRICULTURAL PRODUCT MFG Co. LTD<br>P.O.BOX 17058 AMMAN-JORDAN |
| 21/09/2017 | UgC/2017/001691/In/RR      | DE DE VAP 50EC       | Dichlorvos 500g/l                                                        | VETERINARY AND AGRICULTURAL PRODUCT MFG Co. LTD<br>P.O.BOX 17058 AMMAN-JORDAN |
| 21/09/2017 | UgC/2017/001690/In/RR      | DELTRIN 2.5EC        | Deltamethrin 25g/l                                                       | VETERINARY AND AGRICULTURAL PRODUCT MFG Co. LTD<br>P.O.BOX 17058 AMMAN-JORDAN |
| 19/09/2017 | UgC/2017/001689/In/RRRRR   | CONFIDOR 20SL        | Imidacloprid 200g/l                                                      | BAYER EAST AFRICA                                                             |
| 19/09/2017 | UgC/2017/001688/In/RRRRRRR | DECJS 2.5EC          | Deltamethrin 25g/l                                                       | BAYER EAST AFRICA                                                             |
| 19/09/2017 | UgC/2017/001687/He/RRRR    | RONSTAR 25EC         | Oxadiazon 250g/l                                                         | BAYER EAST AFRICA, KENYA                                                      |
| 19/09/2017 | UgC/2017/001686/He/RRR     | SENCOR PLUS 517.5 SC | Indaziflam 37.5g/l + Metribuzin 480g/l                                   | BAYER EAST AFRICA                                                             |
| 19/09/2017 | UgC/2017/001685/In/RRRRR   | GAUCHO 70WP          | Imidacloprid 700g/kg                                                     | BAYER EAST AFRICA, KENYA                                                      |
| 19/09/2017 | UgC/2017/001684/In/RRR     | THUNDER 145 OD       | Betacyfluthrin 45g + Imidacloprid 100g/l                                 | BAYER EAST AFRICA, KENYA                                                      |
| 19/09/2017 | UgC/2017/001683/Fu/RR      | AUXO 312EC           | Tembofrione 50g/l+ Bromoxymil Octanoate 262g/l                           | BAYER EAST AFRICA LTD                                                         |
| 19/09/2017 | UgC/2017/001682/Fu/RR      | CONSENTO 450SC       | Propamocarb hydrochloride 375g/l+ Fenamidone 75g/l                       | BAYER EAST AFRICA LTD                                                         |
| 18/09/2017 | UgC/2017/001681/He/R       | AGRIFORCE 100 SC     | Bispyribac sodium 100g/l                                                 | NANJING BOCHEN PESTICIDE CHEMICALS CO LTD, CHINA                              |
| 18/09/2017 | UgC/2017/001680/He/R       | FORCETOP 330 EC      | Pendimethalin 330g/l                                                     | SHANDONG BINNONG TECHNOLOGY CO LTD, CHINA                                     |
| 18/09/2017 | UgC/2017/001679/In/R       | PYRETHRUM EWC*       | Pyrethroids                                                              | AGROPY LTD RWANDA                                                             |
| 18/09/2017 | UgC/2017/001678/In/R       | PYRETHRUM 5EW        | Pyrethroids                                                              | AGROPY LTD RWANDA                                                             |
| 18/09/2017 | UgC/2017/001677/He/R       | STARFORCE 150EC      | Fluazi-fop-P-Butyl 150g/l EC                                             | SHANDONG BINNONG TECHNOLOGY Co. LTD SHANDONG CHINA                            |
| 18/09/2017 | UgC/2017/001676/Fe/RR      | G.GANIA 41.2SP       | Gibberellic acid 0.7% + Glycine 40% + Alpha naphthalene acetic acid 0.5% | VAPCO LTD                                                                     |

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|            |                        |                   |                                                                      |                                       |
|------------|------------------------|-------------------|----------------------------------------------------------------------|---------------------------------------|
| 18/09/2017 | UgC/2017/001675/Fu/RR  | MANCOTHANE 80WP   | Mancozeb 800g/kg                                                     | VAPCO LTD                             |
| 18/09/2017 | UgC/2017/001674/Fe/RR  | GIBBROVAP 2SL     | Gibberellic acid 20g/l                                               | VAPCO LTD                             |
| 18/09/2017 | UgC/2017/001673/In/RR  | FLORATON 1.7SL    | Alpha Naphthyl acetic acid 4.5g/l + Alpha Naphthyl acetamide 12.5g/l | VAPCO LTD                             |
| 18/09/2017 | UgC/2017/001672/He/RR  | GROUND-JP 48SL    | Glyphosate 480g/l                                                    | VAPCO LTD                             |
| 18/09/2017 | UgC/2017/001671/In/RR  | BLAST 44.1SL      | Bentazone 441g/l                                                     | VAPCO LTD                             |
| 18/09/2017 | UgC/2017/001670/In/RR  | CHLOROFET 5 DP    | Chlorpyrifos 50g/kg                                                  | VAPCO LTD                             |
| 18/09/2017 | UgC/2017/001669/Fu/R   | RAPID 50SC        | Carbendazim 500g/l                                                   | BHARAT INSECTICIDES LTD, INDIA        |
| 18/09/2017 | UgC/2017/001668/Fu/R   | PROTECT 72WP      | Cymoxanil 80g/kg + Mancozeb 640g/kg                                  | BHARAT INSECTICIDES LTD, INDIA        |
| 18/09/2017 | UgC/2017/001667/Fu/R   | TORNADO 75WP      | Carbendazim 120g/kg + Mancozeb 630g/kg                               | BHARAT INSECTICIDES LTD, INDIA        |
| 18/09/2017 | UgC/2017/001666/He/R   | CONQUER 75.5 SC   | Glyphosate Ammonium salt 755g/l                                      | SINOCHEM AGRO COMPANY                 |
| 18/09/2017 | UgC/2017/001665/He/R   | RICOPE 2.4-D 72SL | 2,4-D Amine 720g/l                                                   | MEGHMANI ORGANICS LTD                 |
| 18/09/2017 | UgC/2017/001664/He/R   | FALCON 720 SL     | 2,4-D Amine 720g/l                                                   | EXGENTA HONG KONG LIMITED, CHINA      |
| 13/09/2017 | UgC/2017/001663/In/R   | MISILE 44EC       | Profenofos 400g/l + Cypermethrin 40g/l                               | EXCEL CROP CARE LTD, MUMBAI INDIA     |
| 13/09/2017 | UgC/2017/001662/Fe/R   | AXEB 25:22:14     | NPK 25:22:14                                                         | M/S AXEB BIO TECH, SPAIN              |
| 11/09/2017 | UgC/2017/001661/In/RR  | IMITRUST 200 SC   | Imidacloprid 200g/l                                                  | KING QUESON INDUSTRY GROUP LTD, CHINA |
| 28/08/2017 | UgC/2017/001660/He/RRR | ROUND UP 360 SL   | Glyphosate 360g/l                                                    | MONSANTO EUROPE                       |
| 28/08/2017 | UgC/2017/001659/In/RR  | AMDOCS 3EC        | Abamectin 18g/l + Emamectin benzoate 12g/l                           | SINERIA INDUSTRIES LTD, CYPRUS        |
| 24/08/2017 | UgC/2017/001658/He/RRR | WEED KILL 360 SL  | Glyphosate 360g/l                                                    | SINOCHEM SHANGAI Co. LTD              |
| 22/08/2017 | UgC/2017/001657/In/RRR | KINYVERT          | Verticillium lecanii-V17 1X10 <sup>8</sup> CFU                       | KINYARA SUGAR LIMITED                 |
| 22/08/2017 | UgC/2017/001656/In/RRR | KINYBEAU          | Beauveria bassiana-Bb 5a 1X10 <sup>8</sup> CFU                       | KINYARA SUGAR LIMITED                 |
| 22/08/2017 | UgC/2017/001655/Fe/RRR | KINYPOTASH        | Frateuria aurentia Fa3 1X10 <sup>8</sup> CFU                         | KINYARA SUGAR LIMITED                 |
| 22/08/2017 | UgC/2017/001654/Fe/RRR | KINYACETO         | Glucanoacetobacteria                                                 | KINYARA SUGAR LIMITED                 |

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## Attachment Active List of Registered Pesticides in Uganda

|            |                            |                            |                                                              |                                                   |
|------------|----------------------------|----------------------------|--------------------------------------------------------------|---------------------------------------------------|
|            |                            |                            | diazotropicus 1X10 <sup>5</sup> CFU                          |                                                   |
| 22/08/2017 | UgC/2017/001653/Fe/RRR     | KINYBIUM                   | Rhizobia spp Ks 3 1X10 <sup>8</sup> CFU                      | KINYARA SUGAR LIMITED                             |
| 21/08/2017 | UgC/2017/001652/Fe/RRRRRRR | VEGIMAX                    |                                                              | BOON VANIT INTERNATIONAL LTD, BANGKOK THAILAND    |
| 01/08/2017 | UgC/2017/001651/In/R       | CYPERSHI 5EC               | Cypermethrin 50g/l                                           | ANHUI ZHONGSHAN INDUSTRY Co LTD, CHINA            |
| 28/07/2017 | UgC/2017/001650/He/RR      | HAOSATE 48SL               | Glyphosate 480g/l                                            | AGROHAO Co. LTD, CHINA                            |
| 14/07/2017 | UgC/2017/001649/He/RRRRR   | GLYCEL 48SL                | Glyphosate 480g/l                                            | EXCEL CROP CARE, INDIA                            |
| 11/07/2017 | UgC/2017/001648/He/R       | MOFARNO 160 EC             | Quisqualoprop-ethyl 35g/l + Fomesafen 125g/l                 | SINERIA HOLLAND BV                                |
| 11/07/2017 | UgC/2017/001647/He/R       | RUSELL 260 OD              | Mesotrione 40g/l + Nicosulfuron 20g/l + Terbutylazine 200g/l | SINERIA HOLLAND BV                                |
| 11/07/2017 | UgC/2017/001646/Fu/R       | OTHELLO TOP 325 SC         | AZoxystrobin 200g/l + Difenconazole 125g/l                   | SINERIA HOLLAND BV                                |
| 11/07/2017 | UgC/2017/001645/In/R       | ORIZON 120 SC              | Acetamidiprid 100g/l + Abamectin 20g/l                       | SINERIA HOLLAND BV                                |
| 10/07/2017 | UgC/2017/001644/In/RR      | TROBAN 48EC                | Chlorpyrifos 480g/l                                          | ISAGRO (ASIA) AGROCHEMICAL PVT LTD, INDIA         |
|            |                            |                            |                                                              |                                                   |
| 04/07/2017 | UgC/2017/001643/In/R       | ACTFORCE 48EC              | Chlorpyrifos 480g/l                                          | M/S GHARDA CHEMICALS LTD                          |
| 04/07/2017 | UgC/2017/001642/In/R       | NO WORRY 20EC              | Chlorpyrifos 200g/l                                          | M/S GHARDA CHEMICALS LTD                          |
| 04/07/2017 | UgC/2017/001641/In/R       | CATERPILLAR FORCE 5WG      | Emamectin benzoate 50g/Kg                                    | M/S JAT TRADING SHANGAI LTD                       |
| 04/07/2017 | UgC/2017/001640/Fu/R       | Z-FORCE 800WP              | Mancozeb 800g/Kg                                             | M/S JAT TRADING SHANGHAI LTD                      |
| 04/07/2017 | UgC/2017/001639/In/R       | IMIFORCE 200SL             | Imidacloprid 200g/l                                          | M/S JIANGSU KESHENG CROP SCIENCE & TECHNOLOGY LTD |
| 29/06/2017 | UgC/2017/001638/In/R       | ALUPHOS-Z-56               | Aluminium phosphide 560g/Kg                                  | M/S ZAGRO SINGAPORE                               |
| 29/06/2017 | UgC/2017/001637/In/R       | ZAPYRIFOS 48EC             | Chlorpyrifos 480g/l                                          | M/S ZAGRO SINGAPORE                               |
| 29/06/2017 | UgC/2017/001636/He/R       | ATRA 500SC                 | Atrazine 500g/l                                              | MS EXGENTA HONG KONG LTD                          |
| 29/06/2017 | UgC/2017/001635/Fu/R       | FALCOZEB 80WP              | Mancozeb 800g/Kg                                             | MS EXGENTA HONG KONG LTD                          |
| 29/06/2017 | UgC/2017/001634/In/R       | LAMBDEX 5EC                | Lambdacyhalothrin 50g/l                                      | MS EXGENTA HONG KONG LTD                          |
| 29/06/2017 | UgC/2017/001633/In/R       | CYPERMEX 10EC              | Alpha-cypermethrin 100g/l                                    | MS EXGENTA HONG KONG LTD                          |
| 27/06/2017 | UgC/2017/001632/He/R       | SUPERIOR 2,4-D AMINE 720SL | 2,4-D Amine 720g/l                                           | SINOCHEM, AGRO Co. LTD                            |
| 27/06/2017 | UgC/2017/001631/Fu/R       | MANCOZEB PRO 80WP          | Mancozeb 800g/Kg                                             | SINOCHEM, AGRO Co. LTD                            |
| 27/06/2017 | UgC/2017/001630/In/R       | CLOPSTAR 20 SL             | Imidacloprid 200g/l                                          | SINOCHEM, AGRO Co. LTD                            |

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|            |                          |                      |                                             |                                             |
|------------|--------------------------|----------------------|---------------------------------------------|---------------------------------------------|
| 27/06/2017 | UgC/2017/001629/In/RR    | GOLIATH 0.05% GEL    | Fipronil 50g/l                              | BASF SE, GERMANY                            |
| 27/06/2017 | UgC/2017/001628/In/RR    | FENDONA 60SC         | Alpha-Cypermethrin 60g/l                    | BASF SE, GERMANY                            |
| 27/06/2017 | UgC/2017/001627/Fu/RR    | ACROBAT 69WG         | Dimethomorph 90g/Kg + Mancozeb 600/Kg       | BASF SE, GERMANY                            |
| 27/06/2017 | UgC/2017/001626/Fu/RR    | DELAN 500 SC         | Dithianon 500g/l                            | BASF SE, GERMANY                            |
| 27/06/2017 | UgC/2017/001625/He/R     | GLYPHOSTAR 75.7WG    | Glyphosate 75.7g/Kg                         | ANHUI ZHONGSHAN CHEMICAL Co. LTD, CHINA     |
| 27/06/2017 | UgC/2017/001624/He/R     | AMINEX 2,4-D 72SL    | 2,4-D Amine salt 720g/l                     | ANHUI ZHONGSHAN CHEMICAL Co. LTD, CHINA     |
| 27/06/2017 | UgC/2017/001623/Fu/R     | MECCOZSHI 80WP       | Mancozeb 800g/kg                            | ANHUI ZHONGSHAN CHEMICAL Co. LTD, CHINA     |
| 27/06/2017 | UgC/2017/001622/In/R     | CHORPY 48EC          | Chlorpyrifos 480g/l                         | ANHUI ZHONGSHAN CHEMICAL Co. LTD, CHINA     |
| 26/06/2017 | UgC/2017/001621/He/RR    | GREEN 2,4-D 86SL     | 2,4-D Amine 860g/l                          | CHANGZHOU WINTAFONE CHEMICAL Co. LTD, CHINA |
| 26/06/2017 | UgC/2017/001620/He/RR    | GREEN MASTER 48SL    | Glyphosate 480g/l                           | ZHEJIANG XINAN CHEMICAL GROUP LTD, CHINA    |
| 19/06/2017 | UgC/2017/001619/In/RRR   | NIMBECIDINE 0.03EC   | Azadirachtin 30g/l                          | T.STONES & COMPANY LTD                      |
| 19/06/2017 | UgC/2017/001618/Fu/RR    | SICOZEB 80WP         | Mancozeb 800g/kg                            | SINOCHEM SHANGHAI Co LTD, CHINA             |
| 19/06/2017 | UgC/2017/001617/Fu/RR    | WINNER 72WP          | Metalaxyl 80g/kg + Mancozeb 640g/kg         | SINOCHEM SHANGHAI Co LTD, CHINA             |
| 19/06/2017 | UgC/2017/001616/In/RRRR  | MAGIC 50EC           | Malathion 500g/kg                           | BHARAT INSECTICIDE LTD, INDIA               |
| 19/06/2017 | UgC/2017/001615/Fu/RRRR  | EUREKA 72WP          | Metalaxyl 80g/kg + Mancozeb 640g/kg         | INVECTRA AGRO LTD, CYPRUS                   |
| 19/06/2017 | UgC/2017/001614/In/RRRRR | ASCORIS 48EC         | Chlorpyrifos 480g/l                         | BHAGIRADHA CHEMICAL INDUSTRY LTD, CHINA     |
| 19/06/2017 | UgC/2017/001613/In/RRRR  | AGRITHOATE 40EC      | Dimethoate 400g/l                           | WILLO WOOD LIMITED, HONGKONG                |
| 19/06/2017 | UgC/2017/001612/He/RRRRR | WILLOSATE 36SL       | Glyphosate 360g/l                           | WILLO WOOD LIMITED, HONGKONG                |
| 19/06/2017 | UgC/2017/001611/In/RRRR  | AGRILLIC SUPER 1.9DP | Pirimiphos methyl 16g/kg + Permethrin 3g/kg | WILLO WOOD LIMITED, HONGKONG                |
| 19/06/2017 | UgC/2017/001610/Fu/RRRRR | ASCOZEB 80WP         | Mancozeb 800g/kg                            | WILLO WOOD LIMITED,                         |

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Attachment Active List of Registered Pesticides in Uganda

|            |                           |                        |                                                |                                                      |
|------------|---------------------------|------------------------|------------------------------------------------|------------------------------------------------------|
|            |                           |                        |                                                | HONGKONG                                             |
| 14/06/2017 | UgC/2017/001609/He/RRRRRR | KALACH 360SL           | Glyphosate 360g/l                              | CALLIOPE GROUP ARYSTA LIFE SC. FRANCE                |
| 30/06/2017 | UgC/2017/001608/In/RR     | DDV HAO 100EC          | Dichlorvos 1000g/l                             | AGROHAO COMPANY LTD, CHINA                           |
| 30/05/2017 | UgC/2017/001607/In/RR     | HAOPYRIFOS 48EC        | Chlorpyrifos 480g/l                            | AGROHAO COMPANY LTD, CHINA                           |
| 30/05/2017 | UgC/2017/001606/In/RR     | HAOTHOATE 40EC         | Dimethoate 400g/l                              | AGROHAO COMPANY LTD, CHINA                           |
| 30/05/2017 | UgC/2017/001605/He/RR     | HAOTACHLOR 95EC        | Butachlor 60% + Propanil 35%                   | AGROHAO COMPANY LTD, CHINA                           |
| 30/05/2017 | UgC/2017/001604/He/RR     | HAO 2,4-D 72SL         | 2,4-D Amine Salt 720g/l                        | AGROHAO COMPANY LTD, CHINA                           |
| 30/05/2017 | UgC/2017/001603/In/RRRR   | OXYMATRINE 2.4SL       | Prosular oxymatrine 24g/l                      | FLUENCE MIDDLE E.A LTD, CYPRUS                       |
| 29/05/2017 | UgC/2017/001602/He/RRRRR  | PIN-UP 48SL            | Glyphosate 410g/l                              | AGSIN SINGAPORE PTE LTD                              |
| 24/05/2017 | UgC/2017/001601/He/R      | AQUARICE 60EC          | Propanil 200g/l + Thiobencarb 400g/l           | M/S HAJLIR PESTICIDE CHEMICALS Co. LTD CHINA         |
| 08/05/2017 | UgC/2017/001600/Fu/RRRR   | VICTORY 72WP           | Mancozeb 640g/kg + Metalaxyl 80g/kg            | INVECTRA AGRO CYPRUS                                 |
| 08/05/2017 | UgC/2017/001599/He/R      | AMINOFORCE 720 SL      | 2,4-D Amine salt 720g/l                        | JIANGSU HUIFENG AGROCHEMICALS                        |
| 08/05/2017 | UgC/2017/001598/He/R      | MAIZE SUCCEED 26% OD   | Mesotrione 4% + Nicosulfuron 2% + Atrazine 20% | SHANDONG BINNONG TECHNOLOGY LTD                      |
| 05/05/2017 | UgC/2017/001597/Fu/R      | DACONIL                | Chlorothalonil 720g/l                          | SYNGENTA AGRO AG, SWITZERLAND                        |
| 05/05/2017 | UgC/2017/001596/In/R      | PROCLAIM FIT UV 045 WG | Emamectin benzoate 50g/kg + Lufenuron 400g/kg  | SYNGENTA AGRO AG, SWITZERLAND                        |
| 21/04/2017 | UgC/2017/001595/He/RR     | WEEDEX                 | Glyphosate-Isopropyl amine salt 480g/l         | SHENZHEN KING QUESON CHEMICAL INDUSTRY Co. LTD CHINA |
| 19/04/2017 | UgC/2017/001594/He/R      | AGROSATE 75.5SG        | Glyphosate Ammonium salt 755g/kg               | ASIATIC AGRICULTURAL INDUSTRIES PTE LTD              |
| 19/04/2017 | UgC/2017/001593/In/R      | BRAVO 20SL             | Imidacloprid 200g/l                            | ZAGRO SINGAPORE PTE LTD                              |
| 19/04/2017 | UgC/2017/001592/In/R      | BOOM SUPER 100EC       | Dichlorvos 1000g/l                             | ZAGRO SINGAPORE PTE LTD                              |

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|            |                               |                    |                                           |                                                                         |
|------------|-------------------------------|--------------------|-------------------------------------------|-------------------------------------------------------------------------|
| 12/04/2017 | UgC/2017/001591/In/RRRRRRRRRR | DURSBAN 4E         | Chlorpyrifos Ethyl 480g/l                 | DOW AGROSCIENCE, FRANCE                                                 |
| 12/04/2017 | UgC/2017/001590/He/R          | CLEANFORCE 500SC   | Ametryn 500g/l                            | SHANDONG BINNONG TECHNOLOGY Co. LTD, CHINA                              |
| 07/04/2017 | UgC/2017/001589/Fe/R          | MAXIFORCE          | NPK 20-20-20 + TE                         | ASTRA INDUSTRIAL COMPLEX Co. LTD                                        |
| 07/04/2017 | UgC/2017/001588/Ro/R          | PUSH OUT 80WWW     | Zinc phosphide 80% W/W                    | SANDHYA ORGANIC CHEMICALS Pvt. LTD                                      |
| 07/04/2017 | UgC/2017/001587/In/R          | DIMEFORCE 40EC     | Dimethoate 400g/l                         | JIANGSU TENGLONG BIOLOGICAL AND MEDICAL Co. LTD                         |
| 07/04/2017 | UgC/2017/001586/In/R          | DDFORCE 1000EC     | Dichlorvos 1000g/l                        | HUBEI SANONDA Co. LTD 93, EAST BEIJING RD, JINGZHOU HUBEI 434001, CHINA |
| 07/04/2017 | UgC/2017/001585/He/RRRRRRRRR  | MAMBA 36SL         | Glyphosate 360g/l                         | DOW AGROSCIENCE, FRANCE                                                 |
| 07/04/2017 | UgC/2017/001584/In/RRR        | LAVA 100EC         | Dichlorvos 100%                           | SABERO ORGANICS LTD, GUJARAT, INDIA                                     |
| 07/04/2017 | UgC/2017/001583/In/RRRRR      | RALOTHRIN          | Cypermethrin 50g/l                        | RALLIS LTD, INDIA                                                       |
| 05/04/2017 | UgC/2017/001582/Fu/R          | SPEAR 50WP         | Copper oxychloride 500g/kg                | M/S SHENSHEN KING QUENSON INDUSTRY, CO LTD                              |
| 05/04/2017 | UgC/2017/001581/He/R          | GLYPHOTEX 480SL    | Glyphosate 480g/l                         | M/S ANHUI ZHONGSHAU CHEMICALS Co. LTD                                   |
| 22/03/2017 | UgC/2017/001580/In/RRR        | HIPOWER 5EC        | Cypermethrin 50g/l                        | SULPHUR MILLS LTD, INDIA                                                |
| 22/03/2017 | UgC/2017/001579/In/RRR        | SULMATHION 50EC    | Malathion 500g/kg                         | SULPHUR MILLS LTD, INDIA                                                |
| 22/03/2017 | UgC/2017/001578/Fu/RRR        | MANCO 80WP         | Mancozeb 800g/kg                          | SULPHUR MILLS LTD, INDIA                                                |
| 17/03/2017 | UgC/2017/001577/Fg/RRRR       | CELPHOS 56         | Aluminium phosphide 560g/kg               | EXCEL CROP CARE LTD, INDIA                                              |
| 16/03/2017 | UgC/2017/001576/Fu/R          | AMISTAR XTRA 280SC | Cyproconazole 80g/l + Azoxystrobin 200g/l | M/S SYNGENTA AGRO AG, SWITZERLAND                                       |
| 16/03/2017 | UgC/2017/001575/In/RR         | FASTAC 100EC       | Alpha cypermethrin 100g/l                 | BASF SE                                                                 |
| 13/03/2017 | UgC/2017/001574/Fe/R          | ULTRASAL           | NPK 8-0-0 + 14.5 CaO                      | SENFA TARIMSAL URUNLER LTD, TURKEY                                      |
| 13/03/2017 | UgC/2017/001573/Fe/R          | FLORA FA           | 18-18-18 + TE                             | SENFA TARIMSAL URUNLER LTD, TURKEY                                      |
| 13/03/2017 | UgC/2017/001572/Fe/R          | FLORA FA           | NPK 15-5-30 + TE                          | SENFA TARIMSAL URUNLER LTD, TURKEY                                      |
| 13/03/2017 | UgC/2017/001571/Fe/R          | FLORA FA           | NPK 15-30-15 + TE                         | SENFA TARIMSAL URUNLER LTD, TURKEY                                      |

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## Attachment Active List of Registered Pesticides in Uganda

|            |                            |                        |                                              |                                                                 |
|------------|----------------------------|------------------------|----------------------------------------------|-----------------------------------------------------------------|
| 07/03/2017 | UgC/2017/001570/In/R       | KU-KILL 48EC           | Chlorpyrifos 480g/l                          | AGRO CARE CHEMICAL INDUSTRY Co LTD, CHINA                       |
| 07/03/2017 | UgC/2017/001569/He/RR      | RICAL 345EC            | Propanil 230g/l + Thiobencarb 115g/l         | ARYSTA LIFE SCIENCE, KENYA                                      |
| 07/03/2017 | UgC/2017/001568/He/RR      | KALACH EXTRA 70SG      | Glyphosate 700g/kg                           | ARYSTA LIFE SCIENCE, KENYA                                      |
| 07/03/2017 | UgC/2017/001567/In/RR      | TITAN 25EC             | Acetamiprid 250g/l                           | ARYSTA LIFE SCIENCE, KENYA                                      |
| 07/03/2017 | UgC/2017/001566/In/RR      | MOSPILAN 200SP         | Acetamiprid 200g/l                           | ARYSTA LIFE SCIENCE, KENYA                                      |
| 07/03/2017 | UgC/2017/001565/Fu/RR      | BANKO 500SC            | Chlorothalonil 500g/l                        | ARYSTA LIFE SCIENCE, KENYA                                      |
| 07/03/2017 | UgC/2017/001563/He/RR      | TWIGA GLYPHOSATE 360SL | Glyphosate 360g/l                            | VOLCANO AGRO-SCIENCE (PTY) COMPANY LTD, SOUTH AFRICA            |
| 07/03/2017 | UgC/2017/001562/In/RRRR    | CYPERCAL P720          | Profenofos 600g/l + Cypermethrin 120g/l      | CALLIOPE GROUPE, ARYSTA LIFE SCIENCE                            |
| 07/03/2017 | UgC/2017/001561/He/RRRRRR  | SATUNIL 60EC           | Thiobencarb 40% + Propanil 20%               | TOMEN CORPORATION, JAPAN                                        |
| 06/03/2017 | UgC/2017/001560/In/R       | AFRI-CYPER 5EC         | Cypermethrin 50g/l                           | ANHUI RUIFENG AGROCHEMICALS Co LTD                              |
| 06/03/2017 | UgC/2017/001559/In/R       | KERLAN 25WG            | Thiamethoxam 250g/kg                         | HAMASHBIR, ISREAL                                               |
| 27/02/2017 | UgC/2017/001558/In/RRR     | HITCEL 44EC            | Profenofos 400g/l + Cypermethrin 40g/l       | EXCEL CROP CARE LTD, INDIA                                      |
| 27/02/2017 | UgC/2017/001557/In/RRR     | TWIGA LACE 100EC       | Lamdda cyhalothrin 60g/l + Acetamiprid 40g/l | VOLCANO AGRO-SCIENCE (PTY) COMPANY LTD, SOUTH AFRICA            |
| 27/02/2017 | UgC/2017/001556/He/RRR     | TWIGA 2,4-D AMINE      | 2,4-D Amine 720g/l                           | ATUL LTD, AGROCHEMICAL DIVISION, INDIA                          |
| 27/02/2017 | UgC/2017/001555/In/RRRRRRR | ACTELIC SUPER 1.9%     | Primiphos methyl 1.6% + Permethrin 0.3%      | SYNGENTA EAST AFRIA                                             |
| 27/02/2017 | UgC/2017/001554/In/RRRRR   | TWIGATHOATE 40EC       | Dimethoate 400g/l                            | THE NATIONAL Co FOR AGROCHEMICALS PRODUCTION, ALEXANDRIA, EGYPT |
| 27/02/2017 | UgC/2017/001553/He/RRRRR   | TWIGA GLYPHOSATE 36SL  | Glyphosate 360g/l                            | VOLCANO AGRO-SCIENCE (PTY) COMPANY LTD, SOUTH AFRICA            |
| 27/02/2017 | UgC/2017/001552/In/RRRRR   | TWIGA CYPER            | Cypermethrin 50g/l                           | AGROCHEM ALEXANDRIA, EGYPT                                      |
| 27/02/2017 | UgC/2017/001551/In/RRRRR   | TWIGA MALATHION 57EC   | Malathion 570g/l                             | AGROCHEM ALEXANDRIA, EGYPT                                      |

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|            |                         |                     |                                                                    |                                               |
|------------|-------------------------|---------------------|--------------------------------------------------------------------|-----------------------------------------------|
| 15/02/2017 | UgC/2017/001550/In/RRR  | TRICEL 48EC         | Chlorpyrifos 480g/l                                                | EXCEL CROP CARE, INDIA                        |
| 14/02/2017 | UgC/2017/001549/In/R    | DELTAMET 1%EC       | Deltamethrin 10g/l                                                 | ASCOT INTERNATIONAL STOCKPORT, UNITED KINGDOM |
| 09/02/2017 | UgC/2017/001548/He/RR   | WIPE OUT 36SL       | Glyphosate 360g/l                                                  | M/S ALMANDINE CORPORATION, SWITZERLAND        |
| 09/02/2017 | UgC/2017/001547/In/RR   | MOS-N-ROACH 100EC   | Alphacypermethrin 100g/l                                           | M/S FMC CORPORATION PHILADELPHIA USA          |
| 09/02/2017 | UgC/2017/001546/He/R    | EXCEL SPEED 71SG    | Ammonium Salt of Glyphosate 710g/kg                                | M/S EXCEL CROP CARE LIMITED, INDIA            |
| 09/02/2017 | UgC/2017/001545/Ro/R    | MESSE PHOS          | Zinc phosphide 80% W/W                                             | M/S EXCEL CROP CARE LIMITED, INDIA            |
| 09/02/2017 | UgC/2017/001544/In/R    | CELPHIDE 57%        | Aluminium phosphide 570g/kg                                        | M/S EXCEL CROP CARE LIMITED, INDIA            |
| 09/02/2017 | UgC/2017/001543/Fu/RR   | MANCOLAX 72WP       | Mancozeb 64% + Metalaxyl 8%                                        | M/S UNITED PHOSPHORUS MUMBAI, INDIA           |
| 09/02/2017 | UgC/2017/001542/Fe/RR   | FOSPHITE 53SL       | Monopotassium phosphate 34% + Dipotassium phosphate 19%            | M/S JH BIOTECH INCORPORATION USA              |
| 03/02/2017 | UgC/2017/001541/He/RRRR | LASSET GD           | Acetochlor 41% + Terbutylazine 19%                                 | MONSANTO EUROPE NV                            |
| 03/02/2017 | UgC/2017/001540/He/RRRR | ROUNDUP-TURBO 480SL | Glyphosate 480g/l                                                  | MONSANTO EUROPE NV                            |
| 02/02/2017 | UgC/2017/001539/In/RR   | BESTOX (DOMINEX)    | Alphacypermethrin 100g/l                                           | JUANCO SPS LTD NAIROBI, KENYA                 |
| 02/02/2017 | UgC/2017/001538/In/RR   | BRIGADE (TAL-STAR)  | Bifenthrin 2.5%                                                    | JUANCO SPS LTD NAIROBI, KENYA                 |
| 19/01/2017 | UgC/2017/001537/He/R    | AMEGA 50 SC         | Ametryn 500g/l                                                     | NINGBO MEGAGRO CHEMICALS Co. LTD              |
| 19/01/2017 | UgC/2017/001536/Fu/R    | MANCODEX SUPER 72WP | Mancozeb 640g/kg + Metalaxyl 80g/kg                                | NINGBO MEGAGRO CHEMICALS Co. LTD              |
| 16/01/2017 | UgC/2017/001535/Fe/RR   | KINYPHOS            | Bacillus megaterium var. phosphaticum PB (1x10 <sup>8</sup> ) ml/l | KINYARA SUGAR LIMITED                         |
| 16/01/2017 | UgC/2017/001534/Fe/RR   | KINYAZOTO           | Azotobacter chroococcum AC (1x10 <sup>8</sup> ) CFU/ml             | KINYARA SUGAR LIMITED                         |
| 16/01/2017 | UgC/2017/001533/Fe/RR   | KINYSPIRILLUM       | Azospirillum spp SP7 (1x10 <sup>8</sup> ) ml/l                     | KINYARA SUGAR LIMITED                         |

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|            |                           |                         |                                                                  |                                            |
|------------|---------------------------|-------------------------|------------------------------------------------------------------|--------------------------------------------|
| 16/01/2017 | UgC/2017/001532/In/RR     | KINYMET                 | <i>Metarrhizium anisopliae</i> (1x10 <sup>6</sup> ) CFU/ml       | KINYARA SUGAR LIMITED                      |
| 16/01/2017 | UgC/2017/001531/Fu/RR     | KINYDERMA               | <i>Trichoderma viride</i> Tv-6 (1x10 <sup>6</sup> ) CFU/ml       | KINYARA SUGAR LIMITED                      |
| 16/01/2017 | UgC/2017/001530/Ba/RR     | KINYMONAS               | <i>Pseudomonas fluorescens</i> PF-19 (1x10 <sup>6</sup> ) CFU/ml | KINYARA SUGAR LIMITED                      |
| 12/01/2017 | UgC/2017/001529/He/RRRRRR | KALACH 480SL            | Glyphosate 360g/l                                                | M/S ARYSTA LIFE SCIENCE LTD, CHINA         |
| 12/01/2017 | UgC/2017/001528/He/RRR    | WEED UP 48SL            | Glyphosate 480g/l                                                | WE-YOUNG INDUSTRIAL TRADING Co. LTD, CHINA |
| 12/01/2017 | UgC/2017/001527/He/RRR    | TOUCH UP 48SL           | Glyphosate 480g/l                                                | NINGBO FREE TRADE ZONE, CHINA              |
| 12/01/2017 | UgC/2017/001526/He/R      | KYEBE AMINE 720SL       | 2,4-D Amine 720g/l                                               | M/S IPROCHEM COMPANY LTD, CHINA            |
| 12/01/2017 | UgC/2017/001525/In/R      | SOCKET PLUS 85 EC       | Profenofos 40% + Cypermethrin 45%                                | M/S IPROCHEM COMPANY LTD, CHINA            |
| 10/01/2017 | UgC/2017/001524/He/R      | MAXIMUS 537.5SC         | Metalachor 375g/l + Terbutylazine 125g/l + Mesotrione 37.5g/l    | SINERIA INDUSTRIES LTD, CHINA              |
| 10/01/2017 | UgC/2017/001523/He/R      | DIZURON 450EC           | Pendimethalin 300g/l + Clomazone 150g/l                          | SINERIA INDUSTRIES LTD, CHINA              |
| 10/01/2017 | UgC/2017/001522/He/RRR    | AMETREX 500SL           | Ametryn 500g/l                                                   | HANGHAZOUS CHEMICAL IND LTD, CHINA         |
| 10/01/2017 | UgC/2017/001521/He/RRR    | WEED ALL 480SL          | Glyphosate 480g/l                                                | HANGHAZOUS CHEMICAL IND LTD, CHINA         |
| 10/01/2017 | UgC/2017/001520/He/R      | CLEAR 2,4-D 720SL       | 2,4-D Amine salt 720g/l                                          | M/S SUNFARM AGROCHEMICALS LTD, CHINA       |
| 03/01/2017 | Ugc/2016/001519/He/RR     | ROUND UP TURBO 450 SL   | Glyphosate 450g/l                                                | MONSANTO EUROPE NV                         |
| 23/12/2016 | Ugc/2016/001518/He/R      | BUTAFORCE 50 EC         | Butachlor 500g/l                                                 | SHANDONG BINNONG TECHNOLOGY CO. LTD, CHINA |
| 22/12/2016 | Ugc/2016/001517/In/R      | PROFEX SUPER 44 EC      | Cypermethrin 4% + Profenofos 40%                                 | M/S EXGENTA HONG KONG LTD, CHINA           |
| 22/12/2016 | Ugc/2016/001516/In/R      | MECTIN 18 EC            | Abamectin 180g/l                                                 | M/S EXGENTA HONG KONG LTD, CHINA           |
| 16/12/2016 | Ugc/2016/001515/He/R      | PRIME 2,4-D AMINE 720SL | 2,4-D Amine 720g/l                                               | M/S YUSULL INDUSTRY Co, LTD,               |

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|            |                           |                               |                                                 |                                                 |
|------------|---------------------------|-------------------------------|-------------------------------------------------|-------------------------------------------------|
|            |                           |                               |                                                 | CHINA                                           |
| 14/12/2016 | Ugc/2016/001514/Fe/RR     | PHOSGARD PLUS                 | NPK + Mg + Bo + Zn + Fe+ Mo + Co                | M/S JUANCO SPS LTD, NAIROBI, KENYA              |
| 14/12/2016 | Ugc/2016/001513/Fe/RR     | SUGAR-MOVER                   | Bo 8% + 0.004% + Inert 91.986%                  | STOLLER ENTERPRISES, USA                        |
| 14/12/2016 | Ugc/2016/001512/Fe/RR     | SETT-ENHANCED                 | Ca 8% + Bo 1% + Inert 91%                       | STOLLER ENTERPRISES, USA                        |
| 14/12/2016 | Ugc/2016/001511/Fe/RR     | BIO-FORGE                     | (N 2% + K 3% + Inert 95%)                       | STOLLER ENTERPRISES, USA                        |
| 12/12/2016 | Ugc/2016/001510/In/RRRR   | FUMAPHOS                      | Aluminium phosphide 560g/kg                     | M/S NATIONAL FUMIGATIONS LTD, SOUTH AFRICA      |
| 07/11/2016 | Ugc/2016/001509/He/R      | WEEDTRYN 500SC                | Ametryn 500g/l                                  | AGROHAO COMPANY LTD, CHINA                      |
| 07/11/2016 | Ugc/2016/001508/He/R      | AGRO 2,4-D 720SL              | 2,4-D Amine 720g/l                              | AGROHAO COMPANY LTD, CHINA                      |
| 07/11/2016 | Ugc/2016/001507/He/R      | WEED BEST 48SL                | Glyphosate 480g/l                               | AGROHAO COMPANY LTD, CHINA                      |
| 27/10/2016 | Ugc/2016/001506/He/RRR    | GREEN FIRE 50SL               | Glyphosate 480g/l                               | LIMIN CHEMICALS LTD, JIANSU CHINA               |
| 27/10/2016 | Ugc/2016/001505/Fu/RRRRRR | GREENZEB 80WP                 | Mancozeb 800g/l                                 | LIMIN CHEMICALS LTD, JIANSU CHINA               |
| 26/10/2016 | Ugc/2016/001504/In/RR     | VAPO 85EC                     | Dichlorvos 850g/l                               | CHANGZHOU EASTCHEM INTERNATIONAL CO. LTD        |
| 26/10/2016 | Ugc/2016/001503/In/RR     | SUPERCYPER 5EC                | Cypermethrin 50g/l                              | CHANGZHOU EASTCHEM INTERNATIONAL CO. LTD        |
| 26/10/2016 | Ugc/2016/001502/In/RR     | SUPAETHOATE 40EC              | Dimethoate 400g/l                               | CHANGZHOU EASTCHEM INTERNATIONAL CO. LTD, CHINA |
| 24/10/2016 | Ugc/2016/001501/In/RRR    | SHUMBA SUPER 55EC             | Fenitrothion 50% + Deltamethrin 5%              | ECOMED MANUFACTURING LTD ZIMBABWE               |
| 24/10/2016 | Ugc/2016/001500/In/RRR    | SHUMBA SUPER GRAIN PROTECTANT | Fenitrothion 1.0% + Deltamethrin 0.13%          | ECOMED MANUFACTURING LTD ZIMBABWE               |
| 04/10/2016 | Ugc/2016/001499/Fe/RR     | MAGICGRO                      | NPK 11:8:6+ 0.2%                                | M/S JUANCO SPS LTD, NAIROBI KENYA               |
| 04/10/2016 | Ugc/2016/001498/Fe/RR     | T-FOLIAR SPS                  | NPK 20:5:5+ MgO+ 5S+TE                          | M/S JUANCO SPS LTD, NAIROBI KENYA               |
| 04/10/2016 | Ugc/2016/001497/Fe/RR     | SYNERGIZER                    | NPK 8:32:4+ Mg, Fe, Cu, Mn, Zn, B, Mo, Cu and S | M/S JUANCO SPS LTD, NAIROBI KENYA               |
| 21/09/2016 | Ugc/2016/001496/In/R      | TIHAN 175 OD                  | Flubendiamide 100g/l + Spirotetramat 75g/l      | BAYER CROP SCIENCE AG GERMANY                   |

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Attachment Active List of Registered Pesticides in Uganda

|            |                          |                      |                                                                              |                                        |
|------------|--------------------------|----------------------|------------------------------------------------------------------------------|----------------------------------------|
| 21/09/2016 | Ugc/2016/001495/Fu/R     | LUNA SENSATION 500SC | Fluopyram 250g/l + Trifloxystrobin 250g/l                                    | BAYER CROP SCIENCE AG GERMANY          |
| 21/09/2016 | Ugc/2016/001494/Fu/R     | ZANTARA 216EC        | Bixafen 50g/l + Tebuconazole 166g/l                                          | BAYER CROP SCIENCE AG GERMANY          |
| 21/09/2016 | Ugc/2016/001493/In/R     | OBERON SPEED 240SC   | Spiromesifen 228.6g/l + Abemectin 11.4g/l                                    | BAYER CROP SCIENCE AG GERMANY          |
| 21/09/2016 | Ugc/2016/001492/Fu/R     | INFINITO 687.5 SC    | Fluopicolide 62.5g/l + Propamocarb hydrochloride 625g/l                      | BAYER CROP SCIENCE AG GERMANY          |
| 21/09/2016 | Ugc/2016/001491/He/R     | HUSKIE 256EC         | Pyrasulfotole 36g/l + Bromoxynil 211g/l + Mefenpyr 9g/l                      | BAYER CROP SCIENCE AG GERMANY          |
| 21/09/2016 | Ugc/2016/001490/He/R     | SENCOR PLUS 517.5 SC | Indaziflam 37.5g/l + Metribuzin 480g/l                                       | BAYER CROP SCIENCE AG GERMANY          |
| 21/09/2016 | Ugc/2016/001489/He/R     | ADENGO 465SC         | Iso-xaflutole 22g/l + Thien-carbazone 90g/l + Safener (Cyprosulfamide) 50g/l | BAYER CROP SCIENCE AG GERMANY          |
| 21/09/2016 | Ugc/2016/001488/In/R     | VELUM 500 SC         | Fluopyram 500g/l                                                             | BAYER CROP SCIENCE AG GERMANY          |
| 21/09/2016 | Ugc/2016/001487/In/R     | K-OBIOL DP2          | Deltamethrin 2g/kg                                                           | BAYER CROP SCIENCE AG GERMANY          |
| 21/09/2016 | Ugc/2016/001486/Fu/RRR   | TATA MASTER 720WP    | Mancozeb 640g/kg + Mancozeb 80g/kg                                           | RALLIS INDIA                           |
| 21/09/2016 | Ugc/2016/001485/In/RRRRR | MALATAF 57EC         | Malathion 570g/l                                                             | RALLIS INDIA                           |
| 21/09/2016 | Ugc/2016/001484/In/RRRRR | TAFGOR 40EC          | Dimethoate 400g/l                                                            | RALLIS INDIA                           |
| 19/09/2016 | Ugc/2016/001481/He/RR    | NYO 2,4-D AMINE      | 24-D Amine 720g/l                                                            | CROPSTAR CHEMICAL INDUSTRY Co. CHINA   |
| 19/09/2016 | Ugc/2016/001480/In/R     | MERIFOS 480SL        | Chlorpyrifos 480g/l                                                          | NINGBO MEGAGRO CHEMICAL Co. LTD, CHINA |
| 19/09/2016 | Ugc/2016/001479/In/R     | ALPHAKILL 100EC      | Alpha-cypermethrin 100g/l                                                    | NINGBO MEGAGRO CHEMICAL Co. LTD, CHINA |
| 19/09/2016 | Ugc/2016/001478/In/R     | MACLOPRID 200SL      | Imidacloprid 200g/l                                                          | NINGBO MEGAGRO CHEMICAL Co. LTD, CHINA |
| 19/09/2016 | Ugc/2016/001477/In/R     | MAMBDA 50EC          | Lambda-cyhalothrin 500g/l                                                    | NINGBO MEGAGRO CHEMICAL Co. LTD, CHINA |
| 19/09/2016 | Ugc/2016/001476/In/R     | MAMECTIN 5%WG        | Emamectin benzoate 50g/kg                                                    | NINGBO MEGAGRO CHEMICAL Co. LTD, CHINA |

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|            |                            |                         |                                                 |                                                        |
|------------|----------------------------|-------------------------|-------------------------------------------------|--------------------------------------------------------|
| 14/09/2016 | Ugc/2016/001475/In/RR      | ULTRAPHOS 56            | Aluminium phosphide 560g/kg                     | UNITED PHOSPHORUS INDIA                                |
| 14/09/2016 | Ugc/2016/001474/Fu/RR      | UNIZEB 80WP             | Mancozeb 800g/kg                                | UNITED PHOSPHORUS INDIA                                |
| 08/09/2016 | Ugc/2016/001473/GP/R       | NUGRO(CHITOSAN)         | N.P.K 1:5:5 + Trace elements                    | M/S ENVIRO CLEAN ENERGY SDN BHD MALAYSIA               |
| 06/09/2016 | Ugc/2016/001472/In/RR      | ACTARA 25WG             | Thiamethoxam 250g/kg                            | SYNGENTA AGRO CROP                                     |
| 29/08/2016 | Ugc/2016/001471/He/R       | ASCOSATE 480SL          | Glyphosate 480g/l                               | SHANGHAI HUI SONG (H&S), AGRO-SOLUTION                 |
| 29/08/2016 | Ugc/2016/001470/He/R       | WEEDMASTER 75.7XL WG    | Glyphosate Ammonium salt 757g/kg                | SHANGHAI HUI SONG (H&S), AGRO-SOLUTION                 |
| 29/08/2016 | Ugc/2016/001469/In/R       | DUDU ACELEMECTIN 4.8EC  | Abamectin 18g/l + Acetamiprid 30g/l             | SHANGHAI HUI SONG (H&S), AGRO-SOLUTION                 |
| 29/08/2016 | Ugc/2016/001468/In/R       | STRIKER 247SC           | Lambda-cyhalothrin 106g/l + Thiomethoxam 141g/l | KING TECH CORPORATION SHENZHEN, CHINA                  |
| 29/08/2016 | Ugc/2016/001467/In/R       | SUPER MALATHION 57EC    | Malathion 570g/l                                | IPOCHEM CO. LTD, CHINA                                 |
| 25/08/2016 | Ugc/2016/001466/In/RR      | DICHLORBEX 100EC        | Dichlorvos 1000g/l                              | NANJING LIMIN Co. LTD                                  |
| 25/08/2016 | Ugc/2016/001465/In/RR      | CYMEBEX 5EC             | Cypermethrin 50g/l                              | NANJING LIMIN Co. LTD                                  |
| 25/08/2016 | Ugc/2016/001464/In/RR      | DIMETHOBEX 40EC         | Dimethoate 400g/l                               | NANJING LIMIN Co. LTD                                  |
| 25/08/2016 | Ugc/2016/001463/He/RR      | GLYPHOBEX 360SL         | Glyphosate 360g/l                               | NANJING LIMIN Co. LTD                                  |
| 25/08/2016 | Ugc/2016/001462/In/RR      | PYRIBEX 48EC            | Chlorpyrifos 480g/l                             | NANJING LIMIN Co. LTD                                  |
| 25/08/2016 | Ugc/2016/001461/Fu/RR      | MANCOBEX 80WP           | Mancozeb 800g/kg                                | NANJING LIMIN Co. LTD, CHINA                           |
| 24/08/2016 | Ugc/2016/001460/He/R       | WEED SOLUTION 11 74.7SG | Glyphosate Ammonium salt 747g/kg                | M/S SINOCHEM AGRO Co. LTD, CHINA                       |
| 24/08/2016 | Ugc/2016/001459/He/R       | WEEDSOLUTION1 41SL      | Glyphosate IPA 480g/l                           | M/S SINOCHEM AGRO Co. LTD, CHINA                       |
| 12/08/2016 | Ugc/2016/001458/Fu/R       | COMMANDER 70WP          | Propineb 700g/kg                                | MS SHENZHEN KING WING CHEMICAL INDUSTRY Co. LTD, CHINA |
| 12/08/2016 | Ugc/2016/001457/In/R       | TRUST DELTA 2.5EC       | DELTAMETHRIN 25g/l                              | MS SHENZHEN KING WING CHEMICAL INDUSTRY Co. LTD, CHINA |
| 29/07/2016 | Ugc/2016/001456/In/R       | TRIDELTA 360EC          | Triazophos 350g/kg + Deltamethrin 10g/kg        | DVA AGRO GmbH, GERMANY                                 |
| 28/07/2016 | Ugc/2016/001455/Fu/RRRRRRR | RIDOMIL GOLD 68WG       | Mancozeb 640g/kg + Mancozeb 40g/l               | SYNGENTA CROP PROTECTION BASEL, SWITZERLAND            |
| 28/07/2016 | Ugc/2016/001454/He/RRRR    | LUMAX                   | <i>S-Metolachlor</i> 375g/l +                   | SYNGENTA CROP PROTECTION                               |

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Attachment Active List of Registered Pesticides in Uganda

|            |                            |                      |                                                        |                                                    |
|------------|----------------------------|----------------------|--------------------------------------------------------|----------------------------------------------------|
|            |                            |                      | Terbutylazine 125g/l + Mesotrion 37.5g/l               | BASEL, SWITZERLAND                                 |
| 19/07/2016 | Ugc/2016/001453/In/RRRRRR  | PYRINEX 48EC         | Chlorpyrifos 480g/l                                    | ADAMA MAKHTESHIM CHEM, ISREAL                      |
| 19/07/2016 | Ugc/2016/001452/Fe/RR      | DI-GROW (RED)        |                                                        | HERBAL MEDICAL WORKS SBN BHN FULAUPENANG, MALAYSIA |
| 11/07/2016 | Ugc/2016/001451/He/RRRR    | FUSILADE FORTE       | Fluazifop-P-butyl 150g/l                               | SYNGENTA CROP PROTECTION BASEL                     |
| 11/07/2016 | Ugc/2016/001450/Fu/RRRR    | APRON STAR           | Difenoconazole 2% + Thiamethoxam 20% + Metalaxyl-M 20% | SYNGENTA CROP PROTECTION BASEL, SWITZERLAND        |
| 11/07/2016 | Ugc/2016/001449/Fu/RRRRR   | MAXIM XK 035FS       | Fludioxonil + Metalaxyl                                | SYNGENTA CROP PROTECTION BASEL                     |
| 11/07/2016 | Ugc/2016/001448/He/RRRRRRR | PRIMAGRAM GOLD 660SC | Atrazine 370g/l + S-Metolachlor 290g/l                 | SYNGENTA CROP PROTECTION BASEL, SWITZERLAND        |
| 20/06/2016 | Ugc/2016/001447/Fu/RRR     | NORDOX SUPER 75WP    | Copper oxychloride 750g/kg                             | NORDOX INDUSTRIES, NORWAY                          |
| 20/06/2016 | Ugc/2016/001446/In/RRR     | GOLAN 200SP          | Acetamiprid 200g/kg                                    | SINERIA INDUSTRY LTD, HOLLAND                      |
| 13/06/2016 | Ugc/2016/001445/In/R       | TERMIDOR 96SC        | FIPRONIL 96%                                           | BASF SE, GERMANY                                   |
| 23/05/2016 | Ugc/2016/001444/He/R       | GLYMARK 360SL        | Glyphosate 360g/l                                      | NINGBO SYNAGROCHEM CO. LTD, CHINA                  |
| 20/05/2016 | Ugc/2016/001443/He/R       | AMESAC 500SC         | Ametryn 500g/l                                         | NINGBO SYNAGROCHEM CO. LTD, CHINA                  |
| 20/05/2016 | Ugc/2016/001442/He/R       | SACOD 720SL          | 2,4-D Amine salt                                       | NINGBO SYNAGROCHEM CO. LTD, CHINA                  |
| 20/05/2016 | Ugc/2016/001441/He/R       | MEPANIL 360EC        | Propanil 360g/l                                        | NINGBO MEGASRO CHEMICAL Co. LTD                    |
| 20/05/2016 | Ugc/2016/001440/He/R       | MESORA 550SC         | Mesotrione 5% + Atrazine 50%                           | NINGBO MEGASRO CHEMICAL Co. LTD                    |
| 20/05/2016 | Ugc/2016/001439/Fu/R       | REVUS 250SC          | Mandipropamid 250g/l                                   | SYNGENTA AGRO AG, SWITZERLAND                      |
| 20/05/2016 | Ugc/2016/001438/Fu/R       | QUADRIS 50WG         | Azoxystrobin 500g/kg                                   | SYNGENTA AGRO AG, SWITZERLAND                      |
| 20/05/2016 | Ugc/2016/001437/In/R       | VOLIAM FLEX 300SC    | Chlorantraniliprole 100g/l + Thiamethoxam 200g/l       | SYNGENTA AGRO AG, SWITZERLAND                      |
| 20/05/2016 | Ugc/2016/001436/In/R       | ENGEO 247SC          | Thiamethoxam 141g/l +                                  | SYNGENTA AGRO AG.                                  |

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|            |                         |                      |                                            |                                                |
|------------|-------------------------|----------------------|--------------------------------------------|------------------------------------------------|
|            |                         |                      | Lambdacyhalothrin 106g/l                   | SWITZERLAND                                    |
| 16/05/2016 | Ugc/2016/001435/In/RRRR | AGRO-DETHRIN 2.5EC   | Deltamethrin 25g/l                         | ASIATIC AGRICULTURAL INDUSTRY                  |
| 16/05/2016 | Ugc/2016/001434/He/RRRR | AGRO-SUPANIL 60EC    | Thiobencarb 400g + Propanil 200g/l         | ASIATIC AGRICULTURAL INDUSTRY                  |
| 16/05/2016 | Ugc/2016/001433/He/RRRR | AGRO-STUMP 330EC     | Pendimethalin 330g/l                       | ASIATIC AGRICULTURAL INDUSTRY                  |
| 16/05/2016 | Ugc/2016/001432/In/RRRR | VALUE 5EC            | Cypermethrin 50g/l                         | ASIATIC AGRICULTURAL INDUSTRY                  |
| 16/05/2016 | Ugc/2016/001431/In/RRRR | AGRO-LAMBACIN 3.5EC  | Lambda_cyhalothrin 30g/l + Profenofos 5g/l | ASIATIC AGRICULTURAL INDUSTRY                  |
| 16/05/2016 | Ugc/2016/001430/In/RRRR | AGRO-ALPHACYPEX 10EC | AlphaCypermethrin 100g/l                   | ASIATIC AGRICULTURAL INDUSTRY                  |
| 16/05/2016 | Ugc/2016/001429/In/R    | MUPA DUST            | Fenitrothion 10g/kg + Deltamethrin 1.3g/kg | SINERIA, HOLLAND                               |
| 06/05/2016 | Ugc/2016/001411/He/R    | WEED CLEAR 480SL     | Glyphosate IPA 480g/l                      | SUNFARM AGROCHEMICAL LTD, CHINA                |
| 05/05/2016 | Ugc/2016/001410/He/R    | HIPPO 480EC          | Triclopyr 480g/l                           | DVA AGRO GmbH GERMANY                          |
| 05/05/2016 | Ugc/2016/001409/He/R    | ROUND 75.5 SG        | Glyphosate 755g/kg                         | DVA AGRO GmbH GERMANY                          |
| 05/05/2016 | Ugc/2016/001408/Fu/R    | METAZEB 72WP         | Mancozeb 640g/Kg + Metalaxyl 80g/kg        | HARANBA INDUSTRIES LTD, INDIA                  |
| 05/05/2016 | Ugc/2016/001407/In/R    | ATTACK 5EC           | Cypermethrin 50g/l                         | HARANBA INDUSTRIES LTD, INDIA                  |
| 29/04/2016 | Ugc/2016/001401/He/R    | SLASH 720SL          | 2,4-D Amine 720g/l                         | HAILIR PESTICIDES CHEMICAL GROUP CO. LTD CHINA |
| 29/04/2016 | Ugc/2016/001400/He/R    | WEEDBAN 480SL        | Glyphosate IPA 41%SLI                      | HAILIR PESTICIDES CHEMICAL GROUP CO. LTD CHINA |
| 27/04/2016 | Ugc/2016/001394/BCA/R   | ENTONEM              | <i>Steinemema feltiae</i>                  | KOPPERT BIOLOGICAL SYSTEM                      |
| 27/04/2016 | Ugc/2016/001393/BCA/R   | SWIRSKI-MITE         | <i>Amblyseius swirskii</i>                 | KOPPERT BIOLOGICAL SYSTEM                      |
| 27/04/2016 | Ugc/2016/001392/BCA/R   | SPICAL               | <i>Amblyseius californicus</i>             | KOPPERT BIOLOGICAL SYSTEM                      |
| 27/04/2016 | Ugc/2016/001391/BCA/R   | SPIDEX               | <i>Phytoseiulus persimilis</i>             | KOPPERT BIOLOGICAL SYSTEM, NETHERLANDS         |
| 14/04/2016 | Ugc/2016/001390/Fu/R    | HARVESTER 72.2       | Propamocarb hydrochloride 72.2%            | M/S SHANGAI CHINA                              |
| 14/04/2016 | Ugc/2016/001389/Fu/R    | TOPLITE 70WP         | Thiophanate methyl 200g/kg +               | KING TECH CORPORATION                          |

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## Attachment Active List of Registered Pesticides in Uganda

|            |                       |                        |                                        |                                                   |
|------------|-----------------------|------------------------|----------------------------------------|---------------------------------------------------|
|            |                       |                        | Maneb 500g/kg                          |                                                   |
| 14/04/2016 | Ugc/2016/001388/Fu/R  | FANGOCIL 72WP          | Mancozeb 640g/kg + Metalaxyl 80g/kg    | KING TECH CORPORATION                             |
| 14/04/2016 | Ugc/2016/001387/In/R  | DUDU GUARD 20SC        | Carbosulfan 200g/l                     | KING TECH CORPORATION                             |
| 14/04/2016 | Ugc/2016/001386/DTB/R | ZEROFLY STORAGE BAG    | Deltamethrin                           | VESTERGARD FRANDSEN EAST AFRICA LTD               |
| 11/04/2016 | Ugc/2016/001383/In/R  | SUPA PROFENOFOS 44EC   | Profenofos 400g/l + Cypermethrin 40g/l | HANGZHOU QINGFENG AGROCHEMICAL COMPANY LTD        |
| 11/04/2016 | Ugc/2016/001382/In/R  | SUPA DICHLORVOS 1000EC | Dichlorvos 1000g/l                     | HANGZHOU QINGFENG AGROCHEMICAL COMPANY LTD        |
| 11/04/2016 | Ugc/2016/001381/He/R  | SUPA MAX 75.5WDG       | Glyphosate 755g/kg                     | HANGZHOU QINGFENG AGROCHEMICAL COMPANY LTD        |
| 06/04/2016 | Ugc/2016/001380/He/R  | CLEAR FORCE 500SL      | Glyphosate 250g/l + Diuron 250g/l      | ANHILL ZHONGSHEN CHEMICAL INDUSTRY CO. LTD, CHINA |
| 06/04/2016 | Ugc/2016/001379/In/R  | LARA FORCE 25g/IEC     | Lambda cyhalothrin 25g/l EC            | NANJING RED SUN CO. LTD, CHINA                    |
| 06/04/2016 | Ugc/2016/001378/He/R  | FORCE UP               | Glyphosate 480g/l                      | ZHEJIANG JINJANDA BIOCHEMICAL CO. LTD             |
| 06/04/2016 | Ugc/2016/001377/Fu/R  | SECRET 80WP            | Tricyclazole 180g/l + 620g/l           | HERENBA INDUSTRIES, LTD, INDIA                    |
| 06/04/2016 | Ugc/2016/001376/Fu/R  | PROXY 25EC             | Propiconazole 250g/l                   | HERENBA INDUSTRIES, LTD, INDIA                    |
| 06/04/2016 | Ugc/2016/001375/In/R  | ASCORON 25WP           | Diflubenzuron 250g/kg                  | HERENBA INDUSTRIES, LTD, INDIA                    |
| 06/04/2016 | Ugc/2016/001374/In/R  | FIGHTER 14.5SC         | Indoxacarb 145g/l                      | HERENBA INDUSTRIES, LTD, INDIA                    |
| 06/04/2016 | Ugc/2016/001373/In/R  | DELETE 36EC            | Triazophos 350g/l + Deltamethrin 10g/l | HERENBA INDUSTRIES, LTD, INDIA                    |
| 06/04/2016 | Ugc/2016/001372/He/R  | WEEDGO 480SL           | Glyphosate 480g/l                      | GREENRIVER INDUSTRY, CO. LTD, CHINA               |
| 24/03/2016 | Ugc/2016/001371/He/R  | MAX 2,4-D 720SL        | 720g/l 2,4-D Amine salt                | WEMAX AGRO LTD, CHINA                             |
| 24/03/2016 | Ugc/2016/001370/He/R  | MUDDOSATE 41SL         | 410g/l Glyphosate IPA salt             | WEMAX AGRO LTD, CHINA                             |
| 24/03/2016 | Ugc/2016/001369/He/R  | KUUTO-2,4-D 720SL      | 720g/l 2,4-D Amine salt                | AGRICORE CHEMICAL INDUSTRY CO. LTD, CHINA         |
| 24/03/2016 | Ugc/2016/001368/He/R  | KUU-GLYPHOSATE 41SL    | 410g/l Glyphosate IPA salt             | AGRICORE CHEMICAL INDUSTRY CO. LTD, CHINA         |

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|            |                      |                         |                                                                         |                                               |
|------------|----------------------|-------------------------|-------------------------------------------------------------------------|-----------------------------------------------|
| 23/03/2016 | Ugc/2016/001367/Fe/R | NUTRIPLANT ORGANIC PLUS |                                                                         | JIANGYINLLA NYE, BIOTECHNOLOGY CO. LTD, CHINA |
| 22/03/2016 | Ugc/2016/001366/He/R | MAGUGUMA 660SC          | Metolachlor 290g/l + Atrazine 370g/l                                    | HANGZHOU AGROCHEMICAL INDUSTRIES LTD          |
| 16/03/2016 | Ugc/2016/001359/Fu/R | MISTRESS 72WP           | Cymoxanil 8% + Mancozeb 64%                                             | MS OSHO CHEMICAL INDUSTRY LTD                 |
| 16/03/2016 | Ugc/2016/001358/He/R | WOUND-OUT 48SL          | Glyphosate IPA salt 480g/l                                              | MS OSHO CHEMICAL INDUSTRY LTD                 |
| 16/03/2016 | Ugc/2016/001357/In/R | OGAR 40EC               | Dimethoate 400g/l                                                       | MS OSHO CHEMICAL INDUSTRY LTD                 |
| 02/03/2016 | Ugc/2016/001356/Fe/R | BARVAR-2                | Pantoea agglomerans strain P5 10 <sup>7</sup> -10 <sup>8</sup> cfu/g    | IRAN AGRO-INDUSTRIES                          |
| 02/03/2016 | Ugc/2016/001355/Fe/R | AZOTO BARVAR-1          | Azotobacter Vinelandii strain-04 10 <sup>7</sup> -10 <sup>8</sup> cfu/g | IRAN AGRO-INDUSTRIES                          |
| 01/02/2016 | Ugc/2016/001354/In/R | TOPSHOT 60 OD           | Cyhalofop butyl 50g/l + Penoxsulam 10g/l                                | DOW CHEMICALS EAST AFRICA LTD                 |
| 25/01/2016 | Ugc/2016/001328/In/R | SUPA ACETEMECTIN 5EC    | Abemectin 1.8% + Acetamiprid 3.2%                                       | IPROCHEM Co. LTD, SHENZHEN, CHINA             |
| 25/01/2016 | Ugc/2016/001327/He/R | SUPA METRYN 50SC        | Ametryn 500g/l                                                          | FINECHEM INDUSTRIAL Co. LTD                   |
| 18/12/2015 | Ugc/2015/001321/In/R | MAXIMUM 200SC           | Imidacloprid 200g/l                                                     | FORWARD SHANGAI LTD                           |
| 18/12/2015 | Ugc/2015/001320/Fu/R | SUPAZIM 500SC           | Carbendazim 500g/l                                                      | FORWARD SHANGAI LTD                           |
| 29/10/2015 | Ugc/2015/001306/He/R | STRIM 960EC             | S-Metolachlor 960g/l                                                    | UNITED PHOSPHORUS LTD, INDIA                  |
| 29/10/2015 | Ugc/2015/001305/He/R | UNIMARK 70WG            | Metribuzin 700g/kg                                                      | UNITED PHOSPHORUS LTD, INDIA                  |
| 29/10/2015 | Ugc/2015/001304/He/R | FIST 33EC               | Pendimethalin 330g/l                                                    | UNITED PHOSPHORUS LTD, INDIA                  |
| 29/10/2015 | Ugc/2015/001303/He/R | LIFELINE 280SL          | Glufosinate ammonium 280g/l                                             | UNITED PHOSPHORUS LTD, INDIA                  |
| 29/10/2015 | Ugc/2015/001302/He/R | FASCINATE 150SL         | Glufosinate ammonium 150g/l                                             | UNITED PHOSPHORUS LTD, INDIA                  |
| 29/10/2015 | Ugc/2015/001301/He/R | AMANORA 720SL           | 2,4-D Amine salt 720g/l                                                 | UNITED PHOSPHORUS LTD, INDIA                  |
| 28/10/2015 | Ugc/2015/001297/He/R | KUU-AMETRYN 50 SC       | Ametryn 500g/l                                                          | SHANGAI AGRO CHINA INDUSTRIAL TRADE Co. LTD   |
| 26/10/2015 | Ugc/2015/001296/He/R | STELLAR STAR 21SL       | Topramezone 50g + Dicamba                                               | BASF SE                                       |

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Attachment Active List of Registered Pesticides in Uganda

|            |                      |                    |                                      |                                        |
|------------|----------------------|--------------------|--------------------------------------|----------------------------------------|
|            |                      |                    | 160g/l                               |                                        |
| 26/10/2015 | Ugc/2015/001295/Fu/R | SAAF 75WP          | Carbendazim 120g + Mancozeb 630g/kg  | UNITED PHOSPHORUS LTD, INDIA           |
| 14/10/2015 | Ugc/2015/001293/He/R | SUGCANE 80SC       | Diuron 800g/l                        | SINOCHEM NINGBO LTD, CHINA             |
| 14/10/2015 | Ugc/2015/001292/He/R | MEGAZINE 50SC      | Atrazine 500g/l                      | SINOCHEM NINGBO LTD, CHINA             |
| 14/10/2015 | Ugc/2015/001291/In/R | SIMALA 50EC        | Malathion 500g/l                     | SINOCHEM NINGBO LTD, CHINA             |
| 14/10/2015 | Ugc/2015/001290/In/R | SIMETOX 40EC       | Dimethoate 400g/l                    | SINOCHEM NINGBO LTD, CHINA             |
| 14/10/2015 | Ugc/2015/001289/In/R | SAFURAN 3G         | Carbofuran 30g/kg                    | SINOCHEM NINGBO LTD, CHINA             |
| 13/10/2015 | Ugc/2015/001288/Fu/R | ASCOSULPH 80WDG    | Sulphur 800g/kg                      | MEGHONANI INDUSTRIES LTD               |
| 13/10/2015 | Ugc/2015/001287/Fu/R | ASCOPPER 50WP      | Copper Oxychloride 500g/kg           | NAGARJUNA AGRICHEM LTD, INDIA          |
| 13/10/2015 | Ugc/2015/001286/In/R | PROFECRON 44EC     | Profenofos 400g + Cypermethrin 40g/l | NAGARJUNA AGRICHEM LTD, INDIA          |
| 12/10/2015 | Ugc/2015/001285/He/R | ROUND-ALL 48SL     | Glyphosate 480g/l                    | SHENZHEN KING QUENSON INDUSTRY Co. LTD |
| 07/10/2015 | Ugc/2015/001284/Fu/R | ROUNDAM 48SL       | Glyphosate 480g/l                    | NANJING BESTGREEN CHEMICAL CO. LTD     |
| 07/10/2015 | Ugc/2015/001283/Fu/R | FAMCOZEB 80WP      | Mancozeb 800g/l                      | NANJING BESTGREEN CHEMICAL CO. LTD     |
| 07/10/2015 | Ugc/2015/001282/In/R | CYPERFAM 5EC       | Cypermethrin 50g/l                   | NANJING BESTGREEN CHEMICAL CO. LTD     |
| 29/07/2015 | Ugc/2015/001276/He/R | HAOMETRYN 50SC     | Ametryn 500g/l                       | AGROHAO COMPANY LTD, CHINA             |
| 22/07/2015 | Ugc/2015/001275/He/R | PRIME GOLD 660SC   | Metolachlor 290g + Atrazine 370g/l   | SINERIA INDUSTRIES LIMITED             |
| 13/07/2015 | Ugc/2015/001273/He/R | MUKASATE 48SL      | Glyphosate 480g/l                    | SHANGAI AGROCHEMICALS CO. LTD, CHINA   |
| 18/06/2015 | Ugc/2015/001267/Fu/R | ALGA MANCOZEB 80WP | Mancozeb 800g/kg                     | M/S AMBEY LABORATORIES FUT LTD         |
| 18/06/2015 | Ugc/2015/001266/In/R | ALGACYP 5EC        | Cypermethrin 50g/l                   | M/S AMBEY LABORATORIES FUT LTD         |
| 18/06/2015 | Ugc/2015/001265/In/R | ALGA DDVP          | Dichlorvos 100EC                     | M/S AMBEY LABORATORIES FUT LTD         |
| 18/06/2015 | Ugc/2015/001264/He/R | MEGA 2,4-D         | 2,4-D Amine 720g/L                   | MEGHMANI ORGANICS LTD                  |
| 17/06/2015 | Ugc/2015/001258/He/R | STOMP CS           | Pendimethalin                        | BASF SE                                |

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|            |                      |                |                                             |                                |
|------------|----------------------|----------------|---------------------------------------------|--------------------------------|
| 17/06/2015 | Ugc/2015/001257/He/R | INTEGRITY      | Saflufenacil 68g/l + Dimethenamid-P, 600g/l | BASF SE                        |
| 16/06/2015 | Ugc/2015/001256/He/R | SUPANIL 700SL  | Butachlor 350g/l + Propanil 350g/l          | IPROCHEM COMPANY LTD, CHINA    |
| 15/06/2015 | Ugc/2015/001251/In/R | DIMIPRID 200SL | Imidacloprid 200g/l                         | DVA AGRO GmbH, HAMBURG GERMANY |

NB:

1. In = Insecticide
2. Ne = Nematicide
3. He = Herbicide
4. Fu = Fungicide
5. Fe = Fertilizer
6. Ro = Rodenticide
7. Gr = Growth Regulator
8. Fg = Fumigant
9. BCA = Biological control agent
10. The following are, until further notice, the Approved Agricultural Chemicals for use in Uganda. More authorized chemicals will, in due course, be approved after they have met the required standards. More details about the approved Dealers and chemicals can be obtained from MAAIF, Department of Crop Protection

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**THE PROJECT ON IRRIGATION SCHEME  
DEVELOPMENT IN CENTRAL AND  
EASTERN UGANDA (PISD)  
RESETTLEMENT ACTION PLAN  
FOR ATARI IRRIGATION SCHEME  
REPORT**



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JUNE 2018

JICA STUDY TEAM International Department SANYU Consultant Inc.  
JICA STUDY TEAM International Department SANYU Consultant Inc.

## Appendix-11.

## RAP

(During approval)

### LIST OF EXPERTS

The following experts were involved during preparation of this Resettlement Action Plan (RAP) for Atari Irrigation Scheme as part of study team

| S/N | NAME                         | EXPERTISE                                |
|-----|------------------------------|------------------------------------------|
| 1.  | Ms. Elizabeth Aisu           | RAP specialist –Team Leader              |
| 2.  | Mr. John Charles Orena-Billa | Social Development Specialist Consultant |
| 3.  | Mr. Richard Atobi            | Engineering Surveyor and MD AES          |
| 4.  | Mr. Francis Xavier Mukudane  | Land Surveyor                            |
| 5.  | Ms. Rose Aarakit             | Valuation Surveyor                       |
| 6.  | Mr. Peter Lochom             | Sociologist                              |
|     |                              | Assistant Sociologist                    |
|     |                              |                                          |
|     |                              |                                          |



**EXECUTIVE SUMMARY**

The Ministry of Agriculture, Animal Industry, and Fisheries (MAAIF) and Ministry of Water and Environment (MWE) with assistance from Japan International Cooperation Agency (JICA) agreed to execute “The Project on Irrigation Scheme Development in Central and Eastern Uganda (PISD)” through technical cooperation in the form of a study to establish medium and large scale irrigation scheme in Uganda targeting farmers cultivating mainly rice in lowland area with unreliable agricultural water sources. The initial survey identified Atari River basin area for further feasibility study. The feasibility study of the project site has been conducted by JICA Study Team and the final project footprint has been identified. Therefore, there is a need to acquire land for the purpose of installing irrigation facilities in the project area. Hence, the preparation of the Resettlement Action Plan (RAP) which will culminate in the compensation of the project affected persons as per the Ugandan laws with guidance from JICA Guidelines for ESC and other international best practices.

**Location and Administration**

Atari River Basin is found at the boundary between Bulambuli district and Kween district, bordered by Atari River. It lies approximately between latitude 1°43' North and 1°30' South and Longitude 34°27' East and 34°25' West. The project area lies in the two neighboring parishes namely: Buwebele Parish in Bunambutye Sub County of Bulambuli District and Sikwa Parish in Ngenge Sub County of Kween District. The proposed target scheme covers about 7 villages in the two parishes, namely: Sikwa, Sosot, Amukokel, villages in Sikwa Parish and Bunambale, Buwechalo, Bukhayaki and Buwebele village in Buwebele Parish. The total size of this project beneficiary area is about 680ha which is distributed almost equally between the two Parishes in the two Districts.

**Project components which require resettlement**

The project components that will require resettlement include the construction of the main Irrigation Structures such as:

- Irrigation and Drainage Structures: The Headwork, Main Canal, Secondary Canal, Tertiary Canal, Drainage Canal, and the Appurtenant.
- Flood Control Dyke on both sides
- Scheme Access Roads within the irrigation scheme area
- Construction of workers’ camps and storage for project materials.

These activities will lead to loss of land and property, loss of crops and trees, limited access to water for production, limited access to farmland during construction, loss of income/means of livelihood, and emergence of potentially vulnerable people.

**Project Impacts**

Population census was carried out of the Project Affected Households (PAHs) in the project area. All together there are 490 PAHs, 251 of them are from Kween District, 174 from Bulambuli District and 65 are in the buffer zone. The 490 PAPs are the household heads who own the affected plots; they were asked how many people they had in their households. Results from the census

survey show that the total number of Project Affected Persons (PAPs) is approximately 2,007. Table below shows the summary of the land acquisition impact of the project per district per village.

| District                           | Sub-county | Parish           | Village    | Number of PAHs | Number of Structures | Land (ha)     |
|------------------------------------|------------|------------------|------------|----------------|----------------------|---------------|
| Kween                              | Ngenge     | Sikwa            | Amukokel   | 61             | 3                    | 10,068        |
|                                    |            |                  | Sikwo      | 151            | 0                    | 12,948        |
|                                    |            |                  | Sosot      | 39             | 0                    | 2,459         |
| <b>Total (a)</b>                   |            |                  | <b>251</b> | <b>3</b>       | <b>25,475</b>        |               |
| Bulambuli                          | Bunambutye | Buwebele         | Bunambale  | 145            | 7                    | 20,663        |
|                                    |            |                  | Buwechalo  | 27             | 0                    | 1,108         |
|                                    |            |                  | Bukhayaki  | 2              | 0                    | 0,544         |
| <b>Total (b)</b>                   |            |                  | <b>174</b> | <b>7</b>       | <b>23,939</b>        |               |
| Buffer Zone                        | Bunambutye | <b>Total (c)</b> |            | 32             | 0                    | 4,990         |
|                                    |            |                  |            | 33             | 0                    | 7,071         |
|                                    |            |                  |            | <b>65</b>      | <b>0</b>             | <b>12,061</b> |
| <b>Grand Total (a) + (b) + (c)</b> |            |                  | <b>490</b> | <b>10</b>      | <b>59,851</b>        |               |

**Crops and Trees affected in the Project Area**

The crops and trees that will be in the project area include; Avacado, Mature Mango Trees, Banana Clumps, Paw Paws, Orange trees , Jack Fruit Trees, Coffee Trees, Eucalyptus Trees Greveria, Fig Trees, Acaacia Trees and Bust Trees. All together a total of 2,579 crops and trees will be lost due the implementation of the irrigation project in Atari area. Kween District will lose the highest number of crops and trees 2040 while Bulambuli District will lose 555.

**Eligibility Criteria**

A Project Affected Persons (PAP) is one who, as consequence of the project, sustains losses as a result of impact on 1) land, 2) structure, 3) immovable asset and/ or d) livelihood/ incomes. Through the detailed census and assets/ land surveys, those PAPs were identified.

In the Atari Irrigation Scheme land that will be lost is the land on which the irrigation infrastructure such as: (Dyke, Main Canal, Primary Canals, Secondary Canals and access roads) will be constructed. This involves strips of land from the already mapped land in the scheme; therefore PAPs are not losing entire land.

**Cut-off date**

The cut-off-date of eligibility refers to the date prior to which the occupation or use of the project area makes residents/users of the same eligible to be categorized as PAPs and be eligible to Project entitlements. In the Project, Cut-off date was the beginning date of the final confirmation of acquired land and assets survey. This date was disclosed to each affected persons by the consultants who were carrying out property and land surveys plus and also was the commencement of the socio-economic and census survey. The establishment of the eligibility cut-off date was intended to prevent the influx of ineligible non-residents who might take advantage of Project entitlements.

PAPs were informed that the date when the property census and socio-economic survey commenced was the official cut-off date and this was 20th January 2018, which is the cut-off date for this RAP.

### Livelihood Restoration Measures

The nature of displacement is such that at times cash compensation and other short-term mitigation measures may not be effective to ensure that affected persons get back to their original status or better in terms of their earnings and productivity. Therefore, the designing an income and livelihood restoration plan is essential.

### Livelihood Needs Assessment

The assessment of needs on a household basis will be done based on baseline data gathered from the following sources: Consultation with government, households and key persons; Asset Survey (Structure, Farm, and Crops); Socio-economic survey and Field visits with extensive consultations

Follow up surveys and in-depth interviews during field visits will lead questions to be asked regarding alternative land sizes and locations, and related questions regarding skills and other assets. Also, information will be gathered on preferences for programs, training opportunities, and community development initiatives. The data collected will be assessment for each household's requirement regarding livelihood and income restoration programs.

### Grievance Redress Mechanism

A simple Grievance Redress Mechanism (GRM) has been proposed to enable timely settlement of grievances to the PAPs. The grievance procedures will be secured and administered at the local level to facilitate access, flexibility and openness to all PAPs. The grievance redress procedure ensures consultations and involvement of the respective District and Village officials and other key stakeholders and provides for record keeping determining the validity of claims, and to ensure that solutions are taken in the most transparent and cost effective ways for all PAPs. The grievance resolution committee members shall undergo a briefing session about their roles and requirements at early stage before commencement of RAP implementation activities. The grievance resolution mechanism will involve four stages as described below.

#### Stage I: Village Grievance Resolution Committee (VGRC)

The Committee will explore all possibilities to solve the raised grievance at the village level and refer to higher level if the grievance is not solved by the committee. This committee will deal with boundary disputes, identification of rightful owners and disputes among family members. However, if aggrieved PAP fails to agree with the committee, the PAP can utilize stage II to solve the grievance.

#### Stage II: District Grievance Resolution Committee (DGRC)

The committee will work together with the VGRC to resolve grievances raised by the PAPs including revisiting the site investigation. The Committee will explore all possibility to solve the

raised grievance failed to be solved by the VGRC. However, if the DGRC and PAP fail to agree, the PAP can utilize stage III as a last resort to solve the grievance.

### Stage III: Land Tribunals

All disputes related to land will be resolved with the help of the existing land tribunals. If the DGRC fails to solve the grievance, it will be referred to the land tribunals. At each level, the land tribunal will endeavour to solve the dispute. If it fails then the dispute will be referred to the land tribunal at the next level. The land tribunals are categorised as follows; The Village Land Council; The Parish Land Tribunal; and The District Land Tribunal.

### Stage IV: Courts of Law

Ugandan legislation allows a right of access to the courts of law by any person who has an interest or right over property. If the grievance procedure fails to provide a settlement, complainants can still seek legal redress in courts of law as a last resort.

### Implementation Framework

#### Ministry of Agriculture, Animal Industry and Fisheries

MAAIF will be responsible for resources mobilization, distribution and implementation of compensation and resettlement. Specifically, the Project Implementation Unit (PIU) in MAAIF will be involved with implementation of this RAP. MAAIF has the responsibility to directly oversee resettlement/compensation activities, identifying and co-ordinating all players in the resettlement programme, managing grievances and monitoring RAP implementation. The Ministry is also responsible for provision of technical assistance in the design and construction of on-farm irrigation systems. MAAIF will further be responsible for the provision of extension services and advice to farmers on irrigation systems and promotion of efficient water use. In addition, the Ministry will provide support in the supervision and monitoring of water use and management. Other agencies responsible for the smooth implementation of the RAP include:

**Ministry of Lands, Housing and Urban Development MLHUD-** will therefore play a direct role in compensation and resettlement activities of proposed project.

**Ministry of Gender, Labour & Social Development, MGLSD-** working through Community Development Officers (CDOs) at district and sub-county level will be responsible for spearheading and coordinating gender responsive and community development, in particular, sensitizing community members to form groups that will adequately utilize the water amicably.

**Local Governments in Which the Project Area Is Situated-**are mandated to set compensation rates for crops and non-permanent structures through their District Land Boards. Local governments will also be important in managing and monitoring social impact through site visits or resolving complaints from affected communities. During compensation, LC1s and LC3s in project-affected areas will be helpful for identification or verification of rightful property owners.

**Uganda Land Commission-**holds and manages land in Uganda vested in or acquired by Government of Uganda and would be involved where such land is affected by the proposed

Irrigation project. Uganda Land Commission will manage the land covered by the Irrigation infrastructures on behalf of the Government of Uganda.

**Private Sector Entities**—such as consultants hired by MAAIF for verification and actual payment of compensation to PAPs. These entities are not known at this time since they will be hired through competitive bidding as per Uganda’s procurement laws.

**Costs and Budget**

Valuation Survey Report indicates that the Total Compensation Award for PAPs to be affected by the proposed the irrigation Project is: Ug. **(496,758,543)** Shillings: Four Hundred Ninety Six Million, Seven Hundred Fifty Eight Thousand for compensation only.

However, the compensation process involves so many other factors that need to be taken as indicated the table below. This therefore will bring the total compensation cost to: **Uganda Shillings: One Thousand Three Hundred Eighty Four Million, Seventy Two Thousand, Two Hundred Sixty seven Only (1,384,072,209)**

| Category         | Amount             | Activities involved                                                                                                                                                                                                   |
|------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.               | 335,174,000        | The ones in yellow will change after valuer gives final figures                                                                                                                                                       |
| 2.               | 89,375,000         |                                                                                                                                                                                                                       |
| 3.               | 5,974,450          |                                                                                                                                                                                                                       |
| 4.               | 66,235,093         |                                                                                                                                                                                                                       |
| <b>Sub-Total</b> | <b>496,758,543</b> | <b>By valuer as final as per today</b>                                                                                                                                                                                |
| 5.               |                    | Sensitization of PAPs<br>Verification of PAPs<br>Disclosure of amounts<br>Training of PAPs on proper use of compensation funds<br>Assist PAPs open accounts<br>Prepare accountability report                          |
| 6.               | 198,703,417        | Done before RAP implementation<br>Ensure all PAPs are captured<br>Include PAPs who were left out/absent during the RAP preparation<br>Display of final RAP report<br>Prepare supplementary report for approval by CGV |
| 6.               | 99,351,708         | Election of grievance redress committees<br>Train the committee members<br>Sitting allowance and transport of committee members<br>Prepare grievance redress log report                                               |
| 7.               | 99,351,708         | Continuous process to keep PAPs aboard about the project activities<br>Disclosure of information about the project                                                                                                    |
| 8.               | 99,351,708         | Carry out a needs assessment on all PAPs to establish the opportunity cost of being off their                                                                                                                         |

| Category                            | Amount                                                                   | Activities involved                                                                                                                                                 |
|-------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| construction preparation 20%        |                                                                          | land during construction<br>To establish the best and agreeable form of compensation<br>To establish training opportunities and community development initiatives   |
| 9.                                  | Estimated amount for livelihood & income restoration for PAPs 92,500,000 | Training in agriculture, and other needs will be established after the needs assessment e.g prove improved seeds, agriculture farm equipment                        |
| <b>Sub-Total RAP Implementation</b> | <b>688,610,249</b>                                                       |                                                                                                                                                                     |
| 10.                                 | Monitoring and Evaluation Internal 15%                                   | To monitor the effectiveness of the compensation process<br>To ensure clearance of the site before commencement of construction<br>Follow-up on land re-arrangement |
| 11.                                 | Monitoring and Evaluation External 25%                                   | To make a follow-up on the resettlement activities evaluate whether the goals and objectives of resettlement were achieved                                          |
| <b>Sub total</b>                    | <b>198,703,417</b>                                                       |                                                                                                                                                                     |
| <b>Grand Total</b>                  | <b>1,384,072,209</b>                                                     |                                                                                                                                                                     |

**Monitoring and Evaluation Activities**

The JICA Guidelines/World Bank OP4.12 policy on resettlement planning provides that the implementer (MAAIF) of the project shall be responsible for Monitoring and Evaluation (M&E) activities provided for by this RAP. Monitoring will provide an advance warning system for MAAIF and an avenue through which the PAPs will make their needs and reactions known. The funding for the M&E activities shall form part of the project cost.

To ensure that the implementation of the land acquisition and resettlement is carried out in accordance with the relevant requirements of the RAP and to guarantee the progress and quality of the resettlement actions, both internal and independent external monitoring and evaluation procedures will be adopted.

The purpose of resettlement monitoring and evaluation will be to verify that:

- Procedures and obligations described in the RAP are implemented;
- Eligible PAPs receive their full compensation prior to the start of construction activities;
- Mitigation measures have helped people in restoring their lives in a sustainable manner;
- Complaints and grievances of the PAPs are adequately addressed and corrective measures implemented;
- If need be, changes in the RAP procedures and obligations are made to improve service delivery to the PAPs.

Accordingly, the primary monitoring and evaluation activities will be the responsibility of the MAAIF as the project sponsor. MAAIF through the Project Implementation Unit (PIU) will undertake the internal monitoring of the implementation of the land acquisition and resettlement so as to ensure that all the responsible units follow the schedule and comply with the guiding principles of the RAP.

**LIST OF ACRONYMS**

|               |                                                                 |
|---------------|-----------------------------------------------------------------|
| <b>ESIA:</b>  | Environmental and Social Impact Assessment                      |
| <b>ESMP:</b>  | Environmental and Social Management Plan                        |
| <b>GoU:</b>   | Government of Uganda                                            |
| <b>HH:</b>    | Household                                                       |
| <b>JICA:</b>  | Japan International Cooperation Agency                          |
| <b>LRIP:</b>  | Livelihood Restoration and Income Programme                     |
| <b>MAAIF:</b> | Ministry of Agriculture, Animal Industry, and Fisheries (MAAIF) |
| <b>MoWE:</b>  | Ministry of Water and Environment                               |
| <b>NEMA:</b>  | National Environment Management Authority                       |
| <b>NGO:</b>   | Non- Governmental Organization                                  |
| <b>OP:</b>    | Operational Policy                                              |
| <b>PACC:</b>  | Project Area Coordination Committee                             |
| <b>PAPs:</b>  | Project Affected Persons                                        |
| <b>PISD:</b>  | Project on Irrigation Scheme Development                        |
| <b>PIU:</b>   | Project Implementation Unit                                     |
| <b>RAP:</b>   | Resettlement Action Plan                                        |
| <b>WB:</b>    | World Bank                                                      |
| <b>VIP:</b>   | Ventilated Pit Latrine                                          |

**DEFINITIONS**

Unless the context dictates otherwise, the following terms will have the following meanings:

“**Census**” means a field survey carried out to identify and determine the number of Project Affected Persons (PAP) or Displaced Persons (DPs). The meaning of the word shall also embrace the criteria for eligibility for compensation, resettlement and other measures emanating from consultations with affected communities.

“**Project Affected Persons (PAPs)**” are persons affected by land use or acquisition needs of the project. These persons are affected because they may lose, be denied, or be restricted access to economic assets; lose shelter, income sources, or means of livelihood. These persons are affected whether or not they must move to another location.

“**Compensation**” means the payment in kind, cash or other assistances given in exchange for the acquisition of land including fixed assets thereon as well as other impacts resulting from sub-project activities.

“**Cut-off date**” is the date of commencement of the census of PAPs or DPs within the project area boundaries. This is the date on and beyond which any person whose land is occupied for sub-project use, will not be eligible for compensation.

“**Displaced Persons**” mean persons who, for reasons due to involuntary acquisition or voluntary contribution of their land and other assets under the project will suffer direct economic and/or social adverse impacts, regardless of whether or not the said Displaced Persons are physically relocated. These people will have their: standard of living adversely affected, whether or not the Displaced Person must move to another location, lose right, title, interest in any house, land (including premises, agricultural and grazing land) or any other fixed or movable assets acquired or possessed, lose access to productive assets or any means of livelihood.

“**Economically Displaced Persons**” means Project affected persons who lose income streams or means of livelihood resulting from land acquisition or obstructed access to resources (land, water or forest) caused by the construction or operation of the Project or its associated facilities.

“**Physically Displaced Persons**” means Project affected persons who lose shelter and assets resulting from the acquisition of land associated with the Project that requires the affected person(s) to move to another location.

“**Involuntary Displacement**” means the involuntary acquisition of land resulting in direct or indirect economic and social impacts caused by: loss of benefits from use of such land; relocation or loss of shelter; loss of assets or access to assets; or loss of income sources or means of livelihood, whether or not the Displaced Persons have moved to another location; or not.

“**Involuntary Land Acquisition**” is the repossession of land by government or other government agencies with or without compensation, for the purposes of a public project against the will of the landowner. The landowner may be left with the right to negotiate the amount of compensation proposed. This includes land or assets for which the owner enjoys uncontested customary rights.

“**Land**” refers to agricultural and/or non-agricultural land and any structures thereon whether temporary or permanent and which may be required for the project.

“**Land acquisition**” means the repossession of or alienation of land, buildings or other assets thereon for purposes of the Project.

“**Rehabilitation Assistance**” means the provision of development assistance in addition to Compensation such as land preparation, credit facilities, training or job opportunities needed to enable Project Affected Persons and Displaced Persons to improve their living standards, income earning capacity and production levels; or at least maintain them at pre-project levels.

“**Resettlement and Compensation Plan**”, also known as a “**Resettlement Action Plan (RAP)**” or “**Resettlement Plan**” - is a resettlement instrument (document) to be prepared when program locations are identified. In such cases, land acquisition leads to physical displacement of persons, and/or loss of shelter, and /or loss of livelihoods and/or loss, denial or restriction of access to economic resources. RAPs are prepared by the party impacting on the people and their livelihoods. RAPs contain specific and legal binding requirements to resettle and compensate the affected party before implementation of the MAAIF program activities.

“**Replacement cost**” means replacement of assets with an amount sufficient to cover full cost of lost assets and related transaction costs. The cost is to be based on **Market rate (commercial rate)** according to Uganda law for sale of land or property and without deduction for depreciation and salvage materials per the WB OP 4.12. In terms of land, this may be categorized as follows: (a) “**Replacement cost for agricultural land**” means the pre-MAAIF project or pre-displacement, whichever is higher, market value of land of equal productive potential or use located in the vicinity of the affected land, plus the costs of: (b) preparing the land to levels similar to those of the affected land; and (c) any registration and transfer taxes;

“**Replacement cost for houses and other structures**” means the prevailing cost of replacing affected structures, in an area and of the quality similar to or better than that of the affected structures. Such costs will include: (a) transporting building materials to the construction site; (b) any labour and contractors’ fees; and (c) any registration costs.

“**Resettlement Assistance**” means the measures to ensure that MAAIF Project Affected Persons and Displaced Persons who may require to be physically relocated are provided with assistance during relocation, such as moving allowances, residential housing or rentals whichever is feasible and as required, for ease of resettlement.

“**Customary Tenure**” Is governed by rules generally accepted as binding and authoritative by the class of persons to which it applies. That is customary tenure is not governed by written law. Landowners do not have deeds recognizing their ownership rights and land is managed according to rules and practices generally accepted as legitimate and binding by a particular community. Customary laws vary according to regions but most systems are based on the same general principles. Ownership rights are recognized by the community through inheritance, purchase, or by settling on a plot of land which was previously vacant. Under Ugandan customary legal systems, particularly in northern and eastern Uganda, land is usually communally owned by the clan but it

can also be owned individually. Rights and responsibilities that derive from communal ownership are shared among various members of the clan according to traditional practices. Usually, the head of the clan or family, the “custodian”, has the responsibility to look after each member’s land rights and to allocate land fairly to all. Under this system, disputes are heard and settled by clan elders.

“**Leasehold Tenure**” Is created either by contract or by operation of the law and is a form under which the landlord of lessor grants the tenant or lessee exclusive possession of the land, usually for a period defined and in return for a rent. The tenant has security of tenure and a proprietary interest in the land.

“**Freehold Tenure**” Derives its legality from the constitution and its incidents from the written law. Involves the holding of land in perpetuity or a term fixed by a condition and also enables the holder to exercise, subject to the law, full powers of ownership.

“**Mailo Tenure**” Has roots in the allotment of land pursuant to the 1900 Uganda Agreement and derives its legality from the constitution and its incidents from written law. It involves the holding of land in perpetuity and permits the separation of ownership of land from the ownership of developments on land made by a lawful or bona fide occupant. The system enables the holder to exercise all powers of ownership, subject to the rights of those persons occupying the land at the time of the creation of the mailo title and their successors.

“**Squatters**” refers to individuals or groups who occupy lands without the express consent of the landowner and who have sufficient income for legitimate housing. The term shall also apply to persons who have previously been awarded homelots or housing units by the Government but who sold, leased or transferred the same to settle illegally in the same place or in another urban area, and non-bona fide occupants and intruders on lands reserved for socialized housing.”

### ACKNOWLEDGEMENT

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Lastly, the team would like to thank the JICA Study Team Sanyu Consultants for their valuable Guidance throughout the RAP preparation and each and every one who was involved in the RAP study for their comments and suggestions that have contributed towards preparation of this report in one way or another.

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## 1. NECESSITY OF THE LAND ACQUISITION AND RESETTLEMENT

### 1.1. Background

The Ministry of Agriculture, Animal Industry, and Fisheries (MAAIF) and Ministry of Water and Environment (MWE) with assistance from Japan International Cooperation Agency (JICA) agreed to execute “The Project on Irrigation Scheme Development in Central and Eastern Uganda (PISD)” through technical cooperation in the form of a study to establish medium and large scale irrigation scheme in Uganda targeting farmers cultivating mainly rice in lowland area with unreliable agricultural water sources. The Study has been entrusted by JICA to the JICA Study Team (JST). During the first phase of the project, between May 2014 and March 2015, JICA Study Team together with MAAIF and MWE made the initial Feasibility Study (FS) of the proposed potential project area for irrigation development.

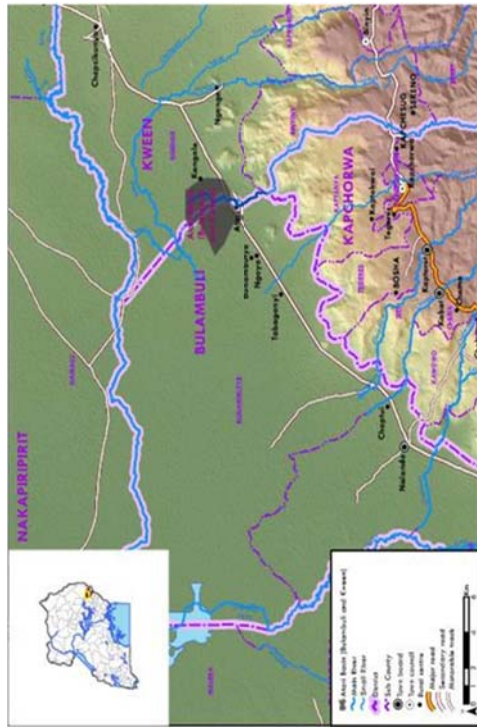
The initial survey identified Atari River basin area for further feasibility study. The feasibility study of the project site has been conducted by JST. As it is the case in most part of Uganda, the land in the project area is held under customary ownership with no clear boundary among the owners. However, there is a need to acquire land for the purpose of installing irrigation facilities in the project area. Hence, the preparation of the Resettlement Action Plan (RAP) using an acceptable land acquisition method which is paramount for smooth implementation of the project. This RAP will culminate in the compensation of the project affected persons as per the Ugandan laws with guidance from JICA Guidelines for ESC and other international best practices. Therefore, JST together with the MAAIF has contracted Associated Engineering Surveyors to prepare a Resettlement Action Plan for Atari Irrigation Scheme under PISD.

### 1.2. Location and Administration

Atari River Basin is found at the boundary between Bulambuli district and Kween district, bordered by Atari River. It lies approximately between latitude 1°43' North and 1°30' South and Longitude 34°27' East and 34°25' West as shown in Figure 1. Administratively, the project area lies in the two neighboring parishes namely: Buwebere Parish in Bunambutye Sub County of Bulambuli District and Sikwa Parish in Ngenge Sub County of Kween District. The proposed target scheme covers about 6 villages in the two parishes, namely: Sikwa, Sosot, Amukokel, villages in Sikwa Parish and Bunambale, Buwechalo, Bukhayaki village in Buwebere Parish. Specifically, the project area is situated at the foot of the mountain and in area to the north of the National Road that links Mbale to Moroto.

The total size of this project beneficiary area is about 680ha which is distributed almost equally between the two Parishes in the two Districts. The area is characterized as flat land, which often is affected by flood from the river, mainly, during rainy season. Although, most of the area is used for upland crops such as maize production and animal grazing, there is also an increase in the use of the area for rice production which results in fragmentation of the land ownership/tenant (chiefly on Sikwa side). Therefore, the survey should give special emphasis to these fragmented land that might be used by the owner or being used by tenants.

Table below shows the administrative division that covers the project. The geological and administrative location of the project area is shown in エラー! 参照元が見つかりません。 below.



Source: JICA Study Team

Figure 1: Location Map of the Project Area

Table 1 Administrative division of the project area

| District  | Sub-County | Parish   | Village in the target area      | Remark                                                                      |
|-----------|------------|----------|---------------------------------|-----------------------------------------------------------------------------|
| Kween     | Ngenge     | Sikwa    | Sikwa, Sosot, Amukokel,         | Most of the community resides along the road and on hill side of the parish |
| Bulambuli | Bunambutye | Buwebere | Bunambale, Buwechalo, Bukhayaki | Most of the community resides along the road and on hill side of the parish |

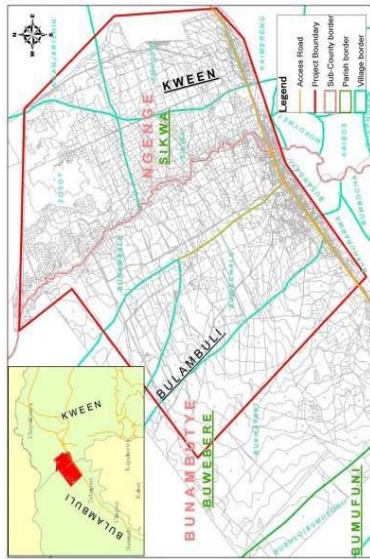


FIGURE 2: THE PROJECT AREA BY DISTRICT, SUB-COUNTY AND PARISH

Source: JICA Study Team

**1.3. Project components which require resettlement**

The project components that will require resettlement include the construction of the main Irrigation Structures such as:

- i. Irrigation and Drainage Structures: The Headwork, Main Canal, Secondary Canal, Tertiary Canal, Drainage Canal, and the Appurtenant.
  - ii. Flood Control Dyke on both sides
  - iii. Scheme Access Roads within the irrigation scheme area
  - iv. Construction of workers' camps and storage for project materials.
- These activities will lead to loss of land and property, loss of crops and trees, limited access to water for production, limited access to farmland during construction, loss of income/means of livelihood, and emergence of potentially vulnerable people. Table 2 below shows the components that will lead to land acquisition.

TABLE 2: SHOWING COMPONENTS OF THE PROJECT LEADING TO LAND ACQUISITION

| Components              | Item                           | Amount  | Remarks                                           |
|-------------------------|--------------------------------|---------|---------------------------------------------------|
| Irrigation and Drainage | Headwork                       | 1 Place | Movable weir type, Intake, De-silting basin       |
|                         | Main canal                     | 2.3 km  | Concrete blocking lining                          |
|                         | Secondary canal                | 15.0 km | Concrete blocking lining                          |
|                         | Tertiary canal                 | 23.5 km | Earth canal                                       |
|                         | Drainage canal                 | 18.3 km | Earth canal                                       |
| River Dyke              | Dyke                           | 5.1 km  | Both sides, 1.4m height                           |
|                         | Maintenance and Operation road | 7.7 km  | 4m width, laterite pavement with 100mm thickness. |
| Land Re-organization    | Land leveraging etc.           | 12.0 ha | Both sides, 6ha in each.                          |

Source: JICA Study Team

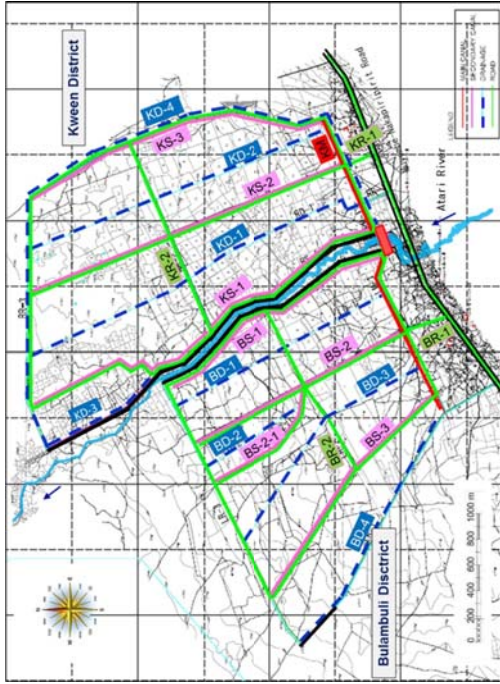


FIGURE 3: MAP SHOWING LOCATION OF IRRIGATION STRUCTURES IN THE PROJECT AREA

**1.4. Project Affected Area**

It should be noted that not all the Atari Irrigation scheme project area will be affected in terms of land acquisition. Previous studies conducted such as the feasibility study which determined the entire project area and the land ownership mapping exercise established the rightful sizes and owners of each plot within the project area. The project design map containing the irrigation infrastructure was then superimposed on the mapped plots to identify those plots that will be affected by the irrigation infrastructure such as; the main canals, drainage canals, dykes and access roads. The three project maps (figures 3) show the project surveyed area and the infrastructure that will impact on the land.

**1.5. Measures for minimizing resettlement and land acquisition during Project implementation**

This RAP report whose main objectives are to present the adverse impacts on land, people's activities and assets due to the proposed Project and propose a set of mitigation measures that are commensurate to the extent of impacts. Further, it aims to ensure the following:

- i. Where it is not feasible to avoid resettlement, resettlement activities are conceived and executed as sustainable development programmes, providing sufficient mitigation measures.
- ii. Affected people are assisted in their efforts to improve their livelihoods and standards of living, or at least to restore them, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.
- iii. Affected people are meaningfully consulted and have opportunities to participate in planning and implementing resettlement programmes.

The RAP carries forward the findings of the ESIA study. Besides listing the non-tangible impacts, it quantifies the tangible impacts and enlists the affected persons/households along with their impacted properties. The scope of the RAP includes:

- extent of impacts, based upon the census/survey of population affected by the project;
- assessment of the potential socio-economic impacts;
- Consultation with stakeholders including; district officials, women and youth groups, the host communities and the project affected persons (PAPs) in each of the villages in the project area.
- review criteria to determine eligibility and other entitlements or forms of assistance for the selected option;
- valuation based on entitlements applicable and determination of an appropriate compensation package providing the full compensation budget;
- determination of other measures necessary to assist affected people to improve or restore living standards in line with the ESMP;
- review existing grievance mechanisms to help formulate clear procedures for settlement of disputes including taking into account traditional dispute settlement mechanisms and judicial recourse;
- review existing and recommend on potential institutional arrangements for coordination and implementation of the RAP including the costs of implementation;
- design a monitoring and evaluation (M&E) framework to enable assessment of achievement/progress of RAP implementation based on indicators; and
- Present a detailed schedule of implementation activities.

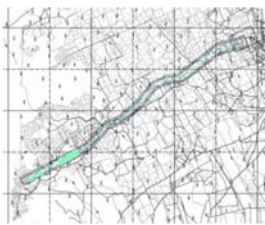

**1.6. Alternatives of initial design to avoid/ minimize resettlement and land acquisition**  
Initial studies including feasibility studies, environmental and social impact assessment, and landownership and boundary mapping were conducted to ensure that involuntary resettlement is minimized as much as possible.

- Feasibility Study: Between May 2014 and March 2015, feasibility studies were initiated to establish the best areas for irrigation projects in Uganda and Atari River basin was identified for further studies.
- In March 2016, landownership and boundary mapping exercise was carried out to identify the sizes and rightful owners of the plots land in the project area. This was part of the land acquisition strategy aimed at avoiding/minimizing land acquisition and involuntary resettlement as much as possible.
- In February 2017, a feasibility study that included an Environment and Social Impact Assessment plus an Abbreviated Resettlement Action Plan were conducted and this study carried out a comparison of several alternatives and came with the best after looking at all aspects including; social impact, land acquisition and its impact, involuntary resettlement within buffer zone, Impact on local community and land use and utilization of the local resources as shown in table 3 below.

Alternative 1 which will involve restoration of the original waterway was adopted and installation of a dyke would minimize impact on resettlement and land acquisition because a small portion of

the land will be required for the construction of the dyke. Resettlement will be minimized because almost all the land in the project area is mainly used for growing crops.

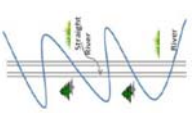

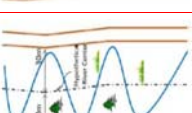

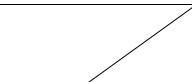
TABLE 3 ALTERNATIVES OF INITIAL DESIGN TO AVOID/ MINIMIZE RESETTLEMENT AND LAND ACQUISITION

| Considerations for Choice of Alternatives | ALT-L1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ALT-L2                                                                                                                                                                                                                                                                                                        | ALT-L3 (Without Project)                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Layout                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                              | -                                                                                                                                                                                                                                                                                                                           |
| Outline of the Plan                       | This alternative has installation of River Dyke along the original waterway which is also the boundary of Kween and Bulambuli Districts. buffer zone shall be established at 30m from hypothetical center line of original waterway to preserve buffer zone for purification of water and preserve existing natural forest along old river course. Downstream part of original river shall be restored by excavating about 30cm from existing river bed to maintain the waterway and convey the same capacity of discharge with upstream. | This alternative has installation of River Dyke along the existing river course which was a canal constructed to irrigate the right side of Atari River. Protection zone shall be set with 30m from center line of irrigation canal to preserve buffer zone for purification of water.                        | Nothing to be changed from the current condition. No regulation and wise-use of wetland become impossible. It is expected that planned Community-Based Wetland Management Plan (hereinafter referred to as "CbWMP") will be implemented by the community together with related District and to realize wise-use of wetland. |
| Irrigation Area                           | 680 ha                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 680 ha                                                                                                                                                                                                                                                                                                        | 450 ha                                                                                                                                                                                                                                                                                                                      |
| Judgment and reason                       | <b>Adopted</b><br>The river course restoration and protection dyke installation will contribute to the local productivity in term of environmental and social aspect. Flood mitigation will be attained. Restoration of water flow in the downstream will hydrate the Ramsar site that                                                                                                                                                                                                                                                    | <b>Not adopted</b><br>The downstream part of left side of the project area will continue to dry up with no river water flow and it leads to dehydrate the Ramsar site that invites farmers' invention to the Ramsar site. Since existing waterway is artificial canal, building the buffer zone does not have | <b>Not adopted</b><br>No flood control is realized and negative impacts on the area are Maximum.                                                                                                                                                                                                                            |

| Considerations for Choice of Alternatives | ALT-L1                                          | ALT-L2                                                            | ALT-L3 (Without Project) |
|-------------------------------------------|-------------------------------------------------|-------------------------------------------------------------------|--------------------------|
|                                           | prevents farmers' invention to the Ramsar site. | much positive impact in terms of environmental and social aspect. |                          |

Source: EIA Report in FS (2017).

TABLE 4 COMPARISON OF ALIGNMENT OF PROTECTION DYKE AND PROTECTION AREA

| Alternative                                    | ALT-P1                                                                                                                                                  | ALT-P2                                                                                                                                                                                               | ALT-P3                                                                                                                                      | ALT-P4                                                                                                                                            | ALT-P5                                                                              |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Layout                                         |                                                                      |                                                                                                                   |                                                          |                                                                |  |
| Outline of the Plan                            | River improvement by straight line with bank protection and no River Dyke against flood. Therefore more land resource can be available for development. | To install River Dyke along the current river curvature to prevent the flood flow. Even in this case, more space is needed for Buffer Zone more than the width of 5 to 20m which is agreed on CbWMP. | To install River Dyke leaving 30m wide area from hypothetical river center. The alignment and necessary space is almost the same as ALT-P2. | To install River Dyke leaving 30m wide area from river curvature. The National Environment Regulation (2000) suggests taking 30m from river bank. | Nothing to be changed, so no River Dyke and Buffer Zone.                            |
| Flood Control                                  | 2                                                                                                                                                       | 5                                                                                                                                                                                                    | 5                                                                                                                                           | 5                                                                                                                                                 | 1                                                                                   |
| Environmental Impact                           | 1                                                                                                                                                       | 3                                                                                                                                                                                                    | 3                                                                                                                                           | 3                                                                                                                                                 | 2                                                                                   |
| Biodiversity                                   | 1                                                                                                                                                       | 3                                                                                                                                                                                                    | 3                                                                                                                                           | 3                                                                                                                                                 | 2                                                                                   |
| Water quality and purification                 | 1                                                                                                                                                       | 3                                                                                                                                                                                                    | 4                                                                                                                                           | 4                                                                                                                                                 | 3                                                                                   |
| Environmental condition within protection zone | 2                                                                                                                                                       | 4                                                                                                                                                                                                    | 4                                                                                                                                           | 4                                                                                                                                                 | 2                                                                                   |
| Affect to the downstream                       | 1                                                                                                                                                       | 3                                                                                                                                                                                                    | 3                                                                                                                                           | 3                                                                                                                                                 | 2                                                                                   |

| Alternative                                 | ALT-P1   | ALT-P2 | ALT-P3    | ALT-P4 | ALT-P5 |
|---------------------------------------------|----------|--------|-----------|--------|--------|
| Social Impact                               | 2        | 3      | 3         | 3      | 2      |
| Land acquisition and its impact             | 5        | 2      | 2         | 1      | 3      |
| Involuntary resettlement within buffer zone | 3        | 3      | 3         | 3      | 2      |
| Impact to Local economy                     | 5        | 4      | 4         | 4      | 1      |
| Benefit, Cost and Environmental impact      | 1        | 3      | 4         | 2      | 5      |
| Total Point                                 | 24       | 36     | 38        | 35     | 25     |
| Evaluation                                  | Very Bad | Good   | Very Good | Fair   | Bad    |

Source: EIA Report in FS (2017).

**1.7. Alternatives Considered in the Outline Design (OD)**

In the Project, River Dykes will be constructed with securing the projected zone which established at 30m from hypothetical centerline of Atari River in each side. Additionally, activities within the buffer zone without permission from executive director of NEMA are not accepted excepting some activities, in accordance with “The National Environment (Wetlands, River Banks, and Lake Shores Management) Regulations (2000).” Moreover, farming activities are not accepted. Since farmers those who have cultivated in the buffer zone will not be possible to continue their activities after establishment of the buffer zone, the lands within the buffer zone are to be acquired by the Project. On the other hand, when it designs the buffer zone without implementation of river training, area needed to be acquired will increase extremely in two sections. From the aspect for minimizing area acquired, the alternatives were considered regarding to course of River Dykes as following; see Figure 4 below.

TABLE 5 SHOWING ALTERNATIVES CONSIDERED DURING OD

| Item             | Alternative-1                                                                                                                                                                                                                                                                                                            | Alternative-2                                                                                                                                                                                                                                      |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Illustration     |                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                    |
| Design           | <ul style="list-style-type: none"> <li>Surrounding area of current water diversion points to Kween side is meandering. When the Project will not implement river training, Buffer Zone of right side requires the width of more than 80 m from hypothetical centerline (see, red circle of the above figure).</li> </ul> | <ul style="list-style-type: none"> <li>The width of Protected Zone is designed as 30m in accordance Buffer principle of the Project. Additionally, the slight river training will be implemented (see, red circle of the above figure).</li> </ul> |
| Land Acquisition | <ul style="list-style-type: none"> <li>Since the large width of Buffer Zone is required, area needed to be acquired is increased.</li> </ul>                                                                                                                                                                             | <ul style="list-style-type: none"> <li>In comparison of Case-1, area of acquired farmland is 25,609m<sup>2</sup> smaller than that of Case-1.</li> </ul>                                                                                           |

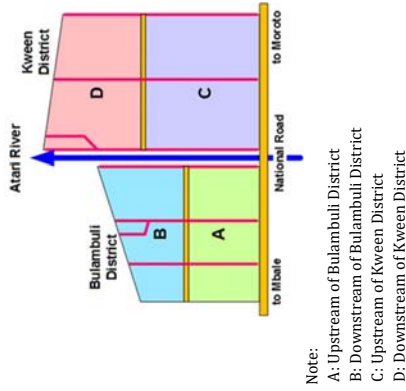


Figure 4. Phasing for Construction Works by Area

1.8. Tentative Construction Schedule

In the Project, development of new farmlands is not planned, while the rearrangement of existing farmlands will be conducted. For minimizing the negative impacts on the current agricultural activities by the construction works, the area where construction worked have been completed will be handed over to the land owners in sequence (see, Figure 4). On the other hand, farming activities at the construction sites can be affected due to the traffic of construction vehicles in terms of safety. The explanation about stage-wise construction area and period when farmers can cultivate in their lands shall be provided in advance. The tentative construction schedule phased by area is shown in Table 5.

Table 5. Tentative Construction Schedule Phased by Area

| Phase | 2020                                     |   |   |   |   |   |   |   |   |    |    |    | 2021                                     |   |   |   |   |   |   |   |   |    |    |    | 2022                                     |   |   |   |   |   |   |  |  |  |  |  |
|-------|------------------------------------------|---|---|---|---|---|---|---|---|----|----|----|------------------------------------------|---|---|---|---|---|---|---|---|----|----|----|------------------------------------------|---|---|---|---|---|---|--|--|--|--|--|
|       | 1                                        | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1                                        | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1                                        | 2 | 3 | 4 | 5 | 6 | 7 |  |  |  |  |  |
| A     | Construction Work, Farmers cannot enter. |   |   |   |   |   |   |   |   |    |    |    | Construction Work, Farmers cannot enter. |   |   |   |   |   |   |   |   |    |    |    | Construction Work, Farmers cannot enter. |   |   |   |   |   |   |  |  |  |  |  |
| B     | Farmers can enter to cultivate.          |   |   |   |   |   |   |   |   |    |    |    | Construction Work, Farmers cannot enter. |   |   |   |   |   |   |   |   |    |    |    | Farmers can enter to cultivate.          |   |   |   |   |   |   |  |  |  |  |  |
| C     | Taking a detour is required.             |   |   |   |   |   |   |   |   |    |    |    | Construction Work, Farmers cannot enter. |   |   |   |   |   |   |   |   |    |    |    | Farmers can enter to cultivate.          |   |   |   |   |   |   |  |  |  |  |  |
| D     | Farmers can enter to cultivate.          |   |   |   |   |   |   |   |   |    |    |    | Farmers can enter to cultivate.          |   |   |   |   |   |   |   |   |    |    |    | Construction Work, Farmers cannot enter. |   |   |   |   |   |   |  |  |  |  |  |
|       | Farmers can enter to cultivate.          |   |   |   |   |   |   |   |   |    |    |    | Farmers can enter to cultivate.          |   |   |   |   |   |   |   |   |    |    |    | Construction Work, Farmers cannot enter. |   |   |   |   |   |   |  |  |  |  |  |

## 2. LEGAL FRAMEWORK ON LAND ACQUISITION AND RESETTLEMENT

This section summarizes the legislative framework for land acquisition and resettlement activities and provides an overview of the relevant national policies, legal and institutional framework to provide guidance to the planning for the RAP, as set out in policies and legislation of the GoU and taking cognizance of the policies of JICA Guidelines / World Bank OP4. 12 related to involuntary resettlement.

### 2.1. Ugandan Policies, Laws, and Regulations

Table below indicates relevant Uganda policies, laws and regulations for land acquisition and resettlement which are applicable to the Project.

TABLE 6: RELEVANT UGANDA POLICIES, LAWS AND REGULATIONS FOR LAND ACQUISITION AND RESETTLEMENT

| Name of Policy, Laws, and Regulations               | Key Contents                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The Constitution of Uganda (1995);                  | The constitution provides procedures of land the acquisition for public interest and of the "prompt payment of fair and adequate compensation" prior to taking possession of the land.                                                                                                                                                                                                     |
| The National Land Policy (2013)                     | This policy addresses the contemporary land issues and conflicts facing the Country.                                                                                                                                                                                                                                                                                                       |
| The Land Act (1998)                                 | This act addresses land holding, management control, and dispute processing.                                                                                                                                                                                                                                                                                                               |
| The Land Acquisition Act (1965)                     | This Act makes provision for the procedures and method of compulsory acquisition of land for public purposes                                                                                                                                                                                                                                                                               |
| National Environment Management Policy (1994)       | Uganda has no resettlement regulations or guidelines except as alluded to in the Land Act. This policy however broadly requires projects to assess potential social impacts caused by the project                                                                                                                                                                                          |
| National Development Plan 2015/16 – 2019/20 (NDPII) | NDP addresses structural bottlenecks in the economy in order to accelerate socio-economic transformation for prosperity and key among these is improvement of livelihood of farmers cultivating food crops in the lowland (wetland) area of the country through the development of sustainable irrigated agriculture for the rice production taking into account wise-use of wetland area. |
| National Gender Policy (1997)                       | This policy indicates gender considerations on equal opportunity in occasion of recruitment of construction labour, and on decision making during resettlement.                                                                                                                                                                                                                            |
| HIV/AIDS Policy (1992)                              | This policy indicates requirements that contractors or their subcontractors, especially in regard to having an in-house HIV Policy, worker sensitization and the provision of free condoms.                                                                                                                                                                                                |
| Local Government Act, Cap. 243 (2008)               | The Act empowers districts administrations to develop and implement district rates upon which compensation for crops and non-permanent structures is based.                                                                                                                                                                                                                                |
| Registration of Titles Act, Cap. 230 (2000)         | This Act provides the guidance for registration of ownership                                                                                                                                                                                                                                                                                                                               |
| Disabilities Act (2006)                             | This Act is relevant to the Project since it points out the requirement for support of any PAPs identified as PWDs to ensure that their right to adequate standard of living is not compromised.                                                                                                                                                                                           |

As shown in Table 3 above shows the legal frameworks that regulate the land and resettlement relations in Uganda. These frameworks define land rights, ownership, procedures, and requirements of transfer and acquisition of land between individuals and communities. They also provide

procedures for the acquisition of land by the state or a public body for public projects. Among the most important legal instruments in this regard are the following:

- The Constitution of Uganda (1995);
- The National Land Policy 2013
- The Land Act (1998);
- The Land Acquisition Act (1965);

While all matters relating to land acquisition, compensation, and resettlement are managed within the provisions of the above legislation, the most decisive document in this regard is the Land Act of 1998, as amended.

Land take refers to acquiring of land for some public purpose by government agency, as authorized by the law from land owner(s) after paying compensation for losses incurred by land owner(s) due to surrendering their land. For land take and displacement of people, specific attention is drawn to two Ugandan laws that will be applicable to land tenure, compensation and resettlement in this project, namely:

- The Constitution of the Republic of Uganda, 1995
- The Land Act, Cap 227

#### 2.1.1. The Constitution of the Republic of Uganda (1995)

The Constitution vests all land of Uganda in the citizens of Uganda. However, the government or local government may acquire land in the public interest. Such acquisition is subject to the provisions of Article 26 (1) of the Constitution, which gives every person in Uganda a right to own property. The Constitution also prescribes the tenure regimes in accordance with which rights and interests in which land may be held namely; Customary, Freehold, Mailo and Leasehold. According to the Constitution, all land belongs to the people of Uganda and is held in trust by the Government. Government is authorized to acquire land for a public purpose and compensate affected persons in accordance with the law. It provides procedures to follow during the acquisition of land for public interest and provides for the "prompt payment of fair and adequate compensation" prior to taking possession of the land.

This gives government and local authorities a statutory power of compulsory acquisition of land in public interest and makes provision; inter alia, for "prompt payment of fair and adequate compensation" prior to the taking of possession of any privately-owned property.

#### 2.1.2. National Land Policy (2013)

This new land policy addresses the contemporary land issues and conflicts the Country faces with. The vision of the policy is: "a transformed Uganda society through optimal use and management of land resources for a prosperous and industrialized economy with a developed services sector" while the goal of the policy is; "to ensure an efficient, equitable, and optimal utilization and management of Uganda's resources for poverty reduction, wealth creation, and overall socio-economic development."

Regarding the women's rights on ownership and inheritance of lands, this policy said that women in Uganda are generally unable to own or inherit land due to restrictive practices under customary land tenure or to economically difficulties for purchasing land rights in the market. In the Policy

Statement, the following sentences are mentioned to improve the women's rights;

- Government shall by legislation, protect the right to inheritance and ownership of land for women and children; and
- Government shall ensure that both men and women enjoy equal rights to land before marriage, in marriage after marriage and at succession without discrimination.

#### 2.1.3. The Land Act, Cap 227

This addresses four issues namely; holding, control, management and land disputes. In regard to tenure, the Act repeats (in Section 3) provisions of Article 237 of the Constitution which vests all land ownership in the citizens of Uganda, to be held under customary, freehold, mailo or leasehold tenure systems. However, the Land Act provides for acquisition of land or rights to use land for execution of public works.

Regarding control of land, the Act reaffirms the statutory power of compulsory acquisition conferred on the government and local authorities under articles 26 (2) and 237(2) (a) of the Constitution (Section 43). Since the Act does not repeal the Land Acquisition Act No. 14 of 1965, it is assumed that this legislation, meets requirements of Article 26(2) of the Constitution that requires a law to be in place for payment of compensation and access to courts. The Act also requires that landowners manage and utilize land in accordance with regulatory land use planning (Sections 44 and 46).

Compensation is assessed in accordance with the valuation principles laid out in Section 77 (1), briefly outlined below:

- The value for customary land is the open market value of unimproved land;
- The value of buildings on the land is taken at open market value for urban areas, and depreciated replacement cost for rural areas;
- The value of standing crops on the land is determined in accordance with the district compensation rates established by respective District Land Board. Annual crops which could be harvested during the period of notice to vacate given to the landowner or occupier of the land are excluded in determining compensation values;

In addition, Section 77(2) of the revised edition (2000) provides for a disturbance allowance on top of the computed compensation amount as shown below:

- 30% of compensation amount if quit notice is given within 6 months.
- 15% of compensation amount if quit notice is given after 6 months.

The foregoing laws form the basis of compensation requirements necessary to fulfill Uganda's regulatory requirements.

#### 2.1.4. Land Acquisition Act (1965)

This Act makes provision for procedures and method of compulsory acquisition of land for public purposes whether for temporary or permanent use. The Ministry responsible for land may authorize any person to enter upon the land, survey the land, dig or bore the subsoil or any other actions necessary for ascertaining whether the land is suitable for a given public purpose. However, compensation should be paid to any person who suffers damage as a result of such actions.

The Land Acquisition Act stops at payment of compensation to the affected people. In Uganda, it is not a legal requirement for a project to purchase alternative land for affected people. Once affected people are promptly and adequately compensated, the project proponent's obligations stop at this extent and there is no legal requirement that people should be moved or provided with alternative land. In Ugandan legal context, once people are compensated, they are expected to vacate affected properties without further claim.

#### 2.1.4.1. Land Tenure Regimes and Transfer of Land

Article 237 of the Constitution, 1995, vests land ownership in the citizens of Uganda and identifies four land tenure systems, namely: customary; freehold; mailo; and leasehold. The incidents of these systems are detailed under Section 4 of the Land Act (Cap 227). Those relevant to the irrigation scheme project are:

**Customary tenure:** This tenure is governed by rules generally accepted as binding and authoritative by the class of persons to which it applies. In other words, customary regime is not governed by written law.

**Land is owned in perpetuity:** Customary occupants occupy former public land, and occupy land by virtue of their customary rights; they have proprietary interest in the land and are entitled to certificates of customary ownership which may be acquired through application to the Parish Land Committee and eventual issuance by the District Land Board.

**Freehold tenure:** This tenure derives its legality from the Constitution of Uganda and its incidents from the written law. It involves holding land in perpetuity or for a period less than perpetuity fixed by a condition. It also enables the holder to exercise, subject to the law, full powers of ownership.

**Leasehold tenure:** This tenure system is:

- Created either by contract or by operation of the law;
- A form under which the landlord of lessor grants the tenant or lessee exclusive possession of the land, usually for a period defined and in return for a rent;
- The tenant has security of tenure and a proprietary interest in the land.

Although only these latter forms of tenure are legally defined under the Land Act, the context of common law also recognizes the statute of "Licensee" or "Sharecroppers", these terms having similar meanings in practice.

Licensees are persons granted authority to use land within for agricultural production. Traditionally, such production would be limited to annual crops. Licensees have no legal security of tenure or any proprietary right in the land. Their tenure is purely contractual.

#### 2.1.4.2. Right of spouse and children

The rights of spouse and children are protected under the Constitution of Uganda and the Land Act (Cap 227). The consent of spouse and children must be acquired prior to any transaction by the head of household on land on which the family ordinarily resides.

- Section 40 of the Land Act, 1998 requires that no person shall:



- Sell, exchange, transfer, pledge, mortgage or lease any land; or enter into any contract for the sale, exchange, transfer, pledge, mortgage or lease of any land;
- Give away any land inter vivos, or enter into any transaction in respect of land;
- In the case of land on which the person ordinarily resides with his or her spouse, and from which they derive their sustenance, except with the prior written consent of the spouse;
- In the case of land on which the person ordinarily resides with his or her dependent children of majority age, except with the prior written consent of the dependent children of majority age;
- In the case of land on which the person ordinarily resides with his or her dependent children below the majority age, except with the prior written consent of the Committee<sup>1</sup>;
- In the case of land on which ordinarily reside orphans below majority age with interest in inheritance of the land, except with prior written consent of the Committee.

**2.1.5. The Local Government Act (1997)**

Local Government Act 1997 provides for a system of Local Governments based on the District. Under the District there are lower Local Governments and administrative units. This system provides for elected Councils whereby chairmen nominate the executive committee of each council, functions of which include:

- Initiating and formulating policy for approval by council;
- Overseeing the implementation of Government and Council policies, and monitoring and coordinating activities of Non-Government Organizations in the district; and
- Receiving and solving disputes forwarded to it from lower local governments.
- Because local leaders participate in above roles and will be crucial not only during compensation process but also project implementation, this law is important.

**2.1.5.1. Local Governments Act, Cap 243**

This Act provides for decentralized governance and devolution of central government functions, powers and services to local governments that have own political and administrative set-ups. Districts have powers to oversee implementation of development activities. They also have units such as District Land Tribunals responsible for solving complaints that arise from land acquisition valuations and compensation payments.

According to Section 9 of the Act, a local government is the highest political and administrative authority in its area of jurisdiction and shall exercise both legislative and executive powers in accordance with the Constitution.

District Local Government, through which the project will be implemented is Kween and Bulambuli, will be key stakeholders in RAP implementation and monitoring.

**2.1.6. The Persons with Disability Act, (2006)**

The Government published its National Policy on Disability in February, 2006. It states that “four in every 25 persons in Uganda are persons with disabilities”. Thus, the disability fraternity appreciates that by enacting the disability policy and other relevant pieces of legislation, the government of Uganda is fulfilling its constitutional obligation of addressing the plight of people with disabilities (NUDIPU, 2007).

The strategic objective of this policy is "promoting equal opportunities and enhanced empowerment, participation and protection of rights of persons with disabilities (PWDs) irrespective of gender, age and type of disability". Article 16 recognizes the rights of persons with disability and states that the "Society and the State shall recognize the right of persons with disability to respect and human dignity".

**2.2. JICA Policy for Resettlement**

The key principle of JICA policies on involuntary resettlement is summarized below.

TABLE 7: JICA POLICY FOR RESETTLEMENT

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• The key principle of JICA policies on involuntary resettlement is summarized below.</li> <li>• Involuntary resettlement and loss of means of livelihood are to be avoided when feasible by exploring all viable alternatives.</li> <li>• When, after such examination, avoidance is proved unfeasible, effective measures to minimize the impact and to compensate for losses must be agreed upon with the people who will be affected.</li> <li>• People who must be resettled involuntarily and people whose means of livelihood will be hindered or lost must be sufficiently compensated and supported, so that they can improve or at least restore their standard of living, income opportunities and production levels to pre-project levels.</li> <li>• Compensation must be based on the full replacement cost<sup>1</sup> as much as possible.</li> <li>• Compensation and other kinds of assistance must be provided prior to displacement.</li> <li>• For projects that entail large-scale involuntary resettlement, resettlement action plans must be prepared and made available to the public. It is desirable that the resettlement action plan include elements laid out in the World Bank Safeguard Policy, OP 4.12, Annex A.</li> <li>• In preparing a resettlement action plan, consultations must be held with the affected people and their communities based on sufficient information made available to them in advance. When consultations are held, explanations must be given in a form, manner, and language that are understandable to the affected people.</li> <li>• Appropriate participation of affected people must be promoted in planning, implementation, and monitoring of resettlement action plans.</li> <li>• Appropriate and accessible grievance mechanisms must be established for the affected people and their communities.</li> <li>• Above principles are complemented by World Bank OP 4.12, since it is stated in JICA Guideline that "JICA confirms that projects do not deviate significantly from the World Bank's Safeguard Policies". Additional key principle based on World Bank OP 4.12 is as follows.</li> <li>• Affected people are to be identified and recorded as early as possible in order to establish their eligibility through an initial baseline survey (including population census that serves as an eligibility cut-off date, asset inventory, and socio-economic survey), preferably at the project identification stage, to prevent a subsequent influx of enforcers of others who wish to take advantage of such benefits.</li> <li>• Eligibility of Beneficiaries include, the PAPs who have formal legal rights to land (including customary and traditional land rights recognized under law), the PAPs who don't have formal legal rights to land at the time</li> </ul> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

<sup>1</sup> Description of "replacement cost" is as follows.

|                     |                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Land                | The pre-project or pre-displacement, whichever is higher, market value of land of equal productive potential or use located in the vicinity of the affected land, plus the cost of preparing the land to levels similar to those of the affected land, plus the cost of any registration and transfer taxes.                                                                       |
| Agricultural Land   | The pre-displacement market value of land of equal size and use, with similar or improved public infrastructure facilities and services and located in the vicinity of the affected land, plus the cost of any registration and transfer taxes.                                                                                                                                    |
| Land in Urban Areas | The market cost of the materials to build a replacement structure with an area and quality similar or better than those of the affected structure, or to repair a partially affected structure, plus the cost of transporting building materials to the construction site, plus the cost of any labor and contractors' fees, plus the cost of any registration and transfer taxes. |
| Structure           |                                                                                                                                                                                                                                                                                                                                                                                    |

of census but have a claim to such land or assets and the PAPs who have no recognizable legal right to the land they are occupying.

- Preference should be given to land-based resettlement strategies for displaced persons whose livelihoods are land-based.
- Provide support for the transition period (between displacement and livelihood restoration).

Particular attention must be paid to the needs of the vulnerable groups among those displaced, especially those below the poverty line, landless, elderly, women and children, ethnic minorities etc.

For projects that entail land acquisition or involuntary resettlement of fewer than 200 people, abbreviated resettlement plan is to be prepared.

In addition to the above core principles on the JICA policy, it also laid emphasis on a detailed resettlement policy inclusive of all the above points; project specific resettlement plan; institutional framework for implementation; monitoring and evaluation mechanism; time schedule for implementation; and, detailed Financial Plan etc.

RESETTLEMENT ACTION PLAN – ATARI IRRIGATION SCHEME

2.3. Gap Analysis between the JICA Guidelines and the Domestic Legal Framework

TABLE 8: GAP ANALYSIS BETWEEN THE JICA GUIDELINES AND THE DOMESTIC LEGAL FRAMEWORK

| No. | JICA Guideline/<br>World Bank OP4.12                                                                                                                                                                                                                                                                        | Laws of Uganda                                                                                                                                                                                                                                                                                                                                                                            | Gaps between JICA Guidelines and Laws of Uganda                                                                                                                                                                                  | Project policy                                                                                                                                                                                                                                                                                                                         |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Involuntary resettlement and loss of means of livelihood are to be avoided when feasible by exploring all viable alternatives. (JICA GL)                                                                                                                                                                    | Act 1998 give the government and local authorities' power to compulsorily acquire land under Eminent Domain. Avoidance or minimization of resettlement is not discussed. Uganda's Constitution 1995 and the Land Act 1998 give the government and local authorities' power to compulsorily acquire land under Eminent Domain. Avoidance or minimization of resettlement is not discussed. | Uganda has no specific guidelines on involuntary resettlement but even the two principle laws on land: the Constitution and the Land Act do not mention specific provision for avoidance or minimizing involuntary resettlement. | All viable alternatives including the design options have been explored to avoid involuntary resettlement and loss of means of livelihood. Justification for resettlement and measures taken to minimize impacts outlined in RAP.                                                                                                      |
| 2   | When population displacement is unavoidable, effective measures to minimize impact and to compensate for losses should be taken. (JICA GL)                                                                                                                                                                  | Uganda Constitution requires that prompt, fair, and adequate compensation be paid prior to displacement.                                                                                                                                                                                                                                                                                  | No gap                                                                                                                                                                                                                           | Measures taken to minimize impacts outlined in RAP.                                                                                                                                                                                                                                                                                    |
| 3   | People who must be resettled involuntarily and people whose means of livelihood will be hindered or lost must be sufficiently compensated and supported, so that they can improve or at least restore their standard of living, income opportunities and production levels to pre-project levels. (JICA GL) | The Land Act regulates the computation of cash compensation for lands, structures and crops, including disturbance allowance.                                                                                                                                                                                                                                                             | Other types of compensation (besides cash) including alternative lands, house and etc. are not applicable in Uganda's law.                                                                                                       | Other types of compensation: To meet various needs, the Project will offer options for the compensation including alternative lands, house as well as livelihood supports. Additionally, MAIF or PACC members can support to find out other land outside of Buffer Zone for renting to PAPs who currently renting land in Buffer Zone. |
| 4   | Compensation must be based on the Land Act, Cap 227 provides that:                                                                                                                                                                                                                                          | The Land Act regulates the computation of cash compensation for lands, structures and crops, including disturbance allowance.                                                                                                                                                                                                                                                             | The project developer will ensure fair and                                                                                                                                                                                       | Project will provide compensation based on full                                                                                                                                                                                                                                                                                        |

| No. | JICA Guideline/<br>World Bank OP4.12                                                                                                                                                            | Laws of Uganda                                                                                                                                                                                           | Gaps between JICA Guidelines<br>and Laws of Uganda                                                                                                                            | Project policy                                                                                                                         |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| 5   | of assistance must be provided prior to displacement (JICA GL)                                                                                                                                  | The Constitution says that no person from whom land is to be acquired shall be required to vacate until they receive full compensation (the exception could be with absentee landlords/Property owners). | not explicit in Uganda's law.                                                                                                                                                 | by-case basis will be provided prior to displacement.                                                                                  |
| 6   | For projects that entail large-scale involuntary resettlement, resettlement action plans must be prepared and made available to the public. (JICA GL)                                           | Land acquisition act section 3 and 5 only provide for a declaration that that land is needed for public purpose and a notice to persons having an interest to be published, respectively.                | Gap – There is no equivalence on preparation of resettlement plans and making them available to the public.                                                                   | Preparation of resettlement plans will be undertaken in a consultative manner and final ARAF documents made available to the public.   |
| 7   | In preparing a resettlement action plan, consultations must be held with the affected people and their communities based on sufficient information made available to them in advance. (JICA GL) | National regulations pertaining to stakeholder consultation are the Constitution of the Republic of Uganda, 1995 and the Access to Information Act, 2005.                                                | While there are no explicit provisions for stakeholder and community consultation, National legislation envisages limited consultations and disclosure, there are guidelines. | MAAIF/ JICA/ AFS have developed a Stakeholder Engagement Plan as part of the RAP. Stakeholder engagement is already being implemented. |
| 8   | When consultations are held, explanations must be given in a privacy of any other person.                                                                                                       | Access to Information Act, 2005 Part II of the privacy of any other person.                                                                                                                              | Two (2) Stakeholder Engagements were conducted: The first one was already held on 1st February, 2018 and the second one was held in                                           | Formation of the PACC and PDCC has played a key role in Stakeholder Engagement.                                                        |

| No. | JICA Guideline/<br>World Bank OP4.12                                                                                                                                                                                   | Laws of Uganda                                                                                                                                                                                                             | Gaps between JICA Guidelines<br>and Laws of Uganda                                                                                                                                    | Project policy                                                                                                                                                                                                                                                          |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9   | Appropriate participation of affected people must be promoted in planning, implementation, and monitoring of resettlement award.                                                                                       | The Land Acquisition Act makes provision for an enquiry whereby PAFs can make formal written claim and the assessment officer is obliged to conduct a hearing before making his award.                                     | While PAF participation is inherent in the ESI/ R/AF process, it contains a number of differences with the requirements of JICA Guidelines.                                           | PAF participation has been provided for and promoted throughout the ESI/ R/AF preparation process.                                                                                                                                                                      |
| 10  | World Bank OP4.12 requires that the borrower develops a jurisdiction to deal with and settle land disputes. The Land Acquisition Act provides for aggrieved persons to appeal to the High Court.                       | The Land Act, 1998 had provided for land tribunals to resolve all land related issues. However, since their suspension in 2007, the High Court handles all land-related cases as provided for in the Land Acquisition Act. | National law allows for grievance procedures. But potential gap exists in terms of accessibility and affordability by PAFs if the High Court must handle land-related grievances.     | The RAP details the grievance procedure, which is accessible to all PAFs and allows grievances in relation to all aspects of the Project at all stages, while ensuring compatibility with national laws and traditional mechanisms.                                     |
| 11  | Affected people are to be identified and recorded as early as possible in order to establish their eligibility through an initial baseline survey (including population census that serves as an eligibility cut-off). | The Land Acquisition Act (1965) requires asset inventories for the purpose of valuation by a registered valuer.                                                                                                            | Although PAFs are required to be identified and served notices, there is no explicit provision for baseline census and socioeconomic surveys as a part of RAP process in Ugandan Law. | Project undertook household census and socio-economic surveys of all affected households using meaningful indicators, together with asset surveys. These were analyzed in the RAP and used for developing appropriate resettlement and livelihood restoration measures. |

| No. | JICA Guideline/<br>World Bank OP4.12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Laws of Uganda                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Gaps between JICA Guidelines<br>and Laws of Uganda                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Project policy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12  | Eligibility of benefits includes, the PAPs who have formal legal rights to land (including customary and traditional land rights recognized under law); the PAPs who don't have formal legal rights to land at the time of census but have a claim to such land or assets and the PAPs who have no recognizable legal right to the land they are occupying. (WB OP4.12 Para.15)                                                                                                                                                             | The Constitution of Uganda, 1995 vests all land directly in the citizens of Uganda, and states that every person in Uganda has the right to own property.<br>Ugandan law recognizes four distinct land tenure systems: customary tenure, freehold tenure, leasehold tenure, and mailo tenure. Registered and customary land owners are entitled to compensation based on the open market value of the unimproved land.<br>However, there is no specific provision for squatters or illegal settlers and compensation is given to only legal occupants. | The laws not explicit about land-based resettlement strategies in the Uganda law. Therefore "land for land" policy is not applicable in Uganda.<br>The Project will provide compensation based on full replacement cost for land owners. This includes the payment of government valuation rates, the payment of a disturbance allowance that is approved by the CGV and compensation allowance for the farmers who will be rendered redundant during construction period as per schedule.<br>If PAP without land tenure is found in the project then JICA/WB OP4.12 para 15 will be applied. | Dialogue with policy makers will be initiated to explore the possibility of giving compensation to those without formal legal rights or claims to such lands in order to conform to WB OP4.12.<br>The Project will provide compensation based on full replacement cost for land owners. This includes the payment of government valuation rates, the payment of a disturbance allowance that is approved by the CGV and compensation allowance for the farmers who will be rendered redundant during construction period as per schedule.<br>If PAP without land tenure is found in the project then JICA/WB OP4.12 para 15 will be applied. |
| 13  | Preference should be given to land-based resettlement assessment office takes possession (ownership), the land immediately becomes vested in the Land Commission. The Land Act Cap 227 (Section 42) which provides for compulsory acquisition of land must comply with the provisions of Article 26 of the Constitution of the Republic of Uganda, 1995. In Uganda, it is not a legal requirement for a project to purchase alternative land for affected people. Once affected people are promptly and adequately compensated, the project | According to Land Acquisition Act, once the assessment office takes possession (ownership), the land immediately becomes vested in the Land Commission. The Land Act Cap 227 (Section 42) which provides for compulsory acquisition of land must comply with the provisions of Article 26 of the Constitution of the Republic of Uganda, 1995. In Uganda, it is not a legal requirement for a project to purchase alternative land for affected people. Once affected people are promptly and adequately compensated, the project                      | Land-based resettlement strategies for displaced persons whose livelihoods are land-based will be strongly considered as per the JICA/WB OP4.12 Para 11 since it is higher in standard compared to the Ugandan law.                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

| No. | World Bank OP4.12                                                                                                                                                                                                        | Laws of Uganda                                                                                                                                                                                                                                     | Gaps between JICA Guidelines<br>and Laws of Uganda                                                                                                                      | Project policy                                                                                                                                               |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                                                                                                                                                                                          | there is no legal requirement or provision that respondent's obligations stop at this extent and alternative land.<br>There are no equivalent provisions on relocation assistance, transitional support, or the provision of civic infrastructure. | There are no provisions for transitional support in Uganda.                                                                                                             | MAAIF will be requested to provide transition allowance as the JICA/WB requirements farmers will not be allowed to go to their farms.                        |
| 14  | Provide support for the transition period (between displacement and restoration), (WB OP4.12 Para.6)                                                                                                                     | There is no distinction made on the basis of gender, age, or ethnic origin in Uganda law during compensation.                                                                                                                                      | There is no distinction made on basis of gender, age or ethnic origin in Uganda law during compensation.<br>National law does not make provision for vulnerable groups. | The project will conform to the requirements of WB OP4.12 and best practices during preparation of the RAP in regards to the needs of the vulnerable groups. |
| 15  | Particular attention must be paid to the needs of the vulnerable groups among those displaced, especially those below the poverty line, landless, elderly, women and children, ethnic minorities etc. (WB OP4.12 Para.8) | There is no explicit provision for ARAP in the Uganda law.                                                                                                                                                                                         | National law does not make provision for vulnerable assistance.                                                                                                         | The Project has conducted RAP study and implemented the recommendations in conformity with JICA Guidelines and WB OP4.12.                                    |
| 16  | For projects that entail land acquisition or involuntary resettlement of fewer than 200 people, abbreviated resettlement plan is to be prepared. (WB OP4.12 Para.25)                                                     | There is no explicit provision for ARAP in the Uganda law.                                                                                                                                                                                         | There is no explicit provision for RAP in Uganda law.                                                                                                                   | The Project will be provide compensation calculated as full replacement cost.                                                                                |
| 17  | JICA GL indicates that "full replacement cost must be provided as much as possible", no matter where it is.                                                                                                              | The value of buildings on the land is taken at depreciated replacement cost for rural areas, and open market value for urban areas, and                                                                                                            | The gap exists on the "depreciated replacement cost for rural areas".                                                                                                   |                                                                                                                                                              |

## 2.4. Policy of Land Acquisition and Resettlement for the Project

TABLE 9 POLICY OF LAND ACQUISITION AND RESETTLEMENT FOR THE PROJECT

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>The Government of Uganda will use the Project Resettlement Policy (the Project Policy) for the PISD Atari Irrigation Project specifically because existing national laws and regulations have not been designed to address involuntary resettlement according to international practice, including JICA's policy. The Project Policy is aimed at filling-in any gaps in what local laws and regulations cannot provide in order to help ensure that PAPs are able to rehabilitate themselves to at least their pre-project condition. This section discusses the principles of the Project Policy and the entitlements of the PAPs based on the type and degree of their losses. Where there are gaps between the Uganda legal framework for resettlement and JICA's Policy on Involuntary Resettlement, practicable mutually agreeable approaches will be designed consistent with Government practices and JICA's Policy.</li> <li>Land acquisition and involuntary resettlement will be avoided where feasible, or minimized, by identifying possible alternative project designs that have the least adverse impact on the communities in the project area.</li> <li>Where displacement of households is unavoidable, all PAPs (including communities) losing assets, livelihoods or resources will be fully compensated and assisted so that they can improve, or at least restore, their former economic and social conditions.</li> <li>Compensation and rehabilitation support will be provided to any PAPs, that is, any person or household or business which on account of project implementation would have his, her or their;</li> <li>Standard of living adversely affected; Right, title or interest in any house, interest in, or right to use, any land (including premises, agricultural and grazing land, commercial properties, tenancy, or right in annual or perennial crops and trees or any other fixed or moveable assets, acquired or possessed, temporarily or permanently; Income earning opportunities; business, occupation, work or place of residence or habitat adversely affected temporarily or permanently; or Social and cultural activities and relationships affected or any other losses that may be identified during the process of resettlement planning.</li> <li>All affected people will be eligible for compensation and rehabilitation assistance, irrespective of tenure status, social or economic standing and any such factors that may discriminate against achievement of the objectives outlined above. Lack of legal rights to the assets lost or adversely affected tenure status and social or economic status will not bar the PAPs from entitlements to such compensation and rehabilitation measures or resettlement objectives. All PAPs residing, working, doing business and/or cultivating land within the project impacted areas as of the date of the latest census and inventory of lost assets (IOL), are entitled to compensation for their lost assets (land and/or non-land assets), at replacement cost, if available and restoration of incomes and businesses, and will be provided with rehabilitation measures sufficient to assist them to improve or at least maintain their pre-project living standards, income-earning capacity and production levels.</li> <li>PAPs that lose only part of their physical assets will not be left with a portion that will be inadequate to sustain their current standard of living. The minimum size of remaining land and structures will be agreed during the resettlement planning process.</li> <li>People temporarily affected are to be considered PAPs and resettlement plans address the issue of temporary acquisition.</li> <li>Where a host community is affected by the development of a resettlement site in that community, the host community shall be involved in any resettlement planning and decision-making. All attempts shall be made to minimize the adverse impacts of resettlement upon host communities.</li> <li>The resettlement plans will be designed in accordance with Uganda's National Involuntary Resettlement Policy (Land Acquisition act (1965) and JICA's Policy on Involuntary Resettlement.</li> <li>The Resettlement Plan will be translated into local languages and disclosed for the reference of PAPs as well as other interested groups.</li> <li>Payment for land and/or non-land assets will be based on the principle of replacement cost.</li> </ul> |
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- Compensation for PAPs dependent on agricultural activities will be land-based wherever possible. Land-based strategies may include provision of replacement land, ensuring greater security of tenure, and upgrading livelihoods of people without legal land titles. If replacement land is not available, other strategies may be built around opportunities for re-training, skill development, wage employment, or self-employment, including access to credit. Solely cash compensation will be avoided as an option if possible, as this may not address losses that are not easily quantified, such as access to services and traditional rights, and may eventually lead to those populations being worse off than without the project.
- Replacement lands, if the preferred option of PAPs should be within the immediate vicinity of the affected lands wherever possible and be of comparable productive capacity and potential. As a second option, sites should be identified that minimize the social disruption of those affected; such lands should also have access to services and facilities similar to those available in the lands affected.
- Resettlement assistance will be provided not only for immediate loss, but also for a transition period needed to restore livelihood and standards of living of PAPs. Such support could take the form of short-term jobs, subsistence support, salary maintenance, or similar arrangements.
- The resettlement plan must consider the needs of those most vulnerable to the adverse impacts of resettlement (including the poor, those without legal title to land, ethnic minorities, women, children, elderly and disabled) and ensure they are considered in resettlement planning and mitigation measures identified. Assistance should be provided to help them improve their socio-economic status.
- PAPs will be involved in the process of developing and implementing resettlement plans.
- PAPs and their communities will be consulted about the project, the rights and options available to them, and proposed mitigation measures for adverse effects, and to the extent possible be involved in the decisions that are made concerning their resettlement.
- Adequate budgetary support will be fully committed and made available to cover the costs of land acquisition (including compensation and income restoration measures) within the agreed implementation period. The funds for all resettlement activities will come from the Government.
- Displacement does not occur before provision of compensation and of other assistance required for relocation. Sufficient civic infrastructure must be provided in resettlement site prior to relocation. Acquisition of assets, payment of compensation, and the resettlement and start of the livelihood rehabilitation activities of PAPs, will be completed prior to any construction activities, except when a court of law orders so in expropriation cases.
- Organization and administrative arrangements for the effective preparation and implementation of the resettlement plan will be identified and in place prior to the commencement of the process; this will include the provision of adequate human resources for supervision, consultation, and monitoring of land acquisition and rehabilitation activities.
- Appropriate reporting (including auditing and redress functions), monitoring and evaluation mechanisms, will be identified and set in place as part of the resettlement management system. An external monitoring group will be hired by the project and will evaluate the resettlement process and final outcome. Such groups may include qualified NGOs, research institutions or universities.

### 3. SCOPE OF LAND ACQUISITION AND RESETTLEMENT

#### 3.1. Population Census Survey

Population census was carried out of the PAPs in the project area. All together there are 2,007 PAPs of 490 PAHs, 251 of them are from Kween District and 174 from Bulambuli District. The 490 PAPs are the household heads who own the affected plots; they were asked how many people they had in their households. Results from the census survey show that the total number of people to be affected is approximately 2,007. Table 10 shows the summary of the land acquisition impact of the project per district.

TABLE 10: SUMMARY OF LAND ACQUISITION IMPACTS PER DISTRICT

| District    | Sub-county | Parish                             | Village   | Number of PAHs | Number of Structures | Land (ha)     |
|-------------|------------|------------------------------------|-----------|----------------|----------------------|---------------|
| Kween       | Ngenge     | Sikwa                              | Amukokel  | 61             | 3                    | 10,068        |
|             |            |                                    | Sikwo     | 151            | 0                    | 12,948        |
|             |            |                                    | Soset     | 39             | 0                    | 2,459         |
|             |            | <b>Total (a)</b>                   |           | <b>251</b>     | <b>3</b>             | <b>25,475</b> |
| Bulambuli   | Bunambutye | Buwebele                           | Bunambale | 145            | 7                    | 20,663        |
|             |            |                                    | Buwechalo | 27             | 0                    | 1,108         |
|             |            |                                    | Bukhayaki | 2              | 0                    | 0,544         |
|             |            | <b>Total (b)</b>                   |           | <b>174</b>     | <b>7</b>             | <b>23,939</b> |
| Buffer Zone | Bunambutye |                                    |           | 32             | 0                    | 4,990         |
|             |            |                                    |           | 33             | 0                    | 7,071         |
|             |            |                                    |           | 65             | 0                    | 12,061        |
|             |            | <b>Grand Total (a) + (b) + (c)</b> |           | <b>490</b>     | <b>10</b>            | <b>59,851</b> |

#### 3.1.1. Project Affected Persons

Altogether the project is going to affect a total of 490<sup>2</sup> households who own land in the project area. Only 2 PAHs plus a fence of private school (1 PAH) out of the 490 will be both physically required to move and economically affected, the remaining 487 will mainly lose land that have been using for farming as the main source of their livelihood.

#### 3.1.2. Project Affected Structures

As mentioned above, the PAP census established that the number of Project Affected Structures is 10. Three of the structures such as two temporary residential houses and one set of school fences are found in Amukokel Village in Kween District. These structures are found on private land, two temporary residential houses of belong to one household while the other belongs to a private school.

<sup>2</sup> A full List of all plus their photograph is Appended on this report as Volume two.

Other seven of the affected structures are in Bulambuli District in Bunambale Village; these are temporal structures such as, business structures, commercial shades, latrines and bathrooms belonging to one household. These 3 PAHs who are also referred to physically displaced will have be provided with enough compensation to allow them find alternative land and also give them enough time to reconstruct their structures before construction of the project takes place.

TABLE 11: NUMBER OF PROJECT AFFECTED UNITS AND PROJECT AFFECTED PERSONS

| District  | Sub-county | Parish   | Village   | Structure Type                                                                                                                                                                                                      | No. of Affected Structures |
|-----------|------------|----------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Bulambuli | Bunambutye | Buwebele | Bunambale | <b>Temporarily Commercial House:</b><br>Roof: Galvanized Corrugated Iron sheet (GCI) on local poles<br>Celling: Nil<br>Walls: Mud and wattle<br>Doors: Timber<br>Windows: Timber<br>Floor: Earth<br>Condition: Fair | 1                          |
|           |            |          |           | <b>Shade for Commercial 1:</b><br>Roof: Grass thatched<br>Walls: Wooden poles supporting<br>Doors: Nil<br>Windows: Nil<br>Floor: Earth<br>Condition: Fair                                                           | 1                          |
|           |            |          |           | <b>Shade for Commercial 2:</b><br>Roof: Grass Thatched<br>Walls: Wood end poles supporting<br>Doors: Nil<br>Windows: Nil<br>Floor: Earth<br>Condition: Fair                                                         | 1                          |
|           |            |          |           | <b>Temporarily Store House:</b><br>Roof: Grass thatched<br>Celling: Nil<br>Walls: Mud and wattle<br>Doors: Timber<br>Windows: Nil<br>Floor: Earth<br>Condition Fair                                                 | 1                          |
|           |            |          |           | <b>Temporarily Kitchen:</b><br>Roof: Grass thatched<br>Celling: Nil<br>Walls: Mud and wattle<br>Doors: Timber<br>Windows: Nil<br>Floor: Earth<br>Condition Fair<br><b>Pit latrine 1:</b>                            | 1                          |

| District | Sub-county | Parish                             | Village  | Structure Type                                                                                                                                                                                         | No. of Affected Structures |
|----------|------------|------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Kween    | Ngenge     | Sikwa                              | Amukokel | Roof: Grass thatched<br>Walls: Mud and wattle<br>Doors: Nil<br>Floor: Earth<br>Condition: Fair                                                                                                         | 1                          |
|          |            |                                    |          | <b>Pit latrine 2:</b><br>Roof: Grass thatched<br>Walls: Mud and wattle<br>Doors: Nil<br>Floor: Earth<br>Condition: Fair                                                                                | 1                          |
|          |            |                                    |          | <b>Bathroom:</b><br>Roof: Nil<br>Walls: Enclosure of grass tied to wooden poles<br>Doors: Nil<br>Windows: Nil<br>Floor: Earth<br>Condition: Fair                                                       | 1                          |
|          |            |                                    |          | <b>Temporarily Residential House:</b><br>Roof: GCI* on local poles<br>Ceiling: Nil<br>Walls: Mud and wattle<br>Doors: Battered timber<br>Windows: Nil<br>Floor: Earth<br>Condition: Fair               | 1                          |
|          |            |                                    |          | <b>Temporarily Residential House:</b><br>Roof: Grass thatched<br>Ceiling: Nil<br>Walls: Mud and wattle with no finish yet<br>Doors: Battered timber<br>Windows: Nil<br>Floor: Earth<br>Condition: Fair | 1                          |
|          |            |                                    |          | <b>Public structures:</b><br>School Fence: Barbed wire on local poles                                                                                                                                  | 1                          |
|          |            |                                    |          | -                                                                                                                                                                                                      | -                          |
|          |            |                                    |          | -                                                                                                                                                                                                      | -                          |
|          |            |                                    |          | -                                                                                                                                                                                                      | -                          |
|          |            |                                    |          | -                                                                                                                                                                                                      | -                          |
|          |            | Sub- total (a)                     |          |                                                                                                                                                                                                        | 7                          |
|          |            | Sub- total (b)                     |          |                                                                                                                                                                                                        | 3                          |
|          |            | <b>Grand Total (c) = (a) + (b)</b> |          |                                                                                                                                                                                                        | <b>10</b>                  |

Note: There is no squatter in the project area.

Some of the photos showing the structures that will be affected are shown in figure 5 below.

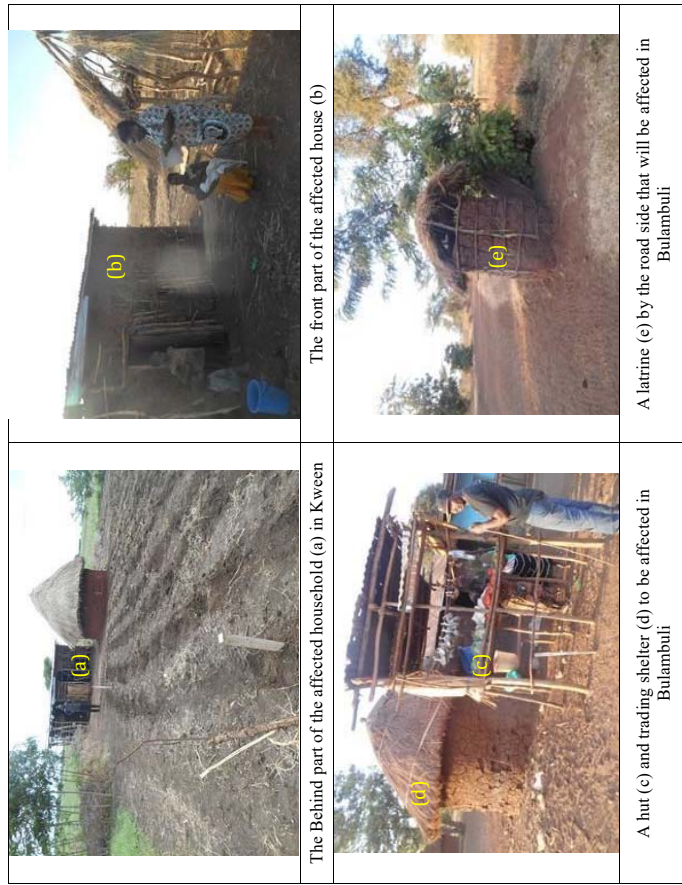


FIGURE 4: PICTURE OF SOME OF THE AFFECTED STRUCTURES/BUILDINGS

### 3.1.3. Project Acquired Lands

Approximately a total of 59,851 ha of land including the lands of the buffer zone will be acquired by the Project. The lands acquired for construction of facilities such as irrigation / drainage canals, road, dyke, etc. covers approximately 80% of the total acquired land area, while the lands of the buffer zone is almost 20%. The total number of land to be affected in Kween District is 29,386 ha while in Bulambuli is also 30,465 ha. Details of land affected per village in both districts are shown in table 8 below.

TABLE 12: SIZE AND AMOUNT OF TOTAL LAND AFFECTED IN THE PROJECT AREA

| No. | District  | Acquired Land (ha) |              | Total (ha)    |
|-----|-----------|--------------------|--------------|---------------|
|     |           | For facilities     | Buffer Zone  |               |
| 1   | Bulambuli | 22,315             | 7,071        | 29,386        |
| 2   | Kween     | 25,475             | 4,990        | 30,465        |
|     | Total     | 48,790 (80%)       | 12,061 (20%) | 59,851 (100%) |

### 3.1.4. Agricultural Products and Trees affected in the Project Area

The crops and trees that will be in the project area include; Avacado, Mature Mango Trees, Banana Clumps, Paw Paws, Orange trees, Jack Fruit Trees, Coffee Trees, Eucalyptus Trees, Cereveria, Fig Trees, Acacia Trees and Bust Trees. All together a total of 2024 crops and trees will be lost due the implementation of the irrigation project in Atari area. Sikwo Village in Kween District will lose the highest number of crops and trees (1,875) while Bukhayaka village in Bulambuli District will lose none as shown in the table 10 below.

TABLE 13: CROPS AND TREES AFFECTED IN THE PROJECT AREA

| No.              | Location (Village/Sub District) | Type of Plants                     | Sub-Total          | Total |              |   |
|------------------|---------------------------------|------------------------------------|--------------------|-------|--------------|---|
| 1                | Amukokel Village                | Acacia trees                       | Permanent          | 90    |              |   |
|                  |                                 | Avacado                            | Annual             |       |              |   |
|                  |                                 | Mature Mango Trees                 | Permanent          |       |              |   |
|                  |                                 | Banana Clumps                      | Permanent          |       |              |   |
|                  |                                 | Eucalyptus Trees                   | Permanent          |       |              |   |
| 2                | Sikwo Village                   | Paw Paws                           | Annual             | 1,875 |              |   |
|                  |                                 | Fig Trees                          | Permanent          |       |              |   |
|                  |                                 | Accacia Trees                      | Permanent          |       |              |   |
|                  |                                 | Jack Fruit Trees                   | Permanent          |       |              |   |
|                  |                                 | Greveria                           | Permanent          |       |              |   |
|                  |                                 | Coffee Trees                       | Permanent          |       |              |   |
|                  |                                 | Bush Trees                         | Permanent          |       |              |   |
|                  |                                 | Eucalyptus Trees                   | Permanent          |       |              |   |
|                  |                                 | Fig Trees                          | Permanent          |       |              |   |
|                  |                                 | Banana Clumps                      | Permanent          |       |              |   |
| Mango trees      | Permanent                       |                                    |                    |       |              |   |
| 3                | Soset village                   | Bush Trees                         | Permanent          | 59    |              |   |
|                  |                                 | Acacia Trees                       | Permanent          |       |              |   |
|                  |                                 | <b>Total in Kween District</b>     |                    |       | <b>2024</b>  |   |
|                  |                                 | Bulambuli District                 | Avacado            |       | Annual       | 2 |
|                  |                                 |                                    | Mature Mango Trees |       | Permanent    |   |
| Banana Clumps    | Permanent                       |                                    |                    |       |              |   |
| Eucalyptus Trees | Permanent                       |                                    |                    |       |              |   |
| Paw Paws         | Annual                          |                                    |                    |       |              |   |
| 1                | Buwembale Village               | Fig Trees                          | Permanent          | 529   |              |   |
|                  |                                 | Accacia Trees                      | Permanent          |       |              |   |
|                  |                                 | Jack Fruit Trees                   | Permanent          |       |              |   |
|                  |                                 | Orange Trees                       | Permanent          |       |              |   |
|                  |                                 | <b>Total in Bulambuli District</b> |                    |       | <b>555</b>   |   |
|                  |                                 | <b>Total</b>                       |                    |       | <b>2,579</b> |   |

| No.                                | Location (Village/Sub District) | Type of Plants | Sub-Total    | Total      |
|------------------------------------|---------------------------------|----------------|--------------|------------|
| 2                                  | Buwachalo Village               | Bush Trees     | Permanent    | 26         |
|                                    |                                 | Banana clumps  | Permanent    |            |
|                                    |                                 | Bush Trees     | Permanent    |            |
| 3                                  | Bukhayaki Village               | -              | 0            | 0          |
| <b>Total in Bulambuli District</b> |                                 |                | <b>0</b>     | <b>555</b> |
| <b>Total</b>                       |                                 |                | <b>2,579</b> |            |

### 3.1.5. Crops Grown on the Affected Land

The affected land is mainly being used for growing crops and grazing cattle. The main crop grown in the project area is maize over all at (77%), followed by rice and beans at (46%), then water melon and tomatoes at 19%, Yams (13%), bananas and sunflower (12%). Other crops grown on a small scale include; Sim-sim, Sorghum, Sweet potatoes, Millet, Mangoes, Cassava, Sugarcane, Vegetables, Cocoa, Onions, Peas, Oranges, Wheat, Ground nuts and Ginger. Animals such as cows, goats and sheep are also grazed in the project area. All the above mentioned PAPs own their property legally.

### 3.1.6. Cut-off Date

PAPs shall be provided resettlement assistance in lieu of compensation for the land they occupy, and other assistance, as necessary if they occupied the project area prior to a cut-off date established. Persons who encroach on the area after the cut-off date will not be entitled to compensation or any other form of resettlement assistance. The cut-off date is the first date of the census and this is 20<sup>th</sup> January, 2018.

PAPs were clearly informed that persons who will claim ownership of any plot after this will not be compensated. During the survey to identify the affected plots, the surveyor and valuer moved together with the owners of plots including the local leaders to help confirm ownership of the plots. Thereafter the identified PAPs were given a valuation form including the size of land affected and the properties to be compensated. After the signed on the form to acknowledge that the information therein is true and the form was countersigned by the local leaders and PACC Chairmen of each district. This measure plays a big role in discouraging illegal entrants to claim for compensation, because during the census only those PAPs with the signed form were the ones interviewed.

Uganda does not have a policy on updating the census once it is delayed, however, following the JICA and the World Bank OP 4.12 guidelines on compensation that the data is required to



be updated, if the land acquisition is not implemented within two years after the population census survey.

### 3.2. Socio-Economic Baseline

This section describes the existing social and economic conditions within the Project Area. These conditions will be used to establish the baseline against which future demographic conditions, and the effectiveness of RAP interventions, to enable displaced households to restore and improve their quality of life, will be measured.

The socio-economic survey describes basic information on the standard characteristics and livelihood of households to be compensated. The information includes; production system, occupation, structure of household, incomes from formal/informal economic activities, standards of living, social and cultural characteristics etc. The objective of collecting the socio-economic data of the affected persons assists to know the social structure and distribution for the purposes of planning the resettlement, relocation, plan measures of livelihood and rehabilitation of the affected persons.

#### 3.2.1. Number of Respondents Interviewed

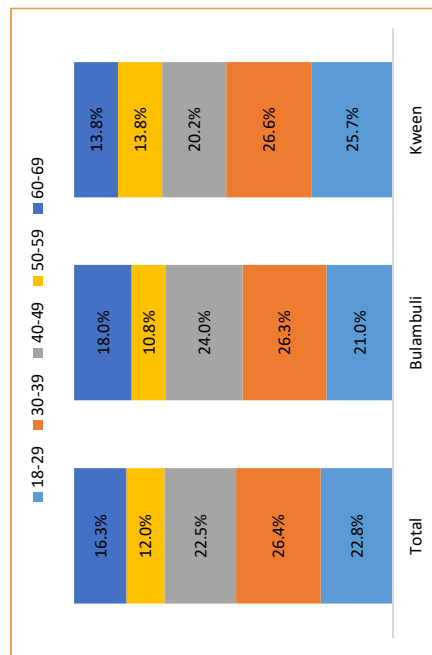
A sample of 276 households was sampled from the two parishes of Sikwa and Buwebere of Kween and Bulambuli districts respectively as shown in the table 11 below. Household lists were got from the Local Council Chairpersons and samples were picked while using a sample space of 4 households. The table below shows the percentage sampled from each village. The total percentage sample was 38.44%.

TABLE 14: NUMBER OF HOUSEHOLD HEADS INTERVIEWED

| District                  | Sub/county          | Parish        | Village List  | No. & %age HHH Interviewed per Sample | %age of HHH sampled per Village |
|---------------------------|---------------------|---------------|---------------|---------------------------------------|---------------------------------|
| Bulambuli<br>(167, 60.5%) | Bunambutye<br>(167) | Buwebele(167) | 57 Bubuya B   | Bubuya B (28,<br>16.8%)               | 49.1%                           |
|                           |                     |               | 85 Bukhayaki  | Bukhayaki (66,<br>39.5%)              | 77.6%                           |
|                           |                     |               | 158 Bunambale | Bunambale (46,<br>27.5%)              | 29.1%                           |
|                           |                     |               | 102 Buwechalo | Buwechalo (27,<br>16.2%)              | 26.5%                           |
| Kween<br>(109, 39.5%)     | Ngenget(109)        | Sikwa(109)    | 97 Amokokel   | Amokokel (35,<br>32.1%)               | 36%                             |
|                           |                     |               | 156 Sikwo     | Sikwo (51,<br>46.8%)                  | 32.6%                           |
|                           |                     |               | 63 Soset      | Soset (23,<br>21.1%)                  | 36.5%                           |
| 276                       | 276                 | 276           | 718           | 276                                   | 38.44%                          |

### 3.2.2. Age of Household Heads

The majority of the respondents were between 30-39 (26.4%) followed by 18-29 who were 22.8%, 40-49 with 22.5%, 60-69 with 16.3% and the age group with the least respondents was 50-59 with 12%. However, there are variations in the figures presented for each district. While for both districts, the majority of the respondents were between 30-39 (26.3% for Bulambuli and 26.6% for Kween), there are marked differences for some age groups. Although in Bulambuli respondents were aged between 60-69 years were 18%, which is higher than 13.8% for Kween, for the 18-29 age group, Kween had more respondents (25.7%) compared to Bulambuli with 21%. See results in figure 6 below.



Sources: Primary Data January 2018

FIGURE 5: AGE OF HOUSEHOLD HEADS INTERVIEWED

### 3.2.3. Tribe of Household Heads

Results from the survey show that there are many tribes in the project area, in Bulambuli district, the most predominant tribe is Bagisu (87%) while in Kween the predominant tribe is Subiny (65%). Other tribes found in the project area include: Bagwere, Basoga, Baktusi, Banyole and the Iteso. See figure 7 below.

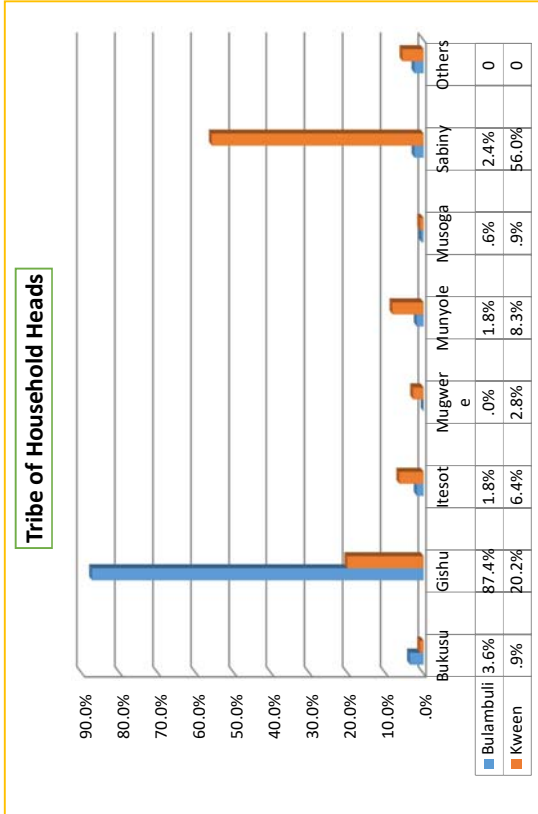
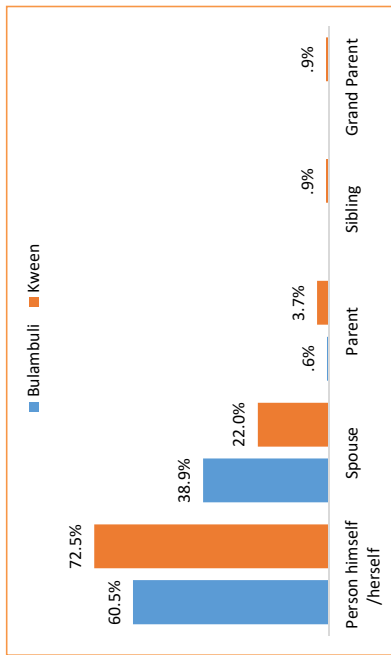


FIGURE 6: TRIBE OF HOUSEHOLD HEADS INTERVIEWED

### 3.2.4. Relationship to Household Head

Results from the survey indicate that the majority of the respondents were household heads (60.5% in Bulambuli and 72.5% in Kween). Respondents who were related to the household head through marriage /marital relations were 38.9% in Bulambuli and those in Kween were 22%. Respondents for who the household head was a parent constituted 0.6% in Bulambuli and 3.7% in Kween. There were no respondents related to household head as siblings in Bulambuli and for this category there were 0.9% in Kween. Respondents who were grandparents to the household head were 0.9 in Kween and none in Bulambuli. See figure 8 below.



Source: Primary Data January 2018

FIGURE 7: RELATIONSHIP OF RESPONDENT TO THE HOUSEHOLD HEAD

### 3.2.5. Marital status of Household Head

The majority of respondents were married or cohabiting (86.85% in Bulambuli and 78.9% in Kween). Respondents who had never married in Kween were 4.6% while in Bulambuli had there was none in this category. For those separated, in Bulambuli they were 7.2% and 11% in Kween. Those widowed constituted 6% of the respondents in Bulambuli and 5.5% in Kween as shown in figure 9 below.

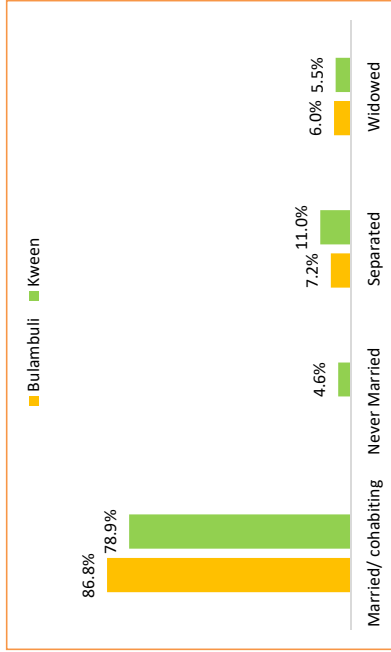
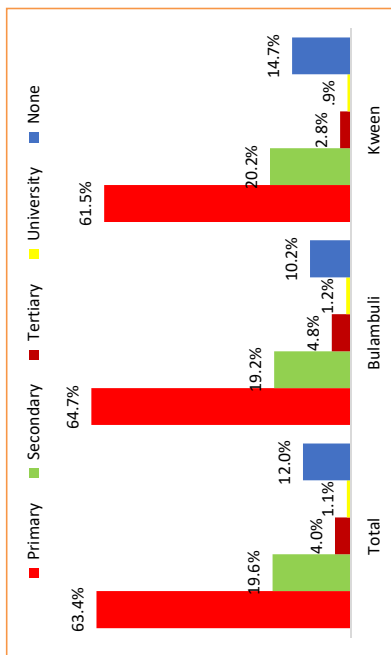


FIGURE 8: MARITAL STATUS OF HOUSEHOLD HEAD

### 3.2.6. Highest Level of Education Attained

Results from the study shows that out of the total number of respondents, 63.4% had finished primary level, 19.6% attained secondary level while 4% had been to tertiary institutions, 1.1% were university graduates and 12% had never been to school. When the proportions for the two districts are compared, there does not seem to be marked variations especially among those who attained primary and secondary education. Respondents who attained tertiary education in Bulambuli were more than those in Kween (4.8% and 2.8% respectively). Kween district had more respondents (14.7%) who had never had any education compared to Bulambuli with 10.2%. See figure 10 below.

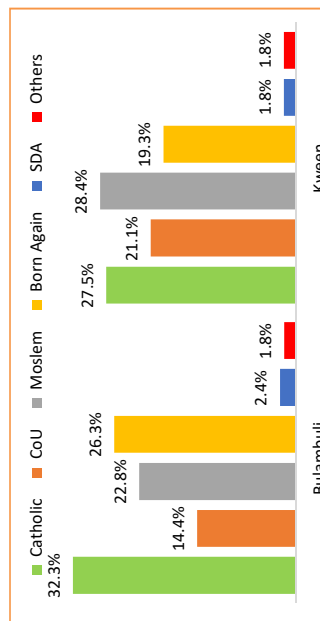


Source: Primary Data January 2018

FIGURE 9: HIGHEST LEVEL OF EDUCATION ATTAINED BY HOUSEHOLD HEAD

### 3.2.7. Religious Affiliation

As shown in figure 11 below, the dominant religion in Bulambuli was Catholic (32.3%) followed by Born Again (26.3%), Islam (22.8%) and SDA (2.4%) while in Kween, Islam dominated (28.4%) followed by Catholic (27.5%), Church of Uganda (21.1%) and SDA (1.8%). Other religions constituted 1.8 % in both Bulambuli and Kween.



Source: Primary Data January 2018

FIGURE 10: RELIGIOUS AFFILIATION OF HOUSEHOLD HEADS

### 3.2.8. Main Occupation

The major occupation of the people in the study districts was peasant farming (93.6% in Kween and 90.4% in Bulambuli). Table 11 indicates in Kween, people were evenly distributed in private employment (1.8%), public service (1.8%) and trade (1.8%) whereas in Bulambuli private employment had 4.2%, followed by public service (3%) and trade (2.4%). The occupation with least people was boda boda, with Kween having 0.9% and none in Bulambuli. See figure 11 below.

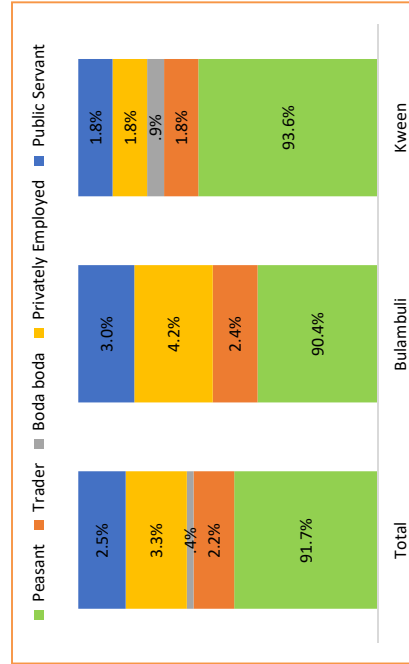
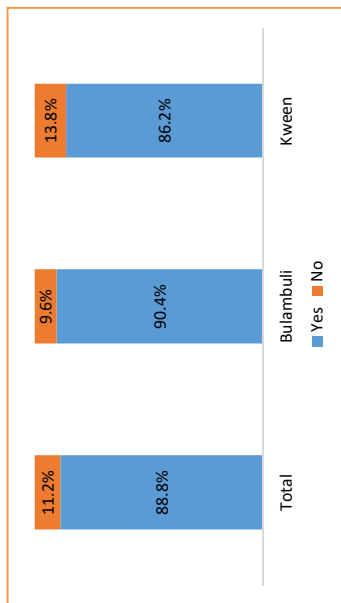


FIGURE 11: MAIN OCCUPATION OF HOUSEHOLD HEADS

### 3.2.9. Household always lived in the project Area

Asked if they always lived in the project area, most of the households (88.8%) in the project districts visited always lived in their current household. Those who did not always live in their

current household were very few (11.2%). See figure 13 below.



Source: Primary Data January 2018

FIGURE 12: HOUSEHOLD LIVES IN THE PROJECT AREA

### 3.2.10. How long has the household head lived in this household?

Table 12 below shows that most of the household heads (44.6%) had lived in those households since birth while (38.8%) had lived there within a period of less than ten years. There were few people who had lived in their current households between 0-10 years (12.0%) and over 20 years (4.7%).

TABLE 15: YEARS HOUSEHOLD HAS SPENT IN THE PROJECT AREA

|               | Total (276) | Bulambuli (167) | Kween (109) |
|---------------|-------------|-----------------|-------------|
| Since birth   | 44.6%       | 38.3%           | 54.1%       |
| 0-10 years    | 38.8%       | 41.9%           | 33.9%       |
| 10-20years    | 12.0%       | 13.2%           | 10.1%       |
| Over 20 years | 4.7%        | 6.6%            | 1.8%        |

### 3.2.11. Ownership of Dwelling Place

Table 13 below indicates that in total, 81.5% of the people in both districts owned the homes they lived in and those who rented were 18.5%. The mean rent for the two district was 16,286; 17,857 for Bulambuli and 15,107 for Kween.

TABLE 16: OWNERSHIP OF DWELLING PLACE

|           | Total  | Bulambuli | Kween  |
|-----------|--------|-----------|--------|
| Owned     | 81.5%  | 86.8%     | 73.4%  |
| Rented    | 18.5%  | 13.2%     | 26.6%  |
| # Renting | 49     | 21        | 28     |
| Mean Rent | 16,286 | 17,857    | 15,107 |

Source: Primary Data January 2018

### 3.2.12. Type of Houses Owned

The types of houses found in the project area are presented in table 14 below as; independent house, apartment in building, tenement, hut and semi-permanent. Out of the 276 households interviewed, of these 167 were in Bulambuli, of which 49.7% were huts, 51.4% independent houses, 3% tenants and no semi-permanent houses. Kween had 109 houses, out of these 57.8% were independent houses, while 22% were huts, 10.1% semi-permanent houses, 8.3% were tenants. Kween had more houses roofed with iron sheets (58.7%) than Bulambuli (43.1%). Grass thatched houses in Bulambuli constituted 56.9% and in Kween (41.3%). Most houses had wall made of mud and wattle (96.4% in Bulambuli and 85.3% in Kween). Houses with walls made of sun dried/unburnt bricks were found only in Kween and these were few (11.9%). Brick or cement walls were found only in Bulambuli but there were very few houses made up of these (3.6%). It was only Kween that had houses with walls made up of stone with mud (2.8%). The floor of most of the houses was made of earth, sand or cow dung (99.1% in Kween and 95.2% in Bulambuli).

### 3.2.13. Status of Houses

TABLE 17: TYPE OF HOUSES OWNED

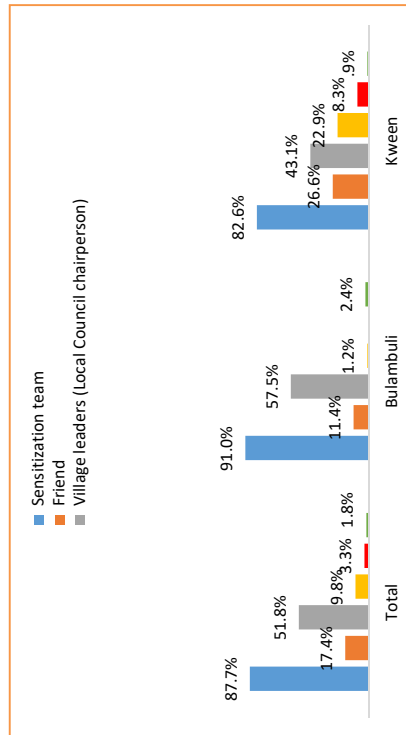
|                       | Total | Bulambuli | Kween |
|-----------------------|-------|-----------|-------|
| Independent house     | 51.4% | 47.3%     | 57.8% |
| Type of main house    |       |           |       |
| Tenement (Muzigo)     | 5.1%  | 3.0%      | 8.3%  |
| Hut                   | 38.8% | 49.7%     | 22.0% |
| Semi-permanent        | 4.0%  |           | 10.1% |
| Roof                  |       |           |       |
| Iron sheets           | 49.3% | 43.1%     | 58.7% |
| Grass thatched        | 50.7% | 56.9%     | 41.3% |
| Walls                 |       |           |       |
| Brick or cement block | 2.2%  | 3.6%      |       |
| Stone with mud        | 1.1%  |           | 2.8%  |

|                                        | Total | Bulambuli | Kween |
|----------------------------------------|-------|-----------|-------|
|                                        | 276   | 167       | 109   |
| Adobe (sun-dried brick/unburnt bricks) | 4.7%  |           | 11.9% |
| Quineha (mud and wattle)               | 92.0% | 96.4%     | 85.3% |
| Cement screed                          | 3.3%  | 4.8%      | .9%   |
| Earth, sand or cow dung                | 96.7% | 95.2%     | 99.1% |

Source: Primary Data January 2018

### 3.2.14. Information about the Project

Results from the survey shows that people in the project districts got information about the project from the following sources; sensitization team (87.7%), village leaders (51.8.7%), friends (17.4%), PACC members (9.8%) and JICCA (3.3%). There were more people in Bulambuli (2.4%) than in Kween (0.9%) who had no information about the project. See figure 14 below.



Source: Primary Data January 2018

FIGURE 13: INFORMATION ABOUT THE PROJECT

### 3.2.15. Impacts of the project

People in the project area were of the positive and negative impacts of the project, results in table 15 below indicates that more people were of the view that the project had more positive effects than the negative ones. The positive effects included improved infrastructure and access farm land (77.5%), increased yield (63.4%), full and fair compensation (24.3%) and employment opportunities/improved life (4.7%).

The negative effects were; loss of land and/or crops (69.6%), inadequate compensation (17.8%), social disruption and loss of social ties (17.4%), loss of buildings (13.8%) and damage to local roads (9.8%). Major differences in the effects of the project between the two districts were in terms of increased yield (69.7% for Kween and 69.3% for Bulambuli) and employment opportunities/improved life (10.1% for Kween and 1.2% for Bulambuli). On the other hand, some negative effects were more severe in Kween than Bulambuli and the vice versa. Bulambuli suffered more loss of buildings (20.4%) than Kween (3.7%) while there were more people who complained of inadequate compensation in Kween (28.4%) than in Bulambuli (10.8%).

TABLE 18: IMPACTS OF THE PROJECT

| Effects                                            | Total | Bulambuli | Kween |
|----------------------------------------------------|-------|-----------|-------|
| Loss of land and/or crops.                         | 69.6% | 71.3%     | 67.0% |
| Construction damage to local roads is negative     | 9.8%  | 9.6%      | 10.1% |
| Loss of buildings                                  | 13.8% | 20.4%     | 3.7%  |
| Severance of social ties hence social disruption   | 17.4% | 15.0%     | 21.1% |
| Inadequate compensation                            | 17.8% | 10.8%     | 28.4% |
| None                                               | 25.7% | 26.9%     | 23.9% |
| Improved infrastructure and access farm land       | 77.5% | 75.4%     | 80.7% |
| Full and fair compensation                         | 24.3% | 24.6%     | 23.9% |
| Increased yields                                   | 63.4% | 59.3%     | 69.7% |
| Employment opportunities/ Improved life conditions | 4.7%  | 1.2%      | 10.1% |
| None                                               | 4.3%  | 6.6%      | .9%   |

Source: Primary Data January 2018

### 3.2.16. Commonest Telecom used

Figure 15 below, reveals that the commonest telecom used in the districts visited was MTN (88.5%) followed by Airtel (6.1%) and WARID (2.7%). The least used telecoms were UTL (0.4%), Africell/Orange (0.4%) and Safaricom (0.4%).

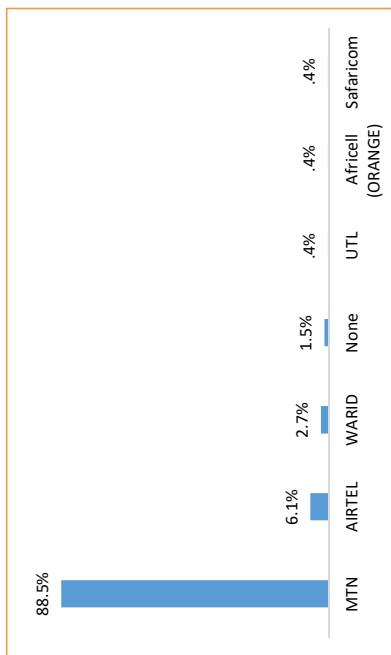


FIGURE 14: COMMONEST TELECOM USED

### 3.2.17. Water and Sanitation

Different aspects of sanitation were covered including; latrine usage, waste products, main water source, distance to water source, how water for drinking is treated and responsibility for fetching water. See table 16 below for details.

#### 3.2.18. Latrine Usage

The most common latrine usage in both district was pit latrine (75.4%) followed by the bush (18.1%). Other types were communal latrine (2.5%) digging a hole in the ground (2.2%). The VIP was the least used (0.9% in Kween) and no usage in Bulambuli. More people used pit latrine in Bulambuli (85.6%) than in Kween (59.6%). Less people used the bush in Bulambuli (10.8%) than in Kween (29.4%). The bush was not used in Bulambuli as a latrine.

#### 3.2.19. Waste Products

Waste products were disposed of in four ways; rubbish pit, back yard, dumping anywhere and burning. The most used method for waste disposal in Bulambuli was a rubbish pit (73.1%), but this was used by few people in Kween (30.3%). In Kween, the most common method of waste disposal was dumping everywhere (53.2%). Burning waste products was least used in the two districts (4.2% in Bulambuli and 1.8% in Kween).

### 3.2.20. Main Water Source

The main water source in both districts was the borehole (96%). Some few people drew water from rivers/lakes (2.8% in Kween and 1.2% in Bulambuli) and pond/unprotected well/spring (0.9% in Kween and .0% in Bulambuli)

#### 3.2.21. How water for drinking is treated

Three methods for treating water for drinking were considered; boiling, drinking bottled water and treating with purified tablets but it was found out that the majority of the people did not use any of these methods (83%). Boiling water was used by few people (19.3% in Kween and 10.8% in Bulambuli). Only 3% in Bulambuli and 0.9% in Kween treated drinking water with purified tablets.

#### 3.2.22. Distance to water source

The distance to the water source for most people was between 100-500m (56% in Kween and 53.9% in Bulambuli). People in Kween had more access to water sources than in Bulambuli.

#### 3.2.23. Responsibility for fetching water

In both districts the responsibility of fetching water fell mostly on women (75.9% in Bulambuli and 67% in Kween). Other household members who participated in participated in fetching water were boy children (9.0% in Bulambuli and 7.3% in Kween), adult men (6.6% in Bulambuli and 9.2% in Kween) and girl children (6.6% in Bulambuli and 9.2% in Kween).

Use of hired labour for fetching water was very low at 1.8% in each of the two districts.

TABLE 19: WATER AND SANITATION

|               | Total                        | Bulambuli | Kween |       |
|---------------|------------------------------|-----------|-------|-------|
|               | 276                          | 167       | 109   |       |
| Latrine usage | Bush                         | 18.1%     | 10.8% | 29.4% |
|               | Hole in ground               | 2.2%      | .0%   | 5.5%  |
|               | Communal Latrine             | 2.5%      | 1.2%  | 4.6%  |
|               | Pit latrine                  | 75.4%     | 85.6% | 59.6% |
|               | VIP                          | .4%       | .0%   | .9%   |
| Sanitation    | other (specify)              | 1.4%      | 2.4%  | .0%   |
|               | Rubbish pit                  | 56.2%     | 73.1% | 30.3% |
|               | Back yard                    | 14.9%     | 15.0% | 14.7% |
|               | Dump anywhere                | 25.7%     | 7.8%  | 53.2% |
|               | Burn                         | 3.3%      | 4.2%  | 1.8%  |
| Water         | Pond/unprotected well/spring | .4%       | .0%   | .9%   |
|               | borehole                     | 96.0%     | 97.6% | 93.6% |
|               | Tap water (stand pipe)       | 1.4%      | .6%   | 2.8%  |
|               | Piped water in house         | .4%       | .6%   | .0%   |

|                                   | Total                       | Bulambuli | Kween |       |
|-----------------------------------|-----------------------------|-----------|-------|-------|
|                                   | 276                         | 167       | 109   |       |
| Distance to water source          | River/Lake less than 100m   | 1.8%      | 1.2%  | 2.8%  |
|                                   | 100-500m                    | 16.3%     | 9.6%  | 26.6% |
|                                   | 500m - 1km                  | 54.7%     | 53.9% | 56.0% |
|                                   | 1-2km                       | 18.8%     | 23.4% | 11.9% |
|                                   | Over 2km                    | 8.3%      | 10.8% | 4.6%  |
| How water for drinking is treated | Boil                        | 1.8%      | 2.4%  | .9%   |
|                                   | Drink bottled water         | 14.1%     | 10.8% | 19.3% |
|                                   | Treat with Purified tablets | .7%       | .0%   | 1.8%  |
|                                   | None                        | 2.2%      | 3.0%  | .9%   |
| Responsibility for fetching water | Boy child                   | 83.0%     | 86.2% | 78.0% |
|                                   | Girl child                  | 8.4%      | 9.0%  | 7.3%  |
|                                   | Adult men                   | 7.6%      | 6.6%  | 9.2%  |
|                                   | Adult women                 | 7.6%      | 6.6%  | 9.2%  |
|                                   | Hired help                  | 72.4%     | 75.9% | 67.0% |
| Everyone                          | 1.8%                        | 1.8%      | 1.8%  |       |
|                                   | 2.2%                        | .0%       | 5.5%  |       |

Source: Primary Data January 2018

### 3.2.24. Grievance Redress Mechanism

Results from the survey show that when people have land disputes they seek redress from mostly local council committees (69.6%) as indicated in table 17 below. However, people who seek help from family members were more in Bulambuli (40.7%) than in Kween (15.6%). Other structures where people seek redress is clan elders/members (15.6% in Bulambuli and 17.4% in Kween); community elders/members (10.2% in Bulambuli and 13.8% in Kween) and police (4.2% in Bulambuli and 16.4% in Kween). In both districts the land boards at the various local council levels were less used for seeking redress for land disputes. Only 0.4% seek redress from the district land board; 0.7% from sub-county land board and 1.4% from parish land board.

TABLE 20: GRIEVANCE REDRESS MECHANISM SOUGHT BY RESPONDENTS

| Where redress is sought  | Total(276) | Bulambuli(167) | Kween(109) |
|--------------------------|------------|----------------|------------|
| Local Council Committees | 69.6%      | 71.3%          | 67.0%      |
| Family Members           | 30.8%      | 40.7%          | 15.6%      |
| Clan Leaders/Members     | 16.3%      | 15.6%          | 17.4%      |
| Community Elders/Members | 11.6%      | 10.2%          | 13.8%      |
| Police                   | 9.1%       | 4.2%           | 16.5%      |
| Parish land Board        | 1.4%       | 1.8%           | .9%        |
| Sub-county land Board    | .7%        |                | 1.8%       |
| District land Board      | .4%        |                | .9%        |

### 3.2.25. Sources and Uses of Energy

Table 18 below indicates that the different types of energy used by people in the household are kerosene, car battery, LPG, firewood, charcoal, engine, gen-set, solar system and manual. Kerosene is used mostly for lighting (81.2%) and less for cooking (0.4%), grinding (3.6%) and radio (0.4%). Most households use firewood for cooking (95.3%). Few people use charcoal for cooking (11.6%) and lighting (0.4%). Engine is used mainly for grinding/milling (71.7%) and for machinery (3.6%) and lighting (0.4%) but these were very few households. Solar system is used for many activities in the household but mostly for cell phone charging (72.5%). Other activities for which the solar system was used included: lighting (21.75), Radio (10.95) and TV (9.4%). Manual is used in few households mostly for equipment (18.8%), machinery (13.8%) and grinding (13%). Dry cell was used mostly for radio (59.4%). Gen-set is used by very few households for machinery (2.5%), cell phone charging (1.4%), grinding (1.1%), radio (0.4%) and TV (0.7%). The types of energy used by the least number of households were gen-set, car battery and LGP.

There were no major differences in the use of the various types of energy for the household activities between the two project districts.

TABLE 21: SOURCES OF ENERGY USED BY HOUSEHOLD FOR VARIOUS ACTIVITIES

| Activities  | Lighting | Cooking | Grinding/milling | Radio | TV   | Cell phone | Equipment | Machinery |
|-------------|----------|---------|------------------|-------|------|------------|-----------|-----------|
| Kerosene    | 81.2%    | .4%     | 3.6%             | .4%   |      |            |           |           |
| Car Battery |          |         | .7%              | 1.1%  | .4%  |            |           |           |
| Dry cell    | 2.5%     |         | .7%              | 59.4% | .7%  |            |           |           |
| LPG         |          |         |                  |       | 2.2% |            |           |           |
| Firewood    |          |         | 95.3%            |       |      |            |           |           |
| Charcoal    | .4%      |         | 11.6%            |       |      |            |           |           |
| Engine      | .4%      |         | 71.7%            |       |      |            |           | 3.6%      |



| Activities       | Lighting | Cooking | Grinding/milling | Radio | TV    | Cell phone | Equipment | Machinery |
|------------------|----------|---------|------------------|-------|-------|------------|-----------|-----------|
| Gen-set          | 1.1%     | .4%     | 1.1%             | .4%   | .7%   | 1.4%       |           | 2.5%      |
| Solar system     | 21.7%    | .4%     | 4%               | 10.9% | 9.4%  | 72.5%      | 1.1%      | .4%       |
| Manual           | .7%      | 13.0%   | 4%               |       |       | .4%        | 18.8%     | 13.8%     |
| NA               |          | 12.3%   |                  | 28.6% | 88.8% | 23.2%      | 80.1%     | 81.2%     |
| <b>Bulambuli</b> |          |         |                  |       |       |            |           |           |
| Kerosene         | 77.2%    | .6%     |                  | .6%   |       |            |           |           |
| Car Battery      |          |         |                  | 1.2%  |       |            |           |           |
| Dry cell         | 3.6%     |         |                  | 50.3% |       | 3.6%       |           |           |
| LPG              |          |         |                  |       |       |            |           |           |
| Firewood         |          | 97.6%   |                  |       |       |            |           |           |
| Charcoal         | .6%      | 9.0%    |                  |       |       |            |           |           |
| Engine           | .6%      |         | 93.4%            |       |       |            |           |           |
| Gen-set          |          | .6%     |                  |       |       | 1.8%       |           |           |
| Solar system     | 24.6%    |         |                  | 13.2% | 7.8%  | 73.1%      | 1.2%      |           |
| Manual           | 1.2%     | 1.2%    |                  | .6%   |       |            | 8.4%      | 4.2%      |
| NA               |          | 4.8%    |                  | 35.9% | 91.0% | 22.8%      | 90.4%     | 95.8%     |
| <b>Kween</b>     |          |         |                  |       |       |            |           |           |
| Kerosene         | 87.2%    | 9.2%    |                  |       |       |            |           |           |
| Car Battery      |          |         |                  | 1.8%  | .9%   | .9%        |           |           |
| Dry cell         | .9%      | 1.8%    |                  | 73.4% |       | 1.8%       |           |           |
| LPG              |          |         |                  |       |       |            |           |           |
| Firewood         |          | 91.7%   |                  |       |       |            |           |           |
| Charcoal         |          | 15.6%   |                  |       |       |            |           |           |
| Engine           |          | 38.5%   |                  |       |       |            |           | 9.2%      |
| Gen-set          |          | 1.8%    |                  | .9%   | 1.8%  | .9%        |           | 6.4%      |
| Solar system     | 17.4%    | .9%     |                  | 7.3%  | 11.9% | 71.6%      | .9%       | .9%       |
| Manual           |          | 31.2%   |                  |       |       | .9%        | 34.9%     | 28.4%     |
| NA               |          | 23.9%   |                  | 17.4% | 85.3% | 23.9%      | 64.2%     | 58.7%     |

Source: Primary Data January 2018

### 3.2.26. Land ownership and usage

Table 19 below shows that most people in the study districts own between less than 1 – 2 acres of land (37.7%) own less than 1 acres and (30.1% had between 1 -2 acres). There are few people who own between 2 – 10 or more acres. Those who own land between 2 - 5 acres are 12.3% while those with 5 – 10 acres are 11.4%. However, there are marked differences when figures for the two districts are compared. Bulambuli had more people who owned less than 1 acre (45.5%) than Kween (25.7%). More people in Kween had land between 2 – 5 acres (20.2%) and, 10 and more acres (18.3%) than in Bulambuli where those who own 2 – 5 acres were 7.2% and those who had 10 and more acres were 6.6%.

The major land tenure systems in the districts visited is customary (40.2%), free hold (29.7%), kibanja (21.0%) and leasehold (8.3%). Other types of land tenure systems constituted 0.7%. Major differences in land tenure systems between districts were for customary (53.2% in Kween and 31.7%) and kibanja (25.7% in Bulambuli and (13.8%) in Kween).

In both districts a big proportion of land is under crop growing (70.3%). However, more land is used for crop growing (90.8%) in Kween than in Bulambuli (56.9%). In Bulambuli, more land was used for providing residential housing facilities (25.7%) than in Kween where only 6.4% is used for this purpose. Land is least used for livestock farming (3.0% in Bulambuli and 0.9% in Kween), fish farming (0.9% in Kween and none in Bulambuli) and other commercial purposes (1.8% in Bulambuli and 0.9% in Kween).

TABLE 22: LAND OWNERSHIP AND USAGE

|                          | Total                                                              | Bulambuli | Kween |       |
|--------------------------|--------------------------------------------------------------------|-----------|-------|-------|
| Land owned               | Less than one acre                                                 | 37.7%     | 45.5% | 25.7% |
|                          | Between 1 and 2 acres                                              | 30.1%     | 29.3% | 31.2% |
|                          | Between 2 and 5 acres                                              | 12.3%     | 7.2%  | 20.2% |
| Major land tenure system | Between 5 and 10 acres                                             | 8.7%      | 11.4% | 4.6%  |
|                          | Ten and more acres                                                 | 11.2%     | 6.6%  | 18.3% |
|                          | Customary                                                          | 40.2%     | 31.7% | 53.2% |
| Purpose put to land      | Free hold tenure                                                   | 29.7%     | 33.5% | 23.9% |
|                          | Leasehold                                                          | 8.3%      | 9.0%  | 7.3%  |
|                          | Kibanja                                                            | 21.0%     | 25.7% | 13.8% |
|                          | Other (specify)                                                    | .7%       | .0%   | 1.8%  |
|                          | Crop growing                                                       | 70.3%     | 56.9% | 90.8% |
| Purpose put to land      | Livestock keeping                                                  | 2.2%      | 3.0%  | .9%   |
|                          | Fish farming                                                       | .4%       | .0%   | .9%   |
|                          | Residential purpose                                                | 25.7%     | 38.3% | 6.4%  |
|                          | Other commercial purpose (e.g. built rental buildings, rented out) | 1.4%      | 1.8%  | .9%   |

Sources: Primary Data January 2018

### 3.2.27. Source of food

As presented in figure 16 below it was found out that there were three sources of food for people in the study districts; grown on this parcel, buy from the market or grown elsewhere. The main source of food for people was the parcel on which they lived (50.4%), followed by buying from the market (34.1%) and growing elsewhere was for only 15.6% of the people. In Bulambuli a considerable number of people (22.2%) grew their food elsewhere, compared to 5.5% in Kween.

**3.2.29. Problems experienced in production activities**

Various problems were experienced by farmers in the districts visited as indicated in table 20 below, ranging from drought/lack of water, poor technology, poor post-harvest handling, lack of markets, lack of good access to markets, lack of sufficient land, worms and pests, lack of credit and lack of tools like hoes. The major problem experienced by almost all people was drought and/or lack of water (94.9%) followed by poor technology (25.7%) and poor post-harvest handling (19.6%). However, some problems are more severe in specific districts. Lack of markets, poor harvest handling and lack of sufficient land are more experienced in Kween than in Bulambuli. The problem of worms and pests was graver in Bulambuli (18.6%) than in Kween (2.8%).

TABLE 23: PROBLEMS EXPERIENCED IN PRODUCTION ACTIVITIES

|                                 | Total(276) | Bulambuli(167) | Kween(109) |
|---------------------------------|------------|----------------|------------|
| Drought/water                   | 94.9%      | 98.8%          | 89.0%      |
| Poor technology                 | 25.7%      | 24.6%          | 27.5%      |
| Poor post-harvest handling      | 19.6%      | 15.6%          | 25.7%      |
| Lack of markets                 | 16.3%      | 7.8%           | 29.4%      |
| Lack of good access to markets. | 13.8%      | 6.6%           | 24.8%      |
| Lack of sufficient land         | 12.7%      | 8.4%           | 19.3%      |
| Worms and Pests                 | 12.3%      | 18.6%          | 2.8%       |
| Lack of credit                  | 9.1%       | 6.6%           | 12.8%      |
| Lack of tools, like hoes        | 6.5%       | 6.0%           | 7.3%       |
| Other (specify)                 | 1.4%       | .6%            | 2.8%       |

**3.2.30. Animals kept**

The majority of the people kept birds poultry (85.5%) followed by goats (62.9%) and cows (45.2%). There were few people who kept piggery and ducks in Bulambuli, and none was found in Kween. See figure 18 below.

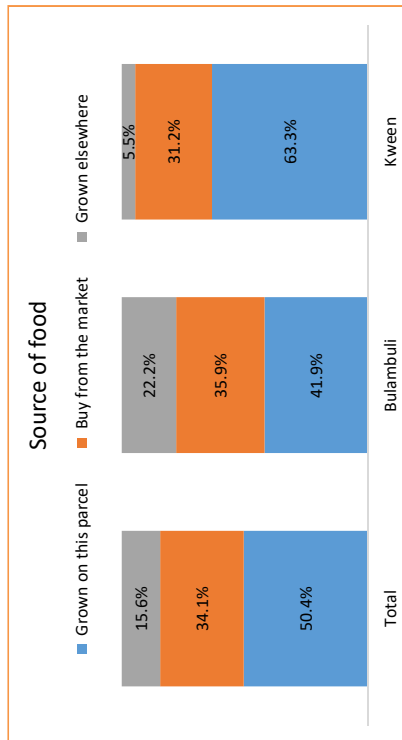


FIGURE 15: SOURCES OF FOOD FOR HOUSEHOLDS

**3.2.28. Where produce is usually sold**

Figure 17 below present's information on where farm produce is sold. In both districts most people sold produce in the local market (72.8%). There are more people in Bulambuli (29.3%) who did not sell produce at all than in Kween where these were 7.3%. Very few people sold produce far away markets including outside their districts.

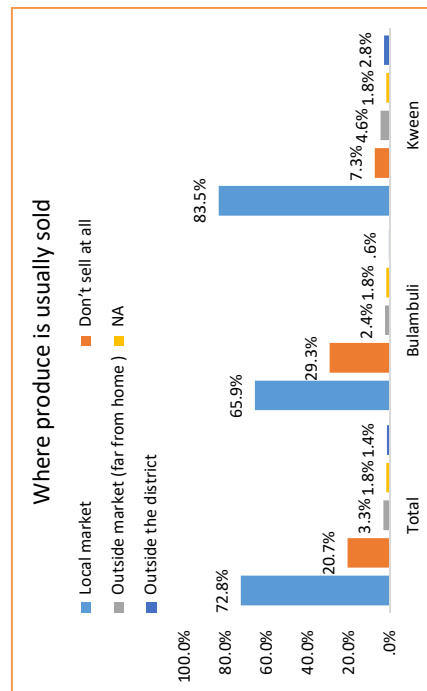


FIGURE 16: MARKET FOR FOOD ITEMS

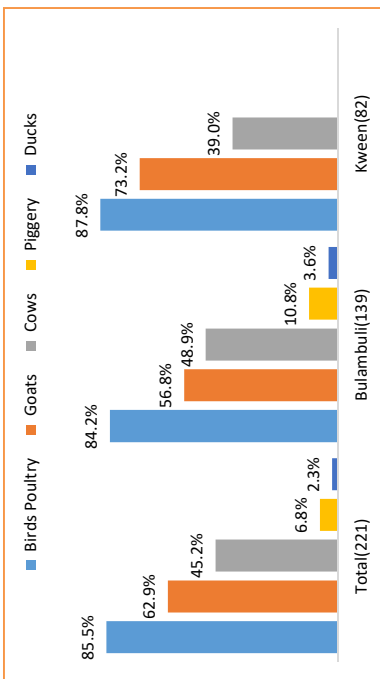


FIGURE 17: ANIMALS KEPT IN THE PROJECT AREA

### 3.2.31. Where live stock is grazed

It was found out that livestock is grazed on different types of land; private owned land, public land, customary land, private borrowed land and hired land. The majority of people grazed animals on private own land (37.6%). Those who grazed on public land (28.1%) and customary land (27.15) were nearly equal in proportion. The least used mode was hired land (1.4% in Bulambuli and 1.2% in Kween).

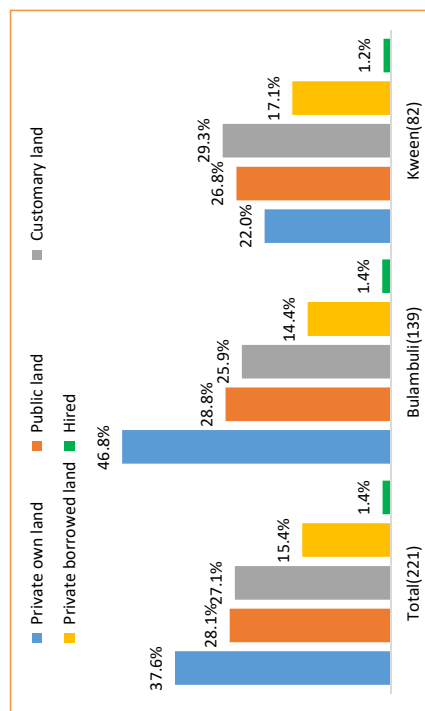


FIGURE 18: WHERE LIVESTOCK IS GRAZED

### 3.2.32. Problems experienced in livestock rearing

The problems people experienced in livestock rearing are indicated in figure 20 below as; animal disease, inadequate/lack of pasture land, expensive drugs, inadequate/lack of water, cattle theft and no help from government. Animal disease was the greatest problem experienced in livestock rearing (71.9%). Inadequate/lack of pasture (36.2%) and expensive drugs (36.2%) were also big problems. Inadequate water/lack of water was experienced by 33% and therefore a critical issue in livestock rearing in the project districts. There were no major variations between the two districts in the problems experienced, with exception of the complaint of no help from government (4.3% in Bulambuli and 20.7% in Kween) and inadequate/lack of pasture (42.4% in Bulambuli and 25.6% in Kween).

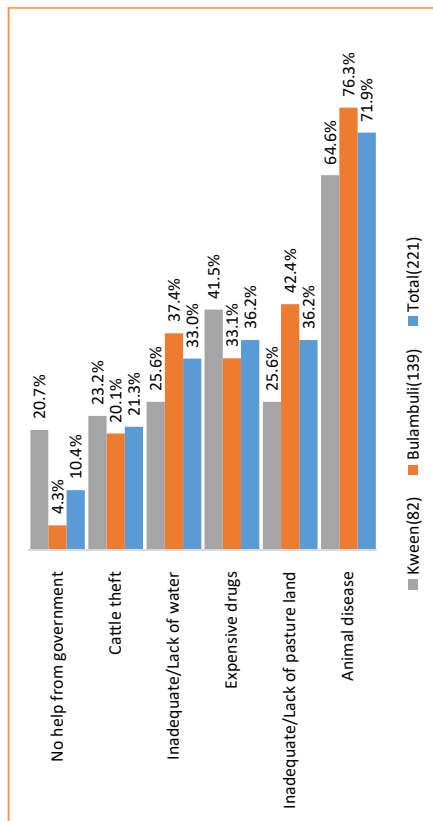


FIGURE 19: PROBLEMS EXPERIENCED IN LIVESTOCK KEEPING

### 3.2.33. Asset ownership and other equipment

Table 21 below presents information on assets and other equipment owned by the households in the districts visited. Most of the households visited had a house (87.3%) while 20.7% had another building. The mobile phone was another asset owned by most people (77.5%), followed by radio (62.0%), bicycle (30.4%), TV (10.9%), boda boda (5.4%) and other transport equipment (3.3%). The most commonly owned asset under the category of livestock/poultry was chicken (65.9%) followed by goats (44.6%) and cows (36.2%). Other assets included ducks (12.7%), bulls (9.4%), pigs (6.2%), oxen (5.8%), turkeys (1.8%) and

donkeys (1.4%). Another category of assets owned considered in the study constituted land, agricultural tools and equipment. Land was owned by the majority of the people in both districts (95.8% in Bulambuli and 80.7% in Kween). Among the agricultural tools and equipment, the hoe (94.2%) and panga (92.0%) were the mostly owned tools. The least owned assets were ploughs (13.0%), wheel barrows (9.1%) and transport equipment for enterprise (0.4%).

TABLE 24: ASSETS AND OTHER EQUIPMENT OWNED BY HOUSEHOLDS

|                                              | Total | Bulambuli | Kween |
|----------------------------------------------|-------|-----------|-------|
| House                                        | 87.3% | 94.6%     | 76.1% |
| Other Building                               | 20.7% | 18.0%     | 24.8% |
| TV                                           | 10.9% | 12.6%     | 8.3%  |
| Radio                                        | 62.0% | 58.7%     | 67.0% |
| Bicycle                                      | 30.4% | 34.1%     | 24.8% |
| Mobile phone                                 | 77.5% | 74.3%     | 82.6% |
| Boda boda/motorcycle                         | 5.4%  | 6.0%      | 4.6%  |
| Other transport equipment (specify)          | 3.3%  | 3.6%      | 2.8%  |
| Cows                                         | 36.2% | 40.7%     | 29.4% |
| Bulls                                        | 9.4%  | 10.8%     | 7.3%  |
| Oxen                                         | 5.8%  | 3.0%      | 10.1% |
| Pigs                                         | 6.2%  | 7.8%      | 3.7%  |
| Goats                                        | 44.6% | 43.7%     | 45.9% |
| Donkeys                                      | 1.4%  | .0%       | 3.7%  |
| Chicken                                      | 65.9% | 68.9%     | 61.5% |
| Turkeys                                      | 1.8%  | 3.0%      | .0%   |
| Ducks                                        | 12.7% | 15.0%     | 9.2%  |
| Other Livestock/Poultry (specify)            | 20.3% | 17.4%     | 24.8% |
| Land                                         | 89.9% | 95.8%     | 80.7% |
| Hoes                                         | 94.2% | 96.4%     | 90.8% |
| Ploughs                                      | 13.0% | 12.6%     | 13.8% |
| Pangas                                       | 92.0% | 94.0%     | 89.0% |
| Wheel barrows                                | 9.1%  | 9.0%      | 9.2%  |
| Other agricultural equipment (specify)       | 8.3%  | 11.4%     | 3.7%  |
| Transport equipment for enterprise (specify) | .4%   | .6%       | .0%   |

### 3.2.34. Main items spent on in the household

Asked on what items they spend their money most, results from the survey show that households mainly spend money on food items (48.4%), education (24.2%), health (214.3%) and household items (10.3%). Airtime was one of the items ranked last. See table 22 below.

TABLE 25: MAIN ITEMS SPENT ON IN THE HOUSEHOLD

|                   | Total | Rank 1 | Rank 2 | Rank 3 | Rank 4 | Rank 5 |
|-------------------|-------|--------|--------|--------|--------|--------|
| Food item         | 48.4% | 18.7%  | 7.4%   | 7.4%   | 7.3%   | 7.3%   |
| Household items   | 10.3% | 24.2%  | 13.9%  | 18.8%  | 17.9%  | 17.9%  |
| Educational items | 24.2% | 19.8%  | 16.5%  | 13.7%  | 6.5%   | 6.5%   |
| Clothing          | 4%    | 11.0%  | 26.4%  | 20.3%  | 8.4%   | 15.3%  |
| Medical items     | 14.3% | 21.6%  | 20.3%  | 20.3%  | 8.4%   | 15.3%  |
| Transport         | .4%   | 1.1%   | 1.8%   | 7.4%   | 9.9%   | 9.9%   |
| Water             | .4%   | .4%    | .4%    | .7%    | 1.9%   | 1.9%   |
| Airtime           | .7%   | 2.9%   | 3.3%   | 7.0%   | 26.0%  | 26.0%  |
| Foot ware         | .4%   | .4%    | .7%    | 1.1%   | 6.5%   | 6.5%   |

### 3.2.35. Standard of living comparison within/among households

Households in the project area visited were asked to rank themselves according to; rich, average, poor and very poor. Results as indicated in figure 21 below show that in total, most households feel within the category of the poor (44.6%) followed by those that were average (42.8%). Households that belonged to the very poor (10.1%) and rich (2.5%) were few.

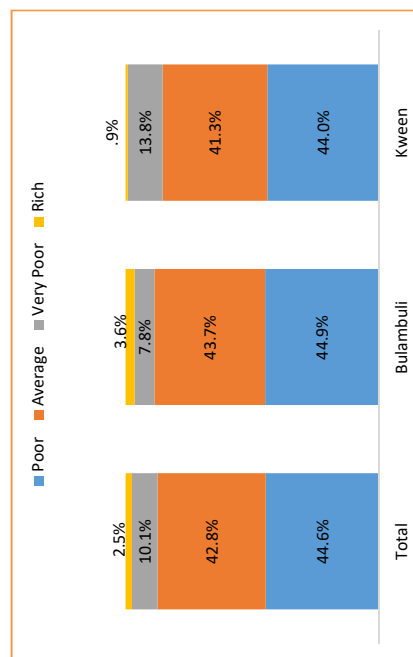


FIGURE 20: COMPARISON OF STANDARDS OF LIVING

### 3.2.36. Vulnerability

Survey results shows that physical disability was the main form of disability in Bulambuli (70.6%) and Kween (77.8%). Blind people were more (17.6%) in Bulambuli compared to those (11.1%) in Kween but Kween had more people with hearing impairments than those in

Bulambuli (5.9%). People with a mental disability were (11.8%) while there was none in Kween. See figure 22 below.

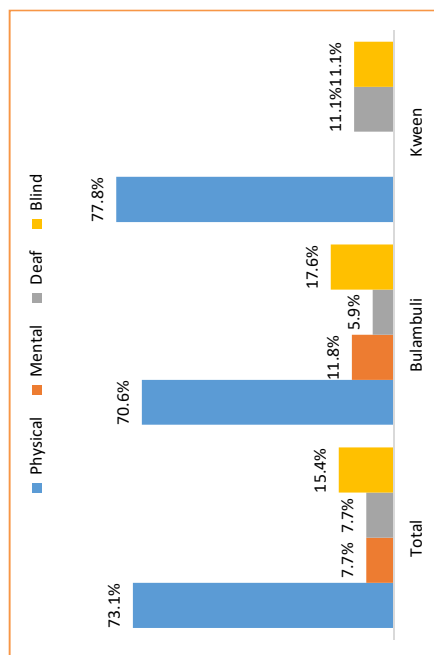


FIGURE 21: VULNERABILITY WITHIN PROJECT AREA

### 3.2.37. Type of other Vulnerable People

Further analysis on vulnerability of the people in the project area shows that the very old constituted the majority (41.1%) followed by the widowed (27.6%), chronically ill (24.1%), disabled and very poor with an equal proportion (17.2%) and the displaced as the least (13.8%). In Bulambuli, the very old are the majority of the vulnerable people (68.8%) while in Kween, the most vulnerable groups included the very poor (30.8%) and widowed (30.8%). See figure 23 below.

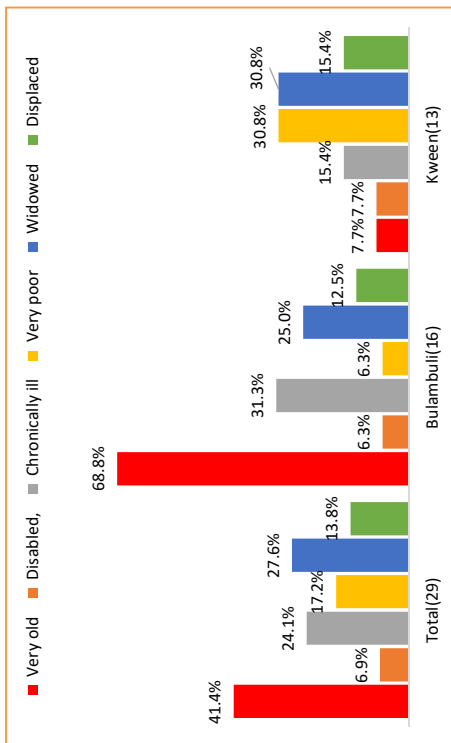


FIGURE 22: TYPES OF VULNERABILITY

### 3.2.38. Assistance to Vulnerable PAPs

Specific vulnerable groups such as Female headed households; Children headed households; HIV/AIDS infected People/ Disabled; Elderly; Youth and orphans will require assistance based on need and level of vulnerability.

However, results from the census survey show that the prominent form of vulnerability among the PAPs is old age and female household heads. In Uganda, people are considered old after attaining the age of 65 years. Among the heads of PAHs interviewed there are 27 heads of PAHs (6%) aged 65 years and above. Additionally, 79 heads of PAHs (17%) are female. In addition, the two households that may need to be relocated can be considered vulnerable because they are very poor. It means, 108 households are categorized as vulnerable group in the Project.

It is, therefore, recommended that during RAP implementation, the 108 PAHs be given extra assistance during the compensation process by:

- Giving them priority to be served first and
- Assistance in opening bank accounts by providing them with transport.
- Priority registration for employment on the Project's works;
- Land preparation where possible; and
- Credit facilities where possible.

Apart from the above assistance, the project should look into some ways of supporting group based on the nature of the vulnerability.

## 4. MEASURES FOR COMPENSATION AND ASSISTANCE

### 4.1. Eligibility Criteria

A Project Affected Persons (PAP) is one who, as consequence of the project, sustains losses as a result of impact on 1) land, 2) structure, 3) immovable asset and/ or d) livelihood/incomes. Through the detailed census and assets/ land surveys, those PAPs were identified.

During the construction of the Project, people will emerge who suffer damage to their property caused by construction works such as damage to cultivated fields, trees and infrastructure such as graves, fences, etc. According to WB OP4.12 and JICA Guidelines, a customary land owner who does not have a certificate on the rights to their occupying lands can be treated as same as those who have legal rights.

### 4.2. Contents of compensation

#### 4.2.1. Principle of Replacement Cost

All compensation for land and non-land assets owned by households/shop owners who meet the cut-off-date will be based on the principle of replacement cost. Replacement cost is the amount calculated before displacement which is needed to replace an affected asset without depreciation and without deduction for taxes and/or costs of transaction as follows:

Productive Land (agricultural, aquaculture, garden and forest) based on actual current market prices that reflect recent land sales in the area, and in the absence of such recent sales, based on recent sales in comparable locations with comparable attributes, fees and taxes or in the absence of such sales, based on productive value;

Residential land based on actual current market prices that reflect recent land sales, and in the absence of such recent land sales, based on prices of recent sales in comparable locations with comparable attributes; fees and taxes.

Existing local government regulations for compensation calculations for building, crops and trees will be used where ever available.

- Houses and other related structures based on actual current market prices of affected materials;
- Annual crops equivalent to current market value of crops at the time of compensation;

For perennial crops, cash compensation at replacement cost that should be in line with local government regulations, if available, is equivalent to current market value given the type and age at the time of compensation.

For timber trees, cash compensation at replacement cost that should be in line with local government regulations, if available, will be equivalent to current market value for each type, age and relevant productive value at the time of compensation based on the diameter at breast height of each tree.

#### 4.2.2. Disturbance Allowance

Section 77(2) of the revised edition (2000) of the Land Act 1998 provides for a disturbance allowance on top of the computed compensation amount as shown below:

- 30% of compensation amount if quit notice is given within 6 months.
- 15% of compensation amount if quit notice is given more than 6 months.

Therefore all PAPs have been added a disturbance allowance of 15% of the total compensation amount because they will be given a six months' notice to vacate the area before construction starts.

In the project, while resettlement is not required, land acquisition or relocation of structures are required. Based on the meetings with MAAIF and relevant authorities, the basic compensation measures were decided. In addition, as described in chapter 10, Stakeholder Meeting," the contents on the compensation measures were presented to stakeholders at 2nd Stakeholder meetings, and it was basically accepted by the participants. The detailed contents are mentioned below;

#### 4.2.3. Land loss

In the Project, the affected area is defined two (2) categories, such as "agricultural" and "residential land." Whether the PAPs have legal rights or not compensation for affected land will be provided.

Preference should be given to land-based resettlement strategies for displaced persons whose livelihoods are land-based. These strategies may include resettlement on public land, or on private land acquired or purchased for resettlement. Whenever replacement land is offered, resettlers are provided with land for which a combination of productive potential, locational advantages, and other factors is at least equivalent to the advantages of the land taken. If land

is not the preferred option of the displaced persons, the provision of land would adversely affect the sustainability of a park or protected area, or sufficient land is not available at a reasonable price, non-land-based options built around opportunities for employment or self-employment should be provided in addition to cash compensation for land and other assets lost. The lack of adequate land should be demonstrated and documented.

Payment of cash compensation for lost assets may be appropriate where (a) livelihoods are land-based but the land taken for the project is a small fraction (e.g. less than 20% of productive area) of the affected asset and the residual is economically viable; (b) active markets for land, housing, and labor exist, displaced persons use such markets, and there is sufficient supply of land and housing; or (c) livelihoods are not land-based. Cash compensation levels should be sufficient to replace the lost land and other assets at full replacement cost in local markets.

In the Atari Irrigation Scheme land that will be lost is the land on which the irrigation infrastructure such as: (Dyke, Main Canal, Primary Canals, Secondary Canals and access roads) will be constructed. This involves strips of land from the already mapped land in the scheme; therefore PAPs are not losing entire land.

#### 4.2.4. Loss of Assets or Access to Assets

Loss of land and/or property if any activity will acquire land as the land in question will be under use of some sort, communally, or individually. This may cause loss of rights to pieces of land, and/or un-exhausted improvements on the land i.e. built structures and crops.

**Loss of land:** mainly residential land or commercial land. Because rural subsistence agriculture and livestock keeping are widely practiced, therefore, affected land could also be agricultural land or grazing ground. Land could belong to private individuals, local institutions, or community/public land. The land could either be grown with crops, or built with structures or open land used for recreation or not developed/used. Ownership could mainly be under either statutory rights of occupancy or customary rights of occupancy and the affected people will lose these land rights (owner; lease holder; informal user of the land).

**Loss of house structures:** the built structures could be residential houses (dwelling, residential and commercial houses, house annexed structures (e.g. kitchens, boundary wall / live fences, pit latrines, house foundations, stores, cottage industries, livestock pens/sheds

etc.) or commercial structures (shop, stall); or house supply structures: water source/supply (well, pump, water line), electricity supply (underground, overhead etc.). Loss of buildings and structures will affect (owner; tenant; informal user of the structure) individual, institution or community.

#### 4.2.5. Crop loss

Compensation for perennial crop loss will be paid to the all PAPs, regardless of legal rights on the land cultivated. Compensation for perennial crops shall be determined in accordance with district compensation rates established by respective District land Board.

The field observations revealed that there are seasonal and or annual crops in and around the priority project affected area. These crops include rice, maize, beans, millet and groundnuts. These crops are not permanent; Ugandan laws do not consider such crops to be compensated. Compensation for annual and seasonal crops shall be calculated based on the average yield recorded in the impacted area for the last five years and the current local market prices for different crops grown on the farmers' land. The owners of the crops should be allowed to harvest their produce before the implementation of the project within the time limit granted. The compensation will start and end as per the project plan.

#### 4.2.6. Tree loss

Trees have recognized local market values, depending upon the species and age. Compensation for trees is calculated based on the growth stage of the tree, using the local current price per m . Subistence trees (predominantly mango) are to be compensated on a combined replacement market/subsistence value. Trees are classified into three categories: small (saplings), medium (mature trees), and large (for poles).

For trees that have already started giving yields, compensation is to be calculated considering the annual production of each tree, multiplied by the current local market price and the total number of plants, as well as including the costs for the development of the perennial trees.

If households are resettled, they will be compensated for the commercial/food value of the trees they leave behind. Owners will be allowed to take the plantation of trees within the time limit granted according to the proclamation and those that cannot be moved will be compensated.

#### 4.2.7. Special attention for vulnerable people

Affected households that are particularly vulnerable to Project implementation will be identified through socio-economic surveys of the affected population, and in consultation with the implementing agency. Specific vulnerable groups such as Female headed households; Children headed households; HIV/AIDS infected People/ Disabled; Elderly; Youth and orphans will require assistance based on need and level of vulnerability. However, in addition to other compensation and rehabilitation measures, these households will be supported through the following measures:

- priority registration for employment on the Project's works;
- advice regarding Project impacts,
- compensation alternatives and risks, and
- resettlement options, including advice on alternative subsistence and livelihood strategies as offered by the Project;
- skills/training enhancement;
- land preparation where possible; and
- credit facilities where possible.

Apart from the above assistance, the project should look into some ways of supporting group based on the nature of the vulnerability.

#### 4.2.8. Temporary land loss

##### 4.2.8.1. Damage Caused during construction work

Reconstruction activities may also cause temporary or permanent damage to land and assets that cannot be identified or quantified during RAP preparation. An example might be construction workers trampling crops or vegetables while accessing particular construction sites. Thus, wherever possible, the construction team/contractor will repair the damage to the satisfaction of the affected person. Affected persons with a claim should be required to complete a compensation claim form and submit it to the construction team/contractor. The construction team/contractor will then negotiate the required compensation measures, which may include repairing the damage or payment of compensation in cash or kind. Payment of compensation should be effected within one month of submission of the claim form. It will be the responsibility of the implementing agency that contractor cater for any damage and have



necessary policies to demonstrate this. The cost of damage caused by the contractor will be borne by the contractor not the implementing agency.

#### **4.2.8.2. Residential Buildings, Structures and Fixtures**

All affected structures will be valued and compensated in the form of cash equal to cost of building a new structure equivalent to replacement of lost asset. Valuation will be conducted by a registered valuer—either government employee or private contractor. PAPs will have the option of reconstructing their new structures on alternative land either in the vicinity or away from the site as per their individual preferences.

Compensation will be paid for structures such as houses, latrines, fences and any other affected assets. Current market prices or replacement cost, whichever is higher, for construction materials will be determined. The registered valuer will survey the prices for the calculation of compensation from the current local market or replacement cost, whichever is higher, for the construction materials and labour.

#### **4.2.8.3. Loss of Temporary structure**

Loss of temporary structure (e.g. temporal commercial structure, latrines, fence, etc.), Will be compensated by cash at government rates and disturbance allowance, equal to inflation for increase in cost of construction materials (equal to replacement cost). Building materials may be salvaged from old housing (transport at their own cost). For those moving to a new settlement, or on-adjacent land, transport assistance to move households or business goods will be provided. Building materials may be salvaged from old housing (transport at their own cost).

#### **4.2.9. Cut-off date**

The cut-off-date of eligibility refers to the date prior to which the occupation or use of the project area makes residents/users of the same eligible to be categorized as PAPs and be eligible to Project entitlements. In the Project, Cut-off date was the beginning date of the final confirmation of acquired land and assets survey (on 20<sup>th</sup> January 2018). This date was disclosed to each affected persons by the consultants who were carrying out property and land surveys plus and also was the commencement of the socio-economic and census survey. The establishment of the eligibility cut-off date was intended to prevent the influx of ineligible non-residents who might take advantage of Project entitlements.

Property inventories with other relevant socio-economic surveys, and fixing a cut-off-date after proper consultation and an announcement, are instrumental to avoid unnecessary and sometimes fraudulent claims for compensation. After the property inspection and survey exercise was completed, no further claims will be accepted. Stakeholders were informed that the date when the property census and socio-economic survey commenced was the official cut-off date and this was 20<sup>th</sup> January 2018, which is the cut-off date for this RAP.

#### **4.2.10. Livelihood Restoration Measures**

The nature of displacement is such that at times cash compensation and other short-term mitigation measures may not be effective to ensure that affected persons get back to their original status or better in terms of their earnings and productivity. Therefore, the designing an income and livelihood restoration plan is essential.

##### **4.2.10.1. Background to the Detailed LIRP**

Livelihoods restoration encapsulates specific measures necessary to mitigate any harmful or negative impacts the Project may have on people's economic assets or activities.

The specific objectives of the Livelihood Programmes are to:

- Provide Training in agriculture
- Support Resettlement-Affected People, Households, and Communities in overcoming the disruption generated by displacement and promote the establishment of inclusive and sustainable community livelihood systems.
- Improve the quality of life of resettled families by building their capacity in the management, operation, and maintenance of new replacement assets (housing and infrastructure), replacement lands, and cash compensation.
- Meet the compensation commitments – and support the effective management of compensation commitments – as negotiated with physically and Economically Displaced Households, such that they receive compensation and other displacement-related assistance in a manner that enables them to create new income sources.
- Provide technical assistance and support the development of technical and vocational capacity such that displaced households can improve their livelihoods through an increased capacity to engage in production, trade, and employment.
- Help ensure that displaced households can equally access and benefit from other community, district, and regional development programmes and initiatives (i.e. Government programmes, community development activities, etc.).

**4.2.10.2. Livelihood Needs Assessment**

The assessment of needs on a household basis will be done based on baseline data gathered from the following sources:

- Consultation with government, households and key persons
- Asset Survey (Structure, Farm, and Crops)
- Socio-economic survey
- Field visits with extensive consultations

Follow up surveys and in-depth interviews during field visits will lead questions to be asked regarding alternative land sizes and locations, and related questions regarding skills and other assets. Also, information will be gathered on preferences for programs, training opportunities, and community development initiatives. The data collected will be assessment for each household's requirement regarding livelihood and income restoration programs.

**4.3. Entitlement Matrix**

Entitlement matrix is a major integrated part of any resettlement plan. It describes compensation for loss of properties and related assistance for each category of PAPs. The entitlement matrix for PAPs is presented in table below.

TABLE 26: ENTITLEMENT MATRIX

| Asset Acquired    | Type of Impact                                                                                                                                                                     | Entitled Persons                         | Compensation Entitlement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Other Entitlement Measures for Vulnerable Groups and Families |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Agricultural land | No displacement: When the remaining land after acquisition is economically viable.                                                                                                 | Farmer/ Land owner (Customary, Freehold) | Cash compensation for affected land by full replacement cost.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | -                                                             |
|                   | Displacement: When more than 20% of land owned is acquired by the Project, or when less than 20% of land owned remained after acquisition but the land is not economically viable. | Farmer/ Land owner (Customary, Freehold) | Alternative land where feasible, or cash compensation for the entire land owned, according to PAP's choice. Alternative land will be in terms a new parcel of land of equivalent size and productivity which a secure tenure status without encumbrances at an available location which is acceptable by PAPs.<br>Relocation assistance including costs of shifting, and Assistance for re-establishing perennial crops including economic trees up to a maximum of 12 months, while short-term crops mature.<br>Where land for land options are chosen by households, similar tenure will be provided.<br>Relocation assistance in cash or services on a case-by-case basis as is sought. | -                                                             |
|                   |                                                                                                                                                                                    | Tenant/ Leaseholder (Leasehold)          | Cash compensation for the average affected land equivalent to the harvest of market value over three years or the compensation rates as established by the District Land Boards in collaboration with the Chief Government Valuer whichever is the higher.                                                                                                                                                                                                                                                                                                                                                                                                                                 | -                                                             |



## 5. GRIEVANCE REDRESS MECHANISM

### 5.1. Grievance Redress Mechanism

A simple Grievance Redress Mechanism (GRM) has been proposed to enable timely settlement of grievances to the PAPs. The grievance procedures will be secured and administered at the local level to facilitate access, flexibility and openness to all PAPs. The grievance redress procedure ensures consultations and involvement of the respective District and Village officials and other key stakeholders and provides for record keeping determining the validity of claims, and to ensure that solutions are taken in the most transparent and cost effective ways for all PAPs. At the time of the detailed socioeconomic survey, the PAPs were informed of the different grievance mechanisms put in place to enable them to direct their complaints and dissatisfactions.

The project will use local mechanisms, which include resettlement committees formed at every village and local leaders of the affected people. These will ensure equity across cases, eliminate nuisance/un-genuine claims and satisfy legitimate claimants. They will also ensure that there is transparency, access and flexibility of the procedure for the PAPs. The grievance resolution mechanism will involve four stages as described below.

#### 5.1.1. STAGE I: Village Grievance Resolution Committee (V/GRC)

There will be a Village Grievance Resolution Committee which comprises of the following members.

- i. Village Local Council Chairperson
- ii. PISD Area Coordination Committee Chairperson (PACC)
- iii. Representatives of PAPs democratically elected by PAPs (Males PACC)
- iv. Representatives of PAPs democratically elected by PAPs (females PACC)
- v. Village/Community Elder

The Committee will explore all possibilities to solve the raised grievance at the village level and refer to higher level if the grievance is not solved by the committee. This committee will deal with boundary disputes, identification of rightful owners and disputes among family members. However, if aggrieved PAP fails to agree with the committee, the PAP can utilize stage II to solve the grievance. The grievance resolution committee members shall undergo a briefing session about their roles and requirements at early stage before commencement of RAP implementation activities.

#### 5.1.2. STAGE II: District Grievance Resolution Committee (DGRC)

The District Grievance Resolution Committee will comprise of the following members.

- i. District Council Representative
- ii. District Land Officer
- iii. PISD District Coordination Chairperson (PDCC)

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|                                                               |                                                                                                                                                                                                              |   |                                                                                                                                                                                                    |                                               |                                                                                           |                         |                                                                                           |                                               |                         |                                                                                          |                                               |                                                                                                                           |                                               |                         |                                                                                          |                                               |                                                                                          |                                                                                                                                    |                         |                                                                                          |
|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------------------------------------------------------------------------|
| Other Entitlement Measures for Vulnerable Groups and Families | transport and labor assistance to move households or business goods.<br>Building materials may be salvaged from old housing (transport at their own cost).                                                   | - | Cash compensation for perennial crops at district rates (full replacement cost. Transitional allowance of 5% of value of crops per household which loses perennial crops to cover for income loss. | PAPs (where land owner, tenant or squatter)   | Loss of perennial crops affected by land acquisition or temporary acquisition or easement | Perennial crops         | Loss of perennial crops affected by land acquisition or temporary acquisition or easement | Land owner                                    | Economic trees          | Tree lost                                                                                | Land owner                                    | Cash compensation based on type, age, and productive value of affected trees. 10% premium of amount of cash compensation. | Land owner                                    | Economic trees          | Tree lost                                                                                | Land owner                                    | Short term land acquisition for PAPs (whether land owner, tenant or squatter)            | And if there are crops and trees in the renting lands, the contractor will negotiate with owners about the amount of compensation. | Temporary Acquisition   |                                                                                          |
| Compensation Entitlement                                      | Building materials may be salvaged from old housing (transport at their own cost).<br>For those moving to a new settlement, or non-adjacent land, transport assistance to move households or business goods. | - | Cash compensation for perennial crops at district rates (full replacement cost. Transitional allowance of 5% of value of crops per household which loses perennial crops to cover for income loss. | PAPs (whether land owner, tenant or squatter) | Loss of seasonal crops affected by land acquisition or temporary acquisition or easement  | Annual (seasonal) crops | Loss of seasonal crops affected by land acquisition or temporary acquisition or easement  | PAPs (whether land owner, tenant or squatter) | Annual (seasonal) crops | Loss of seasonal crops affected by land acquisition or temporary acquisition or easement | PAPs (whether land owner, tenant or squatter) | Loss of seasonal crops affected by land acquisition or temporary acquisition or easement                                  | PAPs (whether land owner, tenant or squatter) | Annual (seasonal) crops | Loss of seasonal crops affected by land acquisition or temporary acquisition or easement | PAPs (whether land owner, tenant or squatter) | Loss of seasonal crops affected by land acquisition or temporary acquisition or easement | Land owner                                                                                                                         | Annual (seasonal) crops | Loss of seasonal crops affected by land acquisition or temporary acquisition or easement |

- iv. PDCC Committee Members (Male and Female)
- v. PAP Representatives PACC Members (male and female)

The PAP representatives depending on the number of PAPs identified about three (3) to seven (7) (PACC members female and male) were democratically elected by the PAPs with the help of the local leaders during to coordinate all issues in regard to the project. The committee will work together with the VGRC to resolve grievances raised by the PAPs including revisiting the site investigation. The Committee will explore all possibility to solve the raised grievance failed to be solved by the VGRC. However, if the DGRC and PAP fail to agree, the PAP can utilize stage III and IV as a last resort to solve the grievance. The grievance resolution committee members shall undergo a briefing session about their roles and requirements at early stage before commencement of RAP implementation activities.

#### 5.1.3. STAGE III: Land Tribunals

All disputes related to land will be resolved with the help of the existing land tribunals. If the Resettlement Committee fails to solve the grievance, it will be referred to the land tribunals. At each level, the land tribunal will endeavour to solve the dispute. If it fails then the dispute will be referred to the land tribunal at the next level.

- (a) The Village Land Council;
- (b) The Parish Land Tribunal;
- (c) The District Land Tribunal

#### 5.1.4. STAGE IV: Courts of Law

Ugandan legislation allows a right of access to the courts of law by any person who has an interest or right over property. If the grievance procedure fails to provide a settlement, complainants can still seek legal redress in courts of law as a last resort.

### 5.2. Actors Involved and Organisational Structure

Several actors will be involved in the resolution of grievances arising from Project Affected Persons (PAPs). These include:

- MAAIF Project Implementing Unit (PIU) and Resettlement and Compensation Management Unit (RCMU)
- Grievance Resolution Committees
- Local Government Officials
- Land Tribunals
- Project Affected Persons

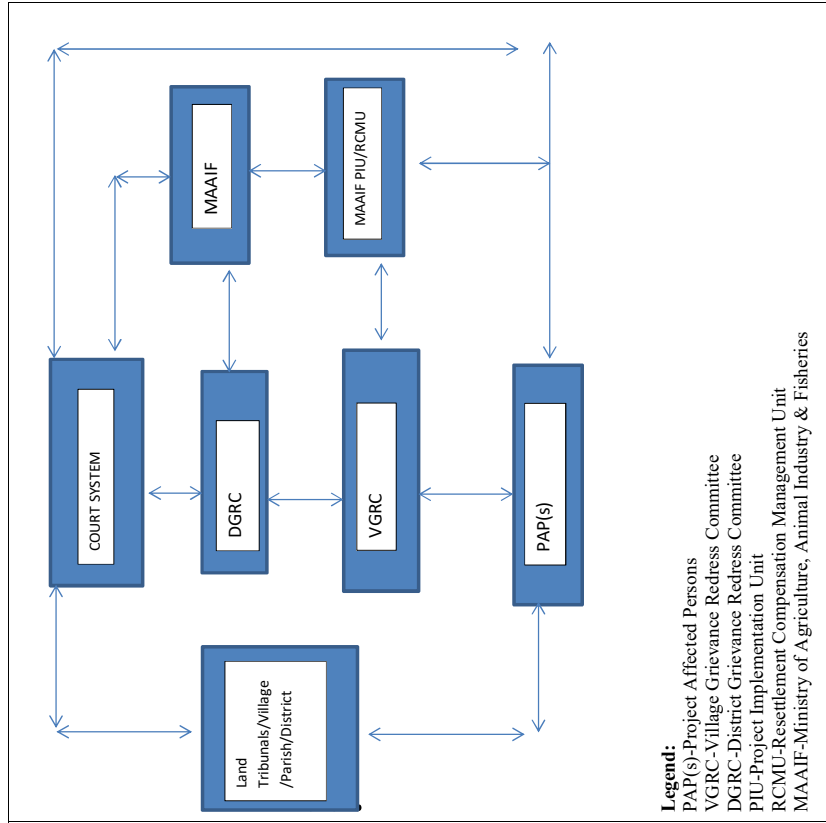


FIGURE 23: ORGANIZATIONAL STRUCTURE OF GRIEVANCE RESOLUTION

### 5.3. Procedures and Responsibilities

During the socio economic study, the PAPs were informed of the different grievance resolution mechanisms in place for them to pass their complaints and dissatisfactions. The grievances will be channelled through the Grievance Resolution Committees either verbally or in writing but writing will be more preferred. The PAPs could write a letter to the project explaining the nature of the complaint. Since the village leaders are the nearest contacts to the affected persons, they will, in most cases receive the grievances from the PAPs. However, PAPs will be free to submit their grievances to any member of the grievance committee. The members of the committee will

pass on the grievance to the RCMU for proper recording and registration. The RCMU team will include a RAP Specialist /a Sociologist, a Land Surveyor, a Valuer and a Legal Officer. These will work together with the grievance resolution committee to solve grievances raised by affected PAPs or community

After registration of the complaint, an investigation will be carried out by the committee members to verify its validity; thereafter a resolution approach will be selected based on the findings. The decisions /actions taken will be communicated to all parties involved mainly in written form. All avenues will be explored to resolve grievances amicably between the aggrieved parties and the court channels will be the last resort.

Efficiency in solving of the grievances will be of paramount importance. The time to finalise a grievance will depend on the nature of the grievance raised. A grievance database showing the date the grievance was registered, the approach applied to resolve it and the status of the grievance shall be maintained by the project team for easy monitoring of the grievance

#### **5.4. Respect and Confidentiality Policy**

Recording a complaint can be a difficult or impossible process if a person is afraid of being punished for his or her act, by members of the RCMU, PIU, VGRC, DGRC, or other interested parties. In addition, many PAPs may not wish to publicize the fact that they have filed a complaint. To address these concerns, the RCMU will have a policy of respect and confidentiality clearly publicized to all parties that will be integrated in the PIU staff and Committees training program. This policy will stipulate that; any person filing a grievance will be treated with respect by the staff of the RCMU, PIU and the Committees; the information relating to the complaint and the complainant is confidential and will not be disseminated in the community; no retaliation by anyone towards the complainant is acceptable in the eyes of the PIU and MAAIF.

#### **5.5. Roles and Responsibilities of the Different Actors in Grievance Resolution**

##### **5.5.1. Ministry of Agriculture, Animal Industry & Fisheries (MAAIF)**

The responsibilities of MAAIF shall be:

- Overall monitoring of the grievance resolution process.
- Continuously provide advice to the team especially on challenging disputes.
- Participate in grievance resolution of raised complaints from the project affected persons and other stakeholders.
- Budget, allocate and disburse funds for grievance resolution including facilitation of the grievance resolution committee members.
- Provide regular updates to project stakeholders regarding grievance resolution.

##### **5.5.2. Implementing Unit (PIU) and Resettlement and Compensation Management Unit (RCMU)**

This will be part of MAAIF dedicated for the project implementation with sub unit selected to deal with resettlement and compensation management. The responsibilities will include:

- Advise on resolving PAPs and project affected communities grievances in various committees
- Will hire the external monitors where necessary to oversee the grievances resolution process.
- Provide routine progress report of the various activities to MAAIF and other stakeholders as required. Prepare a short brochure on the steps in resolving conflicts/disputes
- Prepare a short brochure on the steps in resolving conflicts/disputes to be distributed in the project area.

##### **5.5.3. Village Grievance Resolution Committees**

Participate in resolution of grievances related to land acquisition, compensation and resettlement activities at the respective level.

- Receiving complaints from parties in respect of land;
- Convening meetings for hearing of disputes from parties;
- Mediating between and assist parties to arrive at a mutually acceptable settlement of the disputes on any matter concerning land within its area of jurisdiction (Act as a mediator between project and PAPs);
- Monitoring of land acquisition, compensation and resettlement activities;
- Mobilization and sensitization of projected affected persons with grievances;
- Submit PAPs complaints to the Grievance Resolution Committees, to the project team and refer unsolved issues to higher resolution committee or body; and
- Participation during the verification of PAPs, investigations and disclosure of entitlements.

The village resettlement and compensation committee can be the first level to report a grievance, particularly as there is a degree of familiarity in people with such forums. These avenues can be utilized to formally or informally address grievance resolution for:

- wrongly recorded personal or community details;
- wrongly recorded assets including land details and/or affected acreage;
- Change of recipient due to recent death or disability
- Recent change of asset ownership
- Wrong computation of compensation
- Names missed out of register
- Disputes among relatives and neighbours over the land boundaries and ownership.

PAPs will be informed and advised to lodge their complaints, if any to this committee before forwarding them to higher level. Illiterate PAPs shall be assisted to lodge their complaints in writing. The village committees will assess the grievance and state the course of action within

thirty days to the complainant PAP. The redressing the grievance could require measurement equipment; survey personnel; time to check other records or other adjacent plot owner; availability of committee members as they could be busy with other works or addressing other complaints, and thereby take time. Hence, a period of 30 days shall be adequate for appropriate redress. If the complainant PAP is not satisfied with the settlement proposed, the case should be taken to the next stage.

#### 5.5.4. District Grievance Resolution Committees

At district level, a District Grievances Resolution Committee (DGRC) shall be constituted with representation from PAPs, affected communities (local leaders), District Council Representative, District Land Officer, PISD District Coordination Chairperson (PDCC), PDCC Committee Members (Male and Female), PAP Representatives PACC Members (male and female) MAAIF shall be responsible to set such a committee at each of the affected districts. Grievances shall be heard and redressed appropriately within a period of 60 days. At this stage, the follow up activities on grievance mechanisms are as follows:

- Receive referrals from lower committees;
- Convening meetings for hearing of disputes from parties referred from lower committees;
- Mediating between and assist parties to arrive at a mutually acceptable settlement of the disputes on any matter concerning land within its area of jurisdiction (Act as a mediator between project and PAPs);
- Monitoring of land acquisition, compensation and resettlement activities;
- Sensitization of projected affected persons with grievances;
- Proactively disclose information about the RAP process, as well as success in grievance resolution;
- Ensure constant consultation with project affected persons on ways to improve on the mechanisms and processes therein

At this stage, PAPs who were not satisfied with the outcomes from these two stages shall be oriented by the office regarding the procedures applicable under appropriate courts of law particularly land tribunals starting at village level.

#### 5.5.5. Land Tribunals (village land Council, ward and district land and housing)

These tribunals have three levels namely village land council, Parish tribunals and district land and housing tribunals. The dispute can be head at village council level and if the village land council fails to resolve the PAP can appeal to higher level. The responsibilities of these tribunals include:

- Resolve grievances arising due to the activities of the project through land tribunals.
- Mediate between project team and project affected persons.
- Review the grievance resolution process to ensure fairness is served.

#### 5.5.6. Court of Law

Details of jurisdiction of High Court followed by Court of Appeal of Uganda are presented below:

High Court (Land Division) has jurisdiction on matters including

- (a) in proceedings for the recovery of possession of immovable property in which the value of the property exceeds fifty million shillings;
  - (b) in other proceedings where the subject matter capable of being estimated at a money value in which the value of the subject matter exceeds forty million shillings;
  - (c) Land Acquisition Act (Cap 118) in respect of proceedings involving the Government.
- Appeals of matters originating from the Parish Tribunal

Further, persons aggrieved with the decision of District Land Tribunal in the exercise of its appellate or provisional jurisdiction, may within sixty days after the decision date appeal to the High Court (Land Division).

- Every appeal to the High Court (Land Division) shall be by way of petition and shall be filed in the District Land Tribunal from the decision, or order of which the appeal is brought;
- Upon receipt of a petition under this section, the District Land Tribunal shall within fourteen days dispatch the petition together with the record of the proceedings in the Parish Tribunal and the District Land Tribunal to the High Court (Land Division).

Any person, who is aggrieved by the decision of the High Court (Land Division) in the exercise of its original, provisional or appellate jurisdiction, may with the leave from the High Court (Land Division) appeal to the Court of Appeal of Uganda in accordance with the Appellate Jurisdiction Act.

#### 5.6. Capacity building

Training for all relevant staff and relevant stakeholders will be held before the compensation or otherwise as agreed. The training will include all aspects of the grievance resolution mechanism (GRM) including the GRM principles, procedures and its application, with emphasis on transparency and accountability to the complainant(s) and other stakeholders. Effort will be made to establish logging in of all complaints/feedback into GRM system to keep records of all grievances received.

#### 5.7. Grievance recording and logging procedures by the PIU/RCMU

Once the complaint has been received it will be recorded into GRM system. The RCMU will log the details regarding the complaint into the GRM tracking system. This system may be manual (hard copy) or connected to the project Management Information System (MIS) using special designed form.

Once a complaint has been logged, RCMU refers the case to MAAIF Management. The latter shall determine the following:

- Will formulate the team responsible for the complaint investigation.
- The timeframe within which the complaint should be resolved.
- The agreed course of action (e.g. investigation is required, reply not requiring investigation, refer to higher authority for further decision, etc.).

The investigation process is determined based on the nature and gravity of the complaint:

- For village level complaints, the VGRC will investigate the complaints
- For resettlement-related complaints social safeguard officer, surveyor, RAP expert will be involved in the conduct of the verification and investigation process.
- For complaints that are referred to the DGRC, will determine the appropriate mode of investigation.

When the investigation is required conflict of interest will be ensured i.e. all persons involved in the investigation process should not have any material, personal, or professional interest in the outcome and no personal or professional connection with complainants or witnesses.

Once the verification and investigation process has been established and resolution reached, feedback shall be given through to the Grievance feedback/response notification form.

In order to operate the GRM, there will be a designated person at MAAIF who will manage the GRM.

#### **5.8. Investigation**

The person(s) responsible for investigating the complaint will gather facts in order to generate a clear picture of the circumstances surrounding the grievance. Verification will include site visits, review of documents, meetings with the complainant (if known and willing to engage), and meetings with those who could resolve the issue (including formal and informal village leaders, or other leaders).

With regards to resettlement and grievances related to valuation of assets at the expenses of the project, a second valuation may be undertaken by another independent valuer involving VGRC Team, representative from District Executive Director and District Commissioner's Office at the expenses of the project, until valuation is accepted by both parties.

The results of the investigation and the proposed response to the complainant will be presented to respective Committee or MAAIF PIU/RCMU for decision.

In the event the agreed actions cannot be carried out and/or if the complaint cannot be satisfactorily resolved in 120 days, complainant can appeal to higher level or resolve to go to court system.

#### **5.9. Notification to the complainant**

Following the logging of the complaint, depending on the complexity of the complaint, the PAP(s) will be notified the timeframe and course of action to her/him by phone, email or mail, within thirty (30) days of receipt of the grievance at the respective Grievance Resolution Levels. Feedback will be provided in writing from the respective Grievance Resolution Levels.



## 6. IMPLEMENTATION FRAMEWORK

### 6.1. Ministry of Agriculture, Animal Industry and Fisheries

In respect to this RAP, MAAIF will be responsible for resources mobilization, distribution and implementation of compensation and resettlement. Specifically, the Project Implementation Unit (PIU) in MAAIF will be involved with implementation of this RAP. MAAIF has the responsibility to directly oversee resettlement/compensation activities, identifying and coordinating all players in the resettlement programme, managing grievances and monitoring RAP implementation.

**Relation to the project:** With respect to irrigation aspects in Atari, project issues of on-farm works will be the responsibility of the Ministry especially provision of technical assistance in the design and construction of on-farm irrigation systems. MAAIF will further be responsible for the provision of extension services and advice to farmers on irrigation systems and promotion of efficient water use. In addition, the Ministry will provide support in the supervision and monitoring of water use and management.

**Project Implementing Unit (PIU) and Resettlement and Compensation Management Unit (RCMU):** Will be part of MAAIF dedicated for the project implementation with sub unit selected to deal with resettlement and compensation management. The responsibilities will include:

- Advise on resolving PAPs and project affected communities grievances in various committees
- Will hire the external monitors where necessary to oversee the grievances resolution process.
- Provide routine progress report of the various activities to MAAIF/JICA and other stakeholders as required.
- Prepare a short brochure on the steps in resolving conflicts/disputes

### 6.2. Ministry of Lands, Housing and Urban Development (MLHUD)

The Chief Government Valuer (CGV) in the Valuation Division in the Ministry of Lands, Housing and Urban Development (MLHUD) is responsible for approving the property valuation report developed as part of this RAP. Additionally, property or cadastral survey report is submitted to the Commissioner for Surveys & Mapping in MLHUD for review and approval.

**Relation to the project:** MLHUD will therefore play a direct role in compensation and resettlement activities of proposed project.

### 6.3. Ministry of Gender, Labour & Social Development, MGLSD

This Ministry guides all actors in the social development sector and creates an enabling environment for social transformation, leading to improved standards of living for all, increased equality and social cohesion. These roles make MGLSD a key secondary stakeholder in proposed irrigation scheme with roles of empowering project communities to

harness their potential through cultural growth, skills development and labour productivity for sustainable and gender responsive development. MGLSD has a department of occupational health and safety which is mandated to inspect workplace to ensure safety and gender equity. The Ministry has the following projects which should tie into and compliment objectives of proposed irrigation scheme project.

- Community Rehabilitation Programme for the Disabled (CBR);
- Functional Adult Literacy Programme (FAL);
- Support to AIDS Orphans and Other Vulnerable Children (PCY);
- Elimination of Child Labour.
- Relation to the project:

Above programmes are relevant in so far as some PAPs may be disabled (hence require CBR programmes) or need FAL and PCY. In addition, MGLSD will ensure that no Child Labour is involved in any resettlement activities.

Ministry of Gender, Labour and Social Development (MGLSD), working through Community Development Officers (CDOs) at district and sub-county level will be responsible for spearheading and coordinating gender responsive and community development, in particular, sensitizing community members to form groups that will adequately utilize the water amicably.

### 6.4. Local Governments in Which the Project Area Is Situated

The proposed Project on irrigation scheme development in Eastern Uganda will traverse district of Kween and Bulambuli. As provided for by the Local Government Act; local governments are mandated to set compensation rates for crops and non-permanent structures through their District Land Boards. Local governments will also be important in managing and monitoring social impact through site visits or resolving complaints from affected communities. Hence they have a central responsibility in this project in regard to monitoring resettlement impacts and ensuring social benefits of the project are equitably accessible to every community. Local officers will also ensure that proper resettlement, compensation and grievance management are undertaken. The lower administrative structures (Local councils LC1 to LC5) are important in community mobilization and ensuring law and order in villages through local defence units, which should be useful for ensuring security during project implementation, including compensation.

**Relation to the project:** During compensation, LC1s and LC3s in project-affected areas will be helpful for identification or verification of rightful property owners.

### 6.5. Grievance Resolution Committees District

At district level, a District Grievances Resolution Committee (DGRC) shall be responsible for the follow up activities on grievance mechanisms are as follows:

- Receive referrals from lower committees;
- Convening meetings for hearing of disputes from parties referred from lower committees;
- Mediating between and assist parties to arrive at a mutually acceptable settlement of the

- disputes on any matter concerning land within its area of jurisdiction (Act as a mediator between project and PAPs);
- Monitoring of land acquisition, compensation and resettlement activities;
  - Sensitization of projected affected persons with grievances;
  - Proactively disclose information about the RAP process, as well as success in grievance resolution;
  - Ensure constant consultation with project affected persons on ways to improve on the mechanisms and processes therein

#### 6.6. Uganda Land Commission

The Uganda Land Commission holds and manages land in Uganda vested in or acquired by Government of Uganda and would be involved where such land is affected by the proposed Irrigation project. This applies to where land affected by the buffer zones and Irrigation infrastructures.

Relation to the project: Uganda Land Commission will manage the land covered by the Irrigation infrastructures on behalf of the Government of Uganda.

#### 6.7. Private Sector Entities

RAP implementation will involve private sector consultants hired by the implementing Ministries for verification and actual payment of compensation to PAPs. These entities are not known at this time since they will be hired through competitive bidding as per Uganda's procurement laws.

Relation to the project: Private consultants who are qualified contribute to successful implementation of the RAP

## 7. IMPLEMENTATION SCHEDULE

The responsibility of ensuring the resettlement plan is implemented as agreed with the project affected persons rests with the MAEIF/PIU. The process starts at the design stage with the public consultations and the committees forming informal groups "Ad Hoc Committees" at locational level to engage with the proposal. The PIU mandate will expire after the project implementation. It will be involved in the monitoring as regards realization of the objectives of the Plan in the post construction period.

| Years | Activities                                                                        | 2017 | 2018 | 2019 | 2020 |
|-------|-----------------------------------------------------------------------------------|------|------|------|------|
| 1.1   | Siging of Contract between MAEIF & AES                                            | 11   | 12   |      |      |
| 1.2   | Introduction of Consultant to the Districts                                       |      |      |      |      |
| 1.3   | Initial District and Stakeholder Sensitizations                                   |      |      |      |      |
| 1.4   | Socio-economic Survey                                                             |      |      |      |      |
| 1.5   | Preparations to undertake PAP census and asset valuation                          |      |      |      |      |
| 1.6   | First Stakeholder Meeting                                                         |      |      |      |      |
| 1.7   | PAP identification and sensitization meetings with PAPs and taking photos of PAPs |      |      |      |      |
| 1.8   | Preparation of Draft RAP Report                                                   |      |      |      |      |
| 1.9   | Review of RAP by the JICA                                                         |      |      |      |      |
| 1.9   | Preparation of Final RAP with JICA                                                |      |      |      |      |

| Years | 2017 | 2018 | 2019 | 2020 |
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## 8. COSTS AND BUDGET

The estimates for the resettlement action plan (RAP) will cover land acquisition, compensation for crops, trees and restoration of livelihoods. The details are shown on table 24 below but the actual figures for compensation are to await approval by the Chief Government Valuer before the compensation payments take effect.

It is important to note the estimate of the value given is based on calculation of compensation figures referenced to the diminution in the market value of the land. The effects of severance and injurious affection plus any disturbance element has also been included by the additional 15% of the market value of the properties affected.

### 8.1. VALUATION CERTIFICATE

Valuation Survey Report<sup>4</sup> indicates that the Total Compensation Award for PAPs to be affected by the proposed irrigation Project is: **Ug. (496,758,543) Shillings: Four Hundred Ninety Six Million Seven Hundred Fifty Eight Thousand, Five Hundred Forty Three for compensation only.**

However the compensation process involves so many other factors that need to be taken as indicated the table below. This therefore will bring the total compensation cost to: **Uganda Shillings: 1,384,072,209 (One Billion, Three Hundred Eighty Four Million, and Seventy Two Thousand Two Hundred Nine Only**

TABLE 27: RAP BUDGET

| Category                              | Amount             | Activities involved                                  |
|---------------------------------------|--------------------|------------------------------------------------------|
| 1. Total Valuation of Land            | 335,174,000        |                                                      |
| 2. Valuation for crops/plants         | 89,375,000         |                                                      |
| 3. Valuation for buildings/Structures | 5,974,450          |                                                      |
| 4. Disturbance allowance 15%          | 66,235,093         |                                                      |
| <b>Sub-Total</b>                      | <b>496,758,543</b> | <b>By valuer as final as per today</b>               |
|                                       | 198,703,417        | Sensitization of PAPs                                |
|                                       |                    | Verification of PAPs                                 |
|                                       |                    | Disclosure of amounts                                |
|                                       |                    | Training of PAPs on proper use of compensation funds |
|                                       |                    | Assist PAPs open accounts                            |
|                                       |                    | Prepare accountability report                        |
|                                       |                    | Done before RAP implementation                       |
|                                       |                    | Ensure all PAPs are captured                         |
| 6. RAP Update 20%                     | 99,351,708         |                                                      |

<sup>4</sup>The Valuation Report containing details of the valuation figures and types of impact is Appended to this report as Volume 2.

| Category                                                                                                                                 | Amount               | Activities involved                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                          |                      | Include PAPs who were left out/absent during the RAP preparation<br>Display of final RAP report<br>Prepare supplementary report for approval by CGV                                                                                                             |
| 6. Grievance Redress Committee 20%                                                                                                       | 99,351,708           | Election of grievance redress committees<br>Train the committee members<br>Sitting allowance and transport of committee members<br>Prepare grievance redress log report                                                                                         |
| 7. Stakeholder Participation 20%                                                                                                         | 99,351,708           | Continuous process to keep PAPs aboard about the project activities<br>Disclosure of information about the project                                                                                                                                              |
| 8. Livelihood and income restoration during construction preparation 20%<br><b>Excluding livelihood &amp; Income restoration support</b> | 99,351,708           | Carry out a needs assessment on all PAPs to establish the opportunity cost of being off their land during construction<br>To establish the best and agreeable form of compensation<br>To establish training opportunities and community development initiatives |
| 9. Estimated amount for livelihood & income restoration for only PAPs in the Buffer Zone                                                 | 92,500,000           | Training in agriculture, and other needs will be established after the needs assessment e.g prove improved seeds, agriculture farm equipment                                                                                                                    |
| <b>Sub-Total RAP Implementation</b>                                                                                                      | <b>688,610,249</b>   |                                                                                                                                                                                                                                                                 |
| 10. Monitoring and Evaluation Internal 15%                                                                                               | 74,513,781           | To monitor the effectiveness of the compensation process<br>To ensure clearance of the site before commencement of construction<br>Follow-up on land re-arrangement                                                                                             |
| 11. Monitoring and Evaluation External 25%                                                                                               | 124,189,636          | To make a follow-up on the resettlement activities evaluate whether the goals and objectives of resettlement were achieved                                                                                                                                      |
| <b>Sub total</b>                                                                                                                         | <b>198,703,417</b>   |                                                                                                                                                                                                                                                                 |
| <b>Grand Total</b>                                                                                                                       | <b>1,384,072,209</b> |                                                                                                                                                                                                                                                                 |

## 9. MONITORING AND EVALUATION ACTIVITIES

The JICA Guidelines/World Bank OP4.12 policy on resettlement planning provides that the implementer (MAAIF) of the project shall be responsible for Monitoring and Evaluation (M&E) activities provided for by this RAP. Monitoring will provide an advance warning system for MAAIF and an avenue through which the PAPs will make their needs and reactions known. The funding for the M&E activities shall form part of the project cost.

To ensure that the implementation of the land acquisition and resettlement is carried out in accordance with the relevant requirements of the RAP and to guarantee the progress and quality of the resettlement actions, both internal and independent external monitoring and evaluation procedures will be adopted.

The purpose of resettlement monitoring and evaluation will be to verify that:

- Procedures and obligations described in the RAP are implemented;
- Eligible PAPs receive their full compensation prior to the start of construction activities;
- Mitigation measures have helped people in restoring their lives in a sustainable manner;
- Complaints and grievances of the PAPs are adequately addressed and corrective measures implemented;
- If need be, changes in the RAP procedures and obligations are made to improve service delivery to the PAPs.

Accordingly, the primary monitoring and evaluation activities will be the responsibility of the MAAIF as the project sponsor. MAAIF through the Project Implementation Unit (PIU) will undertake the internal monitoring of the implementation of the land acquisition and resettlement so as to ensure that all the responsible units follow the schedule and comply with the guiding principles of the RAP.

### 9.1. RAP Monitoring Framework

The project will adopt three components for the monitoring framework that include:

- Internal monitoring by the Project Resettlement Office;
- External monitoring by a contracted consulting firm or NGO; and
- RAP Completion Audit by a contracted consulting firm or NGO.

The scope of each of type of monitoring component is briefly described below.

TABLE 28: MONITORING RESPONSIBILITIES

| Monitoring          | ACTORS                                       | RESPONSIBILITY                                                                                                                                                                          |
|---------------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Internal Monitoring | Project Implementation Unit (PIU)            | Lead the internal monitoring, day to day and periodic activities                                                                                                                        |
|                     | Policy Planning and M&E Directorate of MAAIF | Lead agency and coordinating institution for both internal and external monitoring of the implementation of this RAP. Periodic monitoring of the planned implementation and its impact. |
|                     | MAAIF (PIU)                                  | Regular monitoring to ensure that the approved value for                                                                                                                                |

| Monitoring          | ACTORS                         | RESPONSIBILITY                                                       |
|---------------------|--------------------------------|----------------------------------------------------------------------|
| External Monitoring | MAAIF (PIU)                    | Periodic monitoring of the planned implementation and its impact     |
|                     | PDCC                           | Periodic monitoring of the planned implementation and its impact     |
| RAP Audit           | External Consultant(s) or NGOs | Periodic monitoring, and evaluation of the implementation of the RAP |
|                     | External Consultant(s) or NGOs | Final audit of the RAP implementation                                |

#### 9.1.1. Internal Monitoring

The objective of internal monitoring is to monitor the implementation of the entire RAP for the project. The indicators to be monitored shall include:

- Level of understanding of the project impact and mitigation/resettlement options;
- Number and percentage of affected households consulted during the planning stage;
- Degree/level of involvement of local/traditional authorities, women and vulnerable groups;
- Effectiveness of Compensation to the PAPs and the affected units according to the compensation rates described in the RAP;
- Effectiveness relocation procedures to new housing sites;
- Timely rehabilitation of any affected infrastructure;
- Redistribution of cultivated land within the affected administrative villages;
- Effectiveness of resettlement subsidy to develop collective economy.

#### 9.1.2. External Monitoring

In order to ensure the proper implementation of resettlement, a consulting firm will be recruited by the project to conduct an independent external monitoring of the land acquisition, resettlement and rehabilitation activities of the Project.

The consulting firm must be well conversant with RAP preparation and resettlement monitoring for the World Bank/JICA financed Irrigation Projects. The firm will consider the overall implementation from a broader, long term point of view and will follow the resettlement activities to evaluate whether the goals of resettlement are achieved.

The items to be evaluated will include the comparison of the baseline data in the planning phases with the targets and post project situation.

#### 9.1.3. RAP Completion Audit

The purpose of the completion audit is to establish whether MAAIF has implemented all the activities needed to ensure compliance with resettlement commitments defined by the RAP and applicable policies, and whether compensation and resettlement has been deemed complete. A key objective of the RAP is that compensation, resettlement and other mitigation measures

should lead to sustainable restoration or enhancement of the affected persons' quality of life and income levels.

The completion audit will be carried out by the same auditor as the compliance audit. Based on data collected during this review and other data collected during implementation, the auditor will form conclusions on the following main issues:

- Have the objectives of the RAP been achieved in respect to:
  - Identification of the affected people and identification of impacts
  - Compensation for all the impacts of all affected people
  - Timely delivery of entitlements
  - The adequacy of compensation in mitigating experienced impacts
  - Have livelihoods been restored?

Verification of the completion of the RAP will provide a final indication that livelihood restoration is sustainable and that no further action is required. The evaluation report will be made public through the meeting with the PIU through the appropriate media

In addition to the above-mentioned indicators, the monitoring actors will also monitor and evaluate the following indicators:

TABLE 29: SUMMARY OF PERFORMANCE/ INTERNAL MONITORING INDICATORS

| Performance monitoring indicators (Internal)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Number and place of consultative meetings held with PAPs and local authorities in preparation of, or during RAP implementation</li> <li>• Grievance issues by type and how they were resolved: Total resolved, total justified, Total resolved at various levels including the type of agreement reached. Total referred to legal system/courts of law, including clarification on who initiated (local leaders, PAP or MAAIF) the referral and subject matter</li> <li>• Actual amount paid and timeliness of payment</li> <li>• The number of people and households who have been resettled to date or their livelihood restored</li> <li>• Number of affected people (men and women) employed in the project construction</li> <li>• Number of complaints:                             <ul style="list-style-type: none"> <li>Total received; total justified; total non-justified, including the subject matter for all complaints; an explanation for non-justified complaints;</li> <li>Total resolved at various levels including the type of agreement reached;</li> <li>Total referred to the legal system/courts of Law, including a clarification on who initiated (local leaders, PAP or MWE) the referral and the subject matter</li> </ul> </li> </ul> |

TABLE 30: SUMMARY OF PERFORMANCE/EVALUATION INDICATORS FOR EXTERNAL MONITORING

| Subject                                           | Indicator                                                        | Variables                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Land                                              | Acquisition of land                                              | <ul style="list-style-type: none"> <li>• Area of cultivation land acquired for the transmission line Area of communal/government/private land acquired for transmission line developments</li> </ul>                                                                                                                                                                                                                                                                                                                                                                          |
| Buildings/ Structures                             | Acquisition of buildings                                         | <ul style="list-style-type: none"> <li>• Number, type and size of private buildings acquired</li> <li>• Number, type and size of community buildings acquired</li> <li>• Number, type and size of government buildings acquired</li> </ul>                                                                                                                                                                                                                                                                                                                                    |
|                                                   | Acquisition of other structures                                  | <ul style="list-style-type: none"> <li>• Number, type and size of other private structures acquired</li> <li>• Number, type and size of other community structures acquired</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                        |
| Trees and Crops                                   | Acquisition of trees                                             | <ul style="list-style-type: none"> <li>• Number and type of private trees acquired</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                   | Destruction of crops                                             | <ul style="list-style-type: none"> <li>• Crops destroyed by area, type and ownership</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Compensation, Re-establishment and Rehabilitation | Compensation and re-establishment of affected owners/individuals | <ul style="list-style-type: none"> <li>• Number of homesteads affected (buildings, land, trees, crops)</li> <li>• Number of owners compensated by type of loss</li> <li>• Amount compensated by type and owner</li> <li>• Number of replacement houses constructed</li> <li>• Water supply access</li> <li>• Number of replacement businesses constructed</li> </ul>                                                                                                                                                                                                          |
|                                                   | Re-establishment of community resources                          | <ul style="list-style-type: none"> <li>• Number of community buildings replaced, Number and type of plants lost, Number of seedlings supplied by type</li> <li>• Number of trees planted</li> </ul>                                                                                                                                                                                                                                                                                                                                                                           |
| Hazards and Disturbances                          | Introduction of nuisance factors                                 | <ul style="list-style-type: none"> <li>• Number of homesteads affected by hazards and disturbances from construction (noise levels, blasting, increased traffic levels)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                            |
|                                                   | Changes to homestead structure                                   | <ul style="list-style-type: none"> <li>• Homestead size (births, deaths, migration in and out)</li> <li>• Age distribution</li> <li>• Gender distribution</li> <li>• Marital status</li> <li>• Relationship to homestead head</li> <li>• Status of "vulnerable" homesteads</li> </ul>                                                                                                                                                                                                                                                                                         |
| Social/ Demographic                               | Population migration                                             | <ul style="list-style-type: none"> <li>• Residential status of homestead members</li> <li>• Movement in and out of the homestead (place and residence of homestead members)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                   | Changes to access                                                | <ul style="list-style-type: none"> <li>• Distance/travel time to nearest school, health centre, church, shop, village</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                   | Changes to health status                                         | <ul style="list-style-type: none"> <li>• Nutritional status of resettled homestead members</li> <li>• Number of people with disease, by type (STDs, diarrhoea, malaria, ARI, immunizable disease)</li> <li>• Mortality rates</li> <li>• Access to health care services (distance to nearest facility, cost of services, quality of services)</li> <li>• Utilization of health care services</li> <li>• Disease prevention strategies</li> <li>• Extent of educational programmes</li> <li>• Latrine provision at schools (school child population per VIP on site)</li> </ul> |
|                                                   | Changes to educational status                                    | <ul style="list-style-type: none"> <li>• Literacy and educational attainment of homestead members</li> <li>• School attendance rates (age, gender)</li> <li>• Number, type of educational establishments</li> </ul>                                                                                                                                                                                                                                                                                                                                                           |
|                                                   | Changes to status of women                                       | <ul style="list-style-type: none"> <li>• Participation in training programmes</li> <li>• Use of credit facilities</li> <li>• Landholding status</li> <li>• Participation in the project-related activities and enterprises</li> </ul>                                                                                                                                                                                                                                                                                                                                         |

| Subject      | Indicator                        | Variables                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | Homestead earning capacity       | <ul style="list-style-type: none"> <li>Main income source</li> <li>Monthly income level</li> <li>Ownership of capital assets</li> <li>Ownership of equipment and machinery</li> <li>Landholding size, area cultivated and production volume/value, by crop (cash and subsistence crops)</li> <li>Landholding status (tenure)</li> <li>Redistribution of cultivation land</li> <li>Changes to livestock ownership: pre- and post-disturbance</li> <li>Value of livestock sales, and imputed value of barter transactions</li> <li>Consumption of own livestock production</li> <li>Employment status of economically active members</li> <li>Skills of homestead members</li> <li>Earnings/income by source, separating compensation payments</li> <li>Changes to income-earning activities (agriculture) – pre- and post-disturbance</li> <li>Changes to income-earning activities (off-farm) – pre- and post-disturbance</li> <li>Amount and balance of income and expenditure</li> <li>Possession of consumer durables</li> <li>Realization of homestead income restoration plans (components implemented, net income achieved)</li> <li>Possession of bank and savings accounts</li> <li>Access to income-generating natural resource base (wood, grass, sand, stones)</li> </ul> |
|              | Changes in social organization   | <ul style="list-style-type: none"> <li>Organizational membership of homestead members</li> <li>Leadership positions held by homestead members</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|              | Population influx                | <ul style="list-style-type: none"> <li>Growth in number and size of settlements, formal and informal</li> <li>Growth in market areas</li> <li>Influx of people from outside the project area</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Consultation | Consultation programme operation | <ul style="list-style-type: none"> <li>Number of local committees established</li> <li>Number and dates of local committee meetings</li> <li>Type of issues raised at local committees meetings</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|              | Information dissemination        | <ul style="list-style-type: none"> <li>Involvement of local committees and NGOs in participating in the project's planning and development</li> <li>Number, position, staffing of Information Centres</li> <li>Staffing, equipment, documentation of Information Centres</li> <li>Activities of Information Centres</li> <li>Number of people accessing Information Centres</li> <li>Information requests, issues raised at Information Centres</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|              | Grievances resolved              | <ul style="list-style-type: none"> <li>Number of grievances registered, by type</li> <li>Number of grievances resolved</li> <li>Number of cases referred to court</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Training     | Operation of training programme  | <ul style="list-style-type: none"> <li>Number of local committee members trained</li> <li>Number of affected population trained in Project-related training courses</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Management   | Staffing                         | Number of implementing agencies by function                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|              | Procedures in operation          | <ul style="list-style-type: none"> <li>Number of ministry officials available by function</li> <li>Number of office and field equipment, by type</li> <li>Census and asset verification/quantification procedures in place</li> <li>Effectiveness of compensation delivery system</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| Subject | Indicator | Variables                                                                                                                                                             |
|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         |           | <ul style="list-style-type: none"> <li>Number of land transfers effected</li> <li>Co-ordination between local community structures, NGOs and PIU officials</li> </ul> |

The tools available to the resettlement unit to carry out performance monitoring include;

- Public Consultation and Informative Meetings to obtain PAP satisfaction rate from the RAP activities
- Simple Random Sampling to obtain the current household socio-economic conditions to be used as monitoring benchmarks
- Key Informant interviews
- Formal and Informal meetings with PAPs and other relevant stakeholders
- Focus Group Meetings with Vulnerable Groups
- Field Observations by experts
- Grievance and Grievance Close out forms
- Project Progress Report

TABLE 31: MONITORING INDICATORS

| I                                                              |                                       | Public Meetings (regardless of official or non-official) |                     |                |        |
|----------------------------------------------------------------|---------------------------------------|----------------------------------------------------------|---------------------|----------------|--------|
| Monitoring Item:                                               |                                       | As per meeting organized                                 |                     |                |        |
| Monitoring Frequency:                                          |                                       |                                                          |                     |                |        |
| No.                                                            | Date                                  | Venue                                                    | No. of Participants |                | Agenda |
|                                                                |                                       |                                                          | Male                | Female         | Total  |
| 1                                                              |                                       |                                                          |                     |                |        |
| 2                                                              |                                       |                                                          |                     |                |        |
| Note: Details contents of all meetings should be kept records. |                                       |                                                          |                     |                |        |
| II                                                             |                                       | Seminars relevant to the Project <sup>1</sup>            |                     |                |        |
| Monitoring Item:                                               |                                       | As per seminar organized                                 |                     |                |        |
| Monitoring Frequency:                                          |                                       |                                                          |                     |                |        |
| No.                                                            | Date                                  | Venue                                                    | No. of Participants |                | Agenda |
|                                                                |                                       |                                                          | Male                | Female         | Total  |
| 1                                                              |                                       |                                                          |                     |                |        |
| 2                                                              |                                       |                                                          |                     |                |        |
| *1: E.g., Seminars on Pesticides and Fertilizers Use.          |                                       |                                                          |                     |                |        |
| III                                                            |                                       | Water Users' Association (WUA) Member List               |                     |                |        |
| Monitoring Item:                                               |                                       | As per seminar organized                                 |                     |                |        |
| Monitoring Frequency:                                          |                                       |                                                          |                     |                |        |
| No.                                                            | Village/ Parish/ Sub-county/ District | Tick a box (✓)                                           |                     | Name of Member |        |
|                                                                |                                       | Male                                                     | Female              |                |        |
| 1                                                              |                                       |                                                          |                     |                |        |
| 2                                                              |                                       |                                                          |                     |                |        |
| IV                                                             |                                       | Complaints relevant to the Project                       |                     |                |        |
| Monitoring Item:                                               |                                       | Monthly                                                  |                     |                |        |
| Monitoring Frequency:                                          |                                       |                                                          |                     |                |        |

(1) Summary

| Item              | Type of Complaints | No. of Complaints | No. of Solved Complaints | No. of Un-solved Complaints |
|-------------------|--------------------|-------------------|--------------------------|-----------------------------|
| VGRC*1            |                    |                   |                          |                             |
| DGRC*2            |                    |                   |                          |                             |
| Land Tribunals    |                    |                   |                          |                             |
| a) Village level  |                    |                   |                          |                             |
| b) Parish level   |                    |                   |                          |                             |
| c) District level |                    |                   |                          |                             |
| Courts of Law     |                    |                   |                          |                             |
| Other             |                    |                   |                          |                             |
| (Specific: )      |                    |                   |                          |                             |

\*1: Village Grievance Redress Committee

\*2: District Grievance Redress Committee

(2) Complaint List

| No. | Date | Complainant |        | Name | Detailed Contents of Complaints | Members Concerned |
|-----|------|-------------|--------|------|---------------------------------|-------------------|
|     |      | Male (✓)    | Female |      |                                 |                   |
| 1   |      |             |        |      |                                 |                   |
| 2   |      |             |        |      |                                 |                   |

V Monitoring Item; Progress of RAP Activities  
Monitoring Frequency: Monthly

| Item                                                | Completion Date Period | Expected Date of Completion (if it has not been done yet.) |
|-----------------------------------------------------|------------------------|------------------------------------------------------------|
| RAP Finalization Period                             |                        |                                                            |
| Submission to CGV*1                                 |                        |                                                            |
| Approval by CGV                                     |                        |                                                            |
| Procurement of RAP Implementation Consultant        |                        |                                                            |
| Approval for payment by IMAAIF                      |                        |                                                            |
| Preparation of Compensation Funds by MAAIF          |                        |                                                            |
| Disclosure of Compensation Amounts                  |                        |                                                            |
| Opening Banks Accounts of for PAPs                  |                        |                                                            |
| Training Programmes                                 |                        |                                                            |
| Payment of Compensation to all PAPs                 |                        |                                                            |
| Grievance Resolution and settlement of disputes     |                        |                                                            |
| Implementation of Livelihood Restoration Programmes |                        |                                                            |
| Assistance of Vulnerable People                     |                        |                                                            |
| External Monitoring and Evaluation                  |                        |                                                            |
| RAP Audit Report                                    |                        |                                                            |
| RAP Completion                                      |                        |                                                            |

\*1: Chief Government Valuer" under the Ministry of Lands, Housing, and Urban Development

VI Monitoring Item; Progress of Compensation Payment, Land acquisition, and Resettlement  
Monitoring Frequency: Quarterly

| Resettlement activity                       | Planned Total | Unit       | Progress in Quantity |                       | Progress in Percentage |                        | Expected Date of Completion |
|---------------------------------------------|---------------|------------|----------------------|-----------------------|------------------------|------------------------|-----------------------------|
|                                             |               |            | During the quarter   | Till the last quarter | Up to the quarter      | Up to the last quarter |                             |
| Progress of compensation payment (all lots) |               | No. of HHs |                      |                       |                        |                        |                             |
| Lot 1                                       |               | No. of HHs |                      |                       |                        |                        |                             |
| Lot 2                                       |               | No. of HHs |                      |                       |                        |                        |                             |
| Lot 3                                       |               | No. of HHs |                      |                       |                        |                        |                             |

| Lot 4                                               | No. of HHs | No. of HHs | No. of HHs | No. of HHs | No. of HHs | No. of HHs | No. of HHs | No. of HHs | No. of HHs | No. of HHs | No. of HHs | No. of HHs | No. of HHs | No. of HHs | No. of HHs | No. of HHs | No. of HHs | No. of HHs | No. of HHs | No. of HHs |  |
|-----------------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|--|
| Progress of Providing Livelihood Support (all lots) |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 1                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 2                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 3                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 4                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Progress of land acquisition (all lots)             |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 1                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 2                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 3                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 4                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Progress of asset replacement (all lots)            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 1                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 2                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 3                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 4                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Progress of resettlement of people (all lots)       |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 1                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 2                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 3                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 4                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Progress of Land Re-organization (all lots: 12 ha)  |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 1                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 2                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 3                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |
| Lot 4                                               |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |  |

VII Monitoring Item; Economic Situation  
Monitoring Frequency: Quarterly (Simple Random Sampling)

| No. | Sex of HH Head (✓) | Main Income Source of HH (UGX) |        |                 |                 | Amount of Monthly Income (UGX) |                 |                 |                 | Amount of Expenditure (UGX) |                 |  |  |  |  |  |  |  |  |  |  |  |
|-----|--------------------|--------------------------------|--------|-----------------|-----------------|--------------------------------|-----------------|-----------------|-----------------|-----------------------------|-----------------|--|--|--|--|--|--|--|--|--|--|--|
|     |                    | Male                           | Female | 1 <sup>st</sup> | 2 <sup>nd</sup> | 3 <sup>rd</sup>                | 4 <sup>th</sup> | 1 <sup>st</sup> | 2 <sup>nd</sup> | 3 <sup>rd</sup>             | 4 <sup>th</sup> |  |  |  |  |  |  |  |  |  |  |  |
| 1   |                    |                                |        |                 |                 |                                |                 |                 |                 |                             |                 |  |  |  |  |  |  |  |  |  |  |  |
| 2   |                    |                                |        |                 |                 |                                |                 |                 |                 |                             |                 |  |  |  |  |  |  |  |  |  |  |  |



TABLE 32: RAP MONITORING PLAN

| Item                     | Action                                                                                                               | Frequency                            |
|--------------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Internal Monitoring      | Site visits during resettlement implementation                                                                       | Monthly                              |
|                          | Follow up with local leaders/ villagers/PAPs                                                                         | Quarterly                            |
|                          | Reporting to JICA during RAP implementation                                                                          | On completion (1 time)               |
| External Monitoring      | RAP Implementation Completion of Report                                                                              |                                      |
| External Monitoring      | Site visits during RAP implementation                                                                                | Biannually (as necessary)            |
|                          | - Key informant interviews                                                                                           |                                      |
|                          | - Field observation with Experts                                                                                     |                                      |
|                          | Discussions with PAPs and other stakeholders (regardless of formal or informal)                                      | Biannually (as necessary)            |
|                          | Focus group meetings with vulnerable groups                                                                          | Biannually (as necessary)            |
| RAP Implementation Audit | Simple random sampling to obtain the current household socio-economic conditions to be used as monitoring benchmarks | Annually                             |
|                          | RAP Implementation Annual Reports                                                                                    | Annually                             |
|                          | RAP Implementation Audit Site visit                                                                                  | Once after implementation completion |
| RAP Implementation Audit | RAP Implementation Completion Audit Report to JICA                                                                   |                                      |

| VIII | Monitoring Item: Quarterly (Simple Random Sampling) | Household Members                                                       | Sex (✓)            | Age                 | Marital status (✓)                 | Relationship to the HH Head | Residential status | Movement in/ out of household members |
|------|-----------------------------------------------------|-------------------------------------------------------------------------|--------------------|---------------------|------------------------------------|-----------------------------|--------------------|---------------------------------------|
|      |                                                     |                                                                         | Male               |                     | Single                             |                             |                    |                                       |
|      |                                                     |                                                                         | Female             |                     | Married                            |                             |                    |                                       |
|      |                                                     |                                                                         |                    |                     |                                    |                             |                    |                                       |
|      |                                                     |                                                                         |                    |                     |                                    |                             |                    |                                       |
|      |                                                     |                                                                         |                    |                     |                                    |                             |                    |                                       |
| IX   | Monitoring Item: Monthly (During Construction)      | Hazard and Disturbance                                                  | Monitoring Results |                     |                                    |                             |                    |                                       |
|      |                                                     | No. of Households Affected by hazards and Disturbance from Construction | HH(s)              |                     |                                    |                             |                    |                                       |
|      |                                                     | No. of Patients among construction workers                              | Person(s)          |                     |                                    |                             |                    |                                       |
|      |                                                     | No. of accident relevant to the Project Construction                    | Accident(s)        |                     |                                    |                             |                    |                                       |
|      |                                                     | Children labor during Project Construction                              | Person(s)          |                     |                                    |                             |                    |                                       |
|      |                                                     | Crimes by construction workers including sexual harassment              | Crime(s)           |                     |                                    |                             |                    |                                       |
| X    | Monitoring Item: Monthly (During Construction)      | Extent of damage to existing infrastructures                            | Monitoring Results |                     |                                    |                             |                    |                                       |
|      |                                                     | No. Date                                                                | Venue              | Details of Contents | Owners of existing infrastructures | Solution                    |                    |                                       |
|      |                                                     | 1                                                                       |                    |                     |                                    |                             |                    |                                       |
|      |                                                     | 2                                                                       |                    |                     |                                    |                             |                    |                                       |
| XI   | Monitoring Item: Monthly (During Construction)      | Case of conflict between construction workers and community members     | Monitoring Results |                     |                                    |                             |                    |                                       |
|      |                                                     | No. Date                                                                | Venue              | Details of Contents | Solution                           |                             |                    |                                       |
|      |                                                     | 1                                                                       |                    |                     |                                    |                             |                    |                                       |
|      |                                                     | 2                                                                       |                    |                     |                                    |                             |                    |                                       |

**9.2. Payment of compensation**

Sufficient compensation to all the PAPs as per the agreed schedule before the civil construction of the Project begins. Monitor and make detailed record of the type, rate, amount, date and payee of the compensation.

Linkage between the land acquisition, resettlement and the civil works construction of the Project Land acquisition and resettlement will be finished at least 1 month before the initiation of civil construction of the Project.

## 10. PUBLIC CONSULTATION

### 10.1. Rationale for Consultation with Displaced Persons

This chapter describes the public consultation and disclosure for the project and stakeholder consultations that took place during the RAP study. The key objective of the public consultation process for the RAP is to ensure the participation of stakeholders in planning and implementing activities associated with involuntary resettlement.

Effective resettlement planning requires regular consultation with a wide range of Project stakeholders. Early consultation helps to manage public expectations concerning impacts of a project and expected benefits. Subsequent consultations provide opportunities for the Project proponent and representatives of affected populations to negotiate compensation packages and eligibility requirements, resettlement assistance, and the timing of resettlement activities.

Consultation with affected persons is the starting point for all activities concerning resettlement. As a matter of strategy, public consultation shall be an on-going activity taking place throughout the entire project cycle. The justifications for consultations are:

- In principal, the socioeconomic situation in Uganda makes public consultation with the communities, indispensable.
- The land in question will be under use of some sort, communally, or individually.
- It is the local communities who will be host communities for the displaced people
- Local communities have a wealth of knowledge of local conditions - an invaluable asset to the Developer.

In recognition of this, particular attention was paid to public consultation with potentially affected individuals/households, the local and district leadership.

### 10.2. Stakeholder Engagement

A stakeholder engagement plan was drawn to help identify and analyse the relevance of the stakeholders to be consulted. Stakeholders are groups of people connected to one another through formal or informal ties, which have something to gain or lose from a proposed development initiative. Stakeholders in any project will include various social groups, formal and informal agencies in public and private sectors and NGOs/CBOs. NGOs/CBOs are particularly beneficial for the development plans when they work together in coalitions, pooling their resources and lobbying efforts.

### 10.3. Stakeholder Identification

A broad range of stakeholders have been identified for the Atari Irrigation Project. These include directly affected persons, indirectly affected persons, NGOs and Government Agencies, such as Ministry of Lands, Housing Urban Development, Ministry Gender Labour and Social Development, Ministry Justice and Constitutional Affairs, District Local Governments, NEMA s, and Communities. The identification of stakeholder was based on the project scope and the geopolitical and traditional setting of the project area as described below.

### 10.4. Directly Affected Persons

The directly affected persons are the people who reside in or derive their livelihood from the project area. The directly affected persons were consulted about relocation, livelihood and income restoration possibilities. The directly affected persons were the core target of the socio-

economic census during RAP studies.

### 10.5. Indirectly affected Persons

This group included persons who reside near the project area or rely on resources (such as water, pasture land, wetlands etc.) likely to be affected by the project. This group of stakeholders will have to change or adjust their living patterns when the construction of the Irrigation scheme starts.

### 10.6. Government Agencies

Under the present arrangement of governance, power belongs to the people and therefore, the role of the local communities in decision-making is critical. Most importantly, the Project area Coordination Committees (PACC) and the District Area Coordination Committees (PACC) and Local Government units at Village are in charge of handling land issues. The PACC and the Village system will facilitate easy identification of genuine owners of property likely to be affected.

### 10.7. Approach and Methodology

Consultations were done mainly through community meetings with community members living within and those near the project area, and also sufficient information was disclosed before and during socio-economic surveys.

#### Community Meetings

During the RAP exercise, Local Government leaders, such as Districts (Kween & Bulambuli), Village leaders were consulted first as a way of introducing the project and the staff carrying out the RAP exercise like the surveyors, the valuers and the social team. Then before engaging the communities, local leaders were informed and requested to join the teams during the sensitization process and they assisted in taking the minutes of the meetings. Minutes of consultation are presented as annex 1.

Consultations were carried out in the 2 districts where the project located. The main purpose was:

- To have an insight on how resettlement and land acquisition issues are handled in such projects.
- And also get a fair understanding of the social economic baseline indicators of the project areas.
- To establish how grievances have been handled in the past project implementation and also ascertain if there is sufficient capacity to handle Social safeguards at the District level.

So far two stakeholder meetings have been held in December 2017 and 20<sup>th</sup> January 2018 at the project area.

During the public forums, the public were explained to not only the location of the project area using maps but were also informed of the expected benefits, impacts in terms of land acquisition and the mitigation measures of how they will be compensated for the loss of their land and all other benefits they have been getting from project area including the physical cultural resources. They were also informed of the arrangements to address any grievances that might arise, their opportunity to influence and identify appropriate benefits. They were encouraged to form ad-hoc project committees to internalize the project components and if need be, guide the study teams,

and consult among themselves and articulate their concerns effectively. Emphasis was placed on a fully inclusive, open and transparent stakeholder participation process in the transfer of information about the proposed project. The information was disclosed well in advance before the stakeholder meetings, and meetings were held in a form understandable by local people.

TABLE 33: QUESTIONS, RESPONSES AND HOW THEY WERE INCORPORATED IN THIS RAP

| Questions                                                                                                                                                                                                                                                                                                                                                              | Responses                                                                                                                                                                                                                                                                                                                                                                                                      | How it is Addressed in the RAP                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mr. Magoona Godfrey asked if the PAPs were going to be part of the team to assess how much a person will be paid for during the exercise.                                                                                                                                                                                                                              | Ms. Aisu informed the meeting that the compensation rates will be got from the districts which the Chief Government Valuer will approve, so there will be no need for the PAPs to be part of the process.                                                                                                                                                                                                      | The valuers used rates from the Districts of Bulambuli and Kween for determining the values of crops/trees and temporal structures as stipulated in the laws.                                                                                                                                                                                                                                                       |
| Another question from Mr. Magoona was whether the farmers will be allowed to go to the field during the construction time.                                                                                                                                                                                                                                             | Eng. Lwanga informed the meeting that this will not be possible because the construction site shall be out of bounds due to safety concerns. The Constructor will want to minimize accidents as much as possible. In addition, Eng. Lwanga informed that the period when the farmers cannot enter their field will be shorter, since the entire construction period of the project will be phased by the area. | Kitutu Patrick had reservations that this project was hatched by the people of Bulambuli, and JICA FS Study Team had initially told them the Bulambuli district would own 70% and Kween district would have 30%. But when there reached a time a lot of confusion came up, and now the project Bulambuli has only 45% and Kween has 55%! This is so unfair to the people of Bulambuli.                              |
| Masinde Juma said that the cooperation with the farmers was still good and prayed that it continues. He also thanked the Consultants for taking the complaints of the farmers and for agreeing to come back and solve the still pending problems. He further requested the Consultants to alert them in time so that they can mobilize for the farmers to stay around. | The consultant assured the PACC Chairman for Bulambuli that they will be informed in advance before any activities take place                                                                                                                                                                                                                                                                                  | Khabakha Sulai raised the issue of farmers not accessing their fields during the construction time and yet a lot of his food will be inside during the Construction. How does he get food to feed his family?                                                                                                                                                                                                       |
| Masinde raised the issue of the river meandering such that some parts of the river have been left out. This river acts as a boundary between Kween and Bulambuli. In between there is a land owner, where will that land owner be, is it in Kween or Bulambuli?                                                                                                        | The project is not going to change any boundary between the two districts. All land will remain the same apart from a little portion that will be taken by the project will be fully compensated by Government of Uganda. This project has not come to divide boundaries; the owner of the affected land will remain the same, so no worries                                                                   | Eng. Lwanga responded that construction will be done in bits, and it will not take a long period when a site is condoned off, it may take say 2-4 days only and that side is open for farmers to pass to go to their fields. The contractor will be very fast because the equipment he will use will be very expensive to hire so more time the contractor spends in a site the more expensive the project becomes. |

| Questions | Responses                                                                                                                                                                                                                                                                                                                                                                                                           | How it is Addressed in the RAP                                           |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
|           | River meandering – spots are very short and close to each other. River training will be done on two spots, try to redirect the river so that it does not meander a lot. Dykes will form the boundary of the districts, and if we are training in someone's land, that person will be compensated for. Training will be within the buffer zone of 30 meters.                                                         |                                                                          |
|           | Ms. Aisu assured the meeting that this is a government project which should benefit everybody and the people should stop talking in terms of Bulambuli or Kween. First of all the communities have inter-married without any problem. The two districts are accommodating many tribes like the Iteso, Bagwere, Kenyans, Samyas etc, so the problem of the Bulambuli/Kween should not rise.                          | Section 3.1: 3.3.3 shows the different tribes found in the project area. |
|           | Eng. Lwanga responded that construction will be done in bits, and it will not take a long period when a site is condoned off, it may take say 2-4 days only and that side is open for farmers to pass to go to their fields. The contractor will be very fast because the equipment he will use will be very expensive to hire so more time the contractor spends in a site the more expensive the project becomes. | Continuous sensitization                                                 |
|           | Mr. Ayeba was referred to the above response and was told that the issue of leveling the land will be explained in the next stakeholder meeting.                                                                                                                                                                                                                                                                    | Continuous sensitization                                                 |
|           | Ayeba Yasin's concern was that the day the construction starts all the land will be leveled, is it true or not? Then how will the machines work? He suggested that for the smooth running of the project, government should resettle the affected persons for say two years, feeding them with their families until the construction of the Scheme is                                                               |                                                                          |

| Questions                                                                                                                                                                                                                                                                          | Responses                                                                                                                                                         | How it is Addressed in the RAP |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| <p>Chertwo Joselyn said that JICA Study Team went to her garden and planted pegs, when she asked them what the purpose is. Then, they told her that was a government project which was in a position to shift her to another place. But this is her green bank for her family.</p> | <p><i>It seems there was a miscommunication at that time. However, when her field is needed to be acquired for the project, it will be compensated fully.</i></p> | <p>Valuation Report</p>        |

Appendix 1: Volume 1: Project Affected Persons Register including Photographs and Serial Numbers

Appendix 2: Volume 2: Valuation Report

Appendix 3: Volume 3: Strip Maps of the Project Affected Area

**Annex 1. . MINUTES OF THE FIRST STAKEHOLDERS' MEETING OF ATARI IRRIGATION SCHEMME HELD ON 1<sup>ST</sup> FEBRUARY 2018**

**Date:** 1<sup>st</sup> February 2018

**Venue:** Atari Primary School Play Ground

**Time:** 15:00pm – 17:00pm

**Language:** English, Lomasaba and Kiswahili

**Participants:**

| Stakeholder                                             | Number | Remark                                                        |
|---------------------------------------------------------|--------|---------------------------------------------------------------|
| Ministry of Agriculture, Animal Industry, and Fisheries | 4      |                                                               |
| Ministry of Justice and Constitutional Affairs          | 1      |                                                               |
| Ministry of Gender, Labor, and Social Development       | 1      |                                                               |
| PDCC                                                    | 4      | From both sides                                               |
| PACC                                                    | 12     | From both sides                                               |
| Community members (Farmers etc.)                        | 135    | Including Project Affected Persons, and not affected persons. |
| Associated Engineering Surveyors Ltd.                   | 5      | Including director, surveyor, and sociologists.               |
| JICA Uganda Office                                      | 2      |                                                               |
| JICA Study Team                                         | 3      | Team Leader, Social and Interpreter                           |

**Agenda:**

1. Opening Remarks
2. Prayer
3. Introduction
4. Communication from the M/C
5. A word from MAAIF
6. RAP Progress report by AES RAP Consultant
7. Explanation of Project Component with MAP
8. Questions and Answers
9. Closing Remarks

**Minute 1/02/2018: Opening Remarks**

The meeting was called to order by Mr. Nangai Geoffrey, Chairperson Bulambuli PDCC Bulambuli District who was appointed to chair the meeting. He welcomed all members present and thereafter asked a volunteer to lead in a word of prayer and this was done by one of the farmers.

**Minute 2/02/2018: Introduction**

Due to the presence of different teams from different organizations, he asked each team leaders introduced their own members. The meeting was well represented by all stakeholders who included; Ministry of Agriculture and Animal Industry and Fisheries (MAAIF), Ministry of Justice and Constitutional Affairs (MJCA), Ministry of Gender, Labor and Social Development (MGLSD), JICA Uganda office, JICA Study Team, Associated Engineering and Surveyors, Local Government Leaders from Kween and Bulambuli Districts, PACC & PDCC members Project Affected Persons (PAPs) and Farmers.

**Minute 3/02/2018: Communication from the Master of Ceremonies**

Mr. Nangai Geoffrey, Chairperson PDCC Bulambuli District appreciated the shape the project is taking so far and asked all members to embrace the project completely. He added that this kind of stakeholder meetings were very important in keeping all parties abreast with project activities. He thanked MAAIF and JICA for the initiative especially by bringing the meeting down to the project site in Atari. Mr. Nangai then invited a representative from MAAIF to come and address the meeting.

**Minute 4/02/2018: A word from MAAIF Project Manager**

Eng. Lwanga informed the meeting that the people of Bulambuli and Kween are gifted by nature for having such flat land. He said that what the Ministry is doing in Atari is not being done in any part of the country; the people of Atari are the luckiest people he has ever seen. Eng. Lwanga said that the process of acquiring land for agricultural development is being done within the laws in Uganda that is why the RAP Assessment Committee is compromised by all the above stakeholders.

Eng. Lwanga said that the Top Leadership Committee formed a Joint Coordination Committee comprising of Ministry of Water and Environmental, NEMA, Ministry of Justice and Constitutional Affairs which will handle everything within the law, Gender and Social Development to handle employment issues, Ministry of Lands, Housing and Urban Development to handle land issues.

Eng. Lwanga further informed the meeting that Atari Irrigation Scheme will be constructed by the Japanese Government and to Japanese standards. The whole country is looking at Atari Irrigation Scheme as a model irrigation scheme. So the people of the project area should handle it with a lot of care that it deserves.

Eng. Lwanga stated that people of the two districts will be in business throughout the year in spite of weather patterns because of the irrigation scheme. The scheme will empower farmers to improve their livelihoods and attain food security. Therefore all concerned must work together to ensure that this scheme works well.

The scheme will extend some extra waters to the lower bit of the wetlands. The people of the affected area should plan how to work with other farmers to provide everybody with water as it

only those who will be affected by the project infrastructure (PAPs) instead of thinking that all of them were to be affected.

#### Minute 7/02/2018: Questions and answers

The Chairperson of the meeting informed the meeting that people should only raise questions which are very peculiar because most of the queries are already being handled.

1. **Question 1:** Mr. Magoona Godfrey asked if the PAPs were going to be part of the team to assess how much a person will be paid for during the exercise.

**Response:** Ms. Aisu informed the meeting that the compensation rates will be got from the districts which the Chief Government Valuer will approve, so there will be no need for the PAPs to be part of the process.

**Question 1.1:** Another question from Mr. Magoona was whether the farmers will be allowed to go to the field during the construction time.

**Response:** Eng. Lwanga informed the meeting that this will not be possible because the construction site shall be out of bounds due to safety concerns. The Constructor will want to minimize accidents as much as possible.

In addition, Eng. Lwanga informed that the period when the farmers cannot enter their field will be shorter, since the entire construction period of the project will be phased by the area.

2. **Question 2:** Masinde Juma said that the cooperation with the farmers was still good and prayed that it continues. He also thanked the Consultants for taking the complaints of the farmers and for agreeing to come back and solve the still pending problems. He further requested the Consultants to alert them in time so that they can mobilize for the farmers to stay around.

**Question 2.1:** Masinde raised the issue of the river meandering such that some parts of the river have been left out. This river acts as a boundary between Kween and Bulambuli. In between there is a land owner, where will that land owner be, is it in Kween or Bulambuli?

**Response:** The project is not going to change any boundary between the two districts. All land will remain the same apart from a little portion that will be taken by the project will be fully compensated by Government of Uganda. This project has not come to divide boundaries; the owner of the affected land will remain the same, so no worries of belonging anywhere.

River meandering – spots are very short and close to each other. River training will be done on two spots, try to re-direct the river so that it does not meander a lot. Dykes will form the boundary of the districts, and if we are training in someone's land, that person will be compensated for. Training will be within the buffer zone of 30 meters.

3. **Question 3:** Kitutu Patrick had reservations that this project was hatched by the people of Bulambuli, and JICA FS Study Team had initially told them the Bulambuli district would own 70% and Kween district would have 30%. But when there reached a time a lot of confusion came up, and now the project Bulambuli has only 45% and Kween has 55%! This is so unfair to the people of Bulambuli.

exists. Eng. Lwanga then invited the RAP Consultant, Ms. Elizabeth Aisu to brief the meeting about the RAP process so far.

#### Minute 5/02/2018: Briefing from AES RAP Consultant

Ms. Aisu thanked the people of the two districts of Kween and Bulambuli especially the local leadership, PACC members and farmers for being cooperative and hence making the work of the RAP consultant easy. The PACC in particular has been very fast in mobilizing farmers whenever they are needed. She mentioned that the Scheme will empower the communities to improve their livelihoods and attain food security that is the reason they have collected baseline information about the people living in Atari so as to evaluate the impact of the project on their livelihoods after a given period of time. She therefore compelled everybody to work together to ensure that this scheme works well for the benefit of the community.

Ms Aisu took the meeting through what the Consultants have since done from the time they were introduced to the two districts of Kween and Bulambuli which began by holding meetings with district leadership and the PACC members on 5<sup>th</sup> December 2017. The Consultants then went back to the Districts on 3<sup>rd</sup> January 2018 to start RAP studies. Again the consultants started by visiting both district headquarters to announce their presence in the districts. They then carried out a stakeholder sensitization meeting was on 9<sup>th</sup> January 2018 where leaders of the two districts were fully represented PACC members from the two districts, farmers from the project affected area, Surveyors, Valuers and the Social Team. The purpose of the first stakeholder meeting was to explain the RAP methodology and ask for the stakeholder support during the fieldwork.

There after the sensitization meeting, surveyor and valuer embarked on identifying the farmers who will be affected by the project infrastructure meanwhile the social team mobilized research assistants for the collection of the socio-economic data. From 12<sup>th</sup> to 13<sup>th</sup> January, research assistants were recruited from the two districts and trained, on 14<sup>th</sup> January 2018. Local Council Chairpersons from Sikwo – 3 and Buwembere 4 Parishes were met and they provided lists of all persons that live within these villages.

In the period of 15<sup>th</sup> January to 19<sup>th</sup> January social economic studies were carried out. Household interviews were held among the households within the project area and buffer zone plus the neighboring villages. A total of 274 households were interviewed and 20<sup>th</sup> January the Consultants met the JICA Study Team and briefed them of the progress of the work.

After the surveyors and valuers had identified the Project Affected Persons (PAPs) the social team mobilized them for the RAP Census from 21<sup>st</sup> to 23<sup>rd</sup> January 2018. Starting from 24<sup>th</sup> to 31<sup>st</sup> January 2018, a census on all PAPs was carried out using household questionnaires, photos of each PAP was taken, names verified and grievances noted and recorded.

Ms. Aisu concluded her presentation by informing the meeting that the Surveyors, Valuers and the Social Team will go back to the affected area and sort out all queries that are being raised by the farmers at a later date. She also requested the Chairmen to receive all complaints and record them down so that when the team comes back to the ground, they know exactly how many PAPs need their attention. Lists of complaint from the PAPs are appended to these minutes.

#### Minute 6/02/2018: Explanation of Project Component with MAP

Together with JICA Study Team the consultant showed the members present the map of the project area showing how the land in the project area is demarcated and where the project infrastructure is located thereby determining those farmers who are going to be affected by the project. This process was highly appreciated by the farmers and it clearly brought out the issue of

JICA for the sponsoring the project and assured them of total government support. He then cautioned the farmers especially those from Bulambuli who are now complaining that they were the first beneficiaries of the project but currently the biggest percentage of the project is located in Kween District. He gave an analogy of quote: "You are like people who refused to assist the lorry driver to push the lorry when it was stuck in the mud and after it started by the help of the few all the rest wanted to jump in" he warned them next time they should be very careful when handling projects.

He also emphasized the fact that this is a very important project to the government and people of Uganda because it is also the first of its kind. He thanked MAAIF for bringing on board other government Ministries and departments for the smooth implementation of Atari Irrigation Scheme. He thanked members for sparing their time to attend the meeting and wished everybody a safe journey home.

**Response:** Ms. Aish assured the meeting that this is a government project which should benefit everybody and the people should stop talking in terms of Bulambuli or Kween. First of all the communities have inter-married without any problem. The two districts are accommodating many tribes like the Ieso, Bagwere, Kenyans, Samyas etc, so the problem of the Bulambuli/Kween should not rise.

4. **Question 4:** Khabakha Sulai raised the issue of farmers not accessing their fields during the construction time and yet a lot of his food will be inside during the construction. How does he get food to feed his family?

**Response:** Eng. Lwanga responded that construction will be done in bits, and it will not take a long period when a site is condoned off, it may take say 2 -4 days only and that side is open for farmers to pass to go to their fields. The contractor will be very fast because the equipment he will use will be very expensive to hire so more time the contractor spends in a site the more expensive the project becomes.

5. **Question 5:** Ayeba Yasin's concern was that the day the construction starts all the land will be leveled, is it true or not? Then how will the machines work? He suggested that for the smooth running of the project, government should resettle the affected persons for say two years, feeding them with their families until the construction of the Scheme is completed.

**Response:** Mr Ayeba was referred to the above response and was told that the issue of leveling the land will be explained in the next stakeholder meeting.

6. **Question 6:** Chertwo Joselyn said that JICA Study Team went to her garden and planted pegs, when she asked them what the purpose is. Then, they told her that was a government project which was in a position to shift her to another place. But this is her green bank for her family.

**Response:** It seems there was a miscommunication at that time. However, when her field is needed to be acquired for the project, it will be compensated fully.

7. **Question 7:** Aziza Mwakwana Yahya complained that all her land has been consumed by the infrastructure. Her only livelihood is going to be taken away.

**Response:** She was re-assured that she will be fully compensated and she will be in a position to buy another piece of land.

#### Minute 8/02/2018: Closing Remarks

The Chairman, Mr. Nangai Geoffrey requested Mr. Chepkor Yusuf Juma the Assistant CAO Kween to address the meeting before closing remarks were presented. Yusuf informed the meeting that he was sent by the CAO Kween District to represent him because of the importance of this project to Kween District. He said they are very grateful for the good working relationship between the two communities on this project. The district is eagerly waiting for the fruits of the project and they pledge their utter support to the irrigation project.

The Chairman then invited Mr. Peter Welaya from the Ministry of Gender, Labour and Social Development to give the closing remarks. He started by appreciating the development partners



**COMPLAINTS – KWEEN DISTRICT**

| Names            | S/No      | Type of Complaint                                                                                                         |
|------------------|-----------|---------------------------------------------------------------------------------------------------------------------------|
| Asadu Mutai      |           | He appears 3 times in the list provided by the surveyor but in the book he appears twice.                                 |
| Matfahanse Issa  | 231       | Appears once in the survey forms and in the list he is there twice.                                                       |
| Cheroto Michael  | 159       | Does not appear in the receipt book Bought land from Sabitayo Robert but Sabitayo still registered the land in his names. |
| Bitali Rogers    | 173       | Recorded as Bitali John.                                                                                                  |
| Kweboi Simon     | 191       | Does not appear in the valuation book                                                                                     |
| Abudu Saida      | 190       | Does not appear in the valuation book                                                                                     |
| Khauka Musa      | 243       | Does not appear in the valuation book                                                                                     |
| Matakwa Jenifer  | 198       | Does not appear in the valuation book                                                                                     |
| Kapsandu Fred    | Amukok el | There are pegs in his land but he does not appear anywhere.                                                               |
| Wanyayabilo Juma | 136       | Not in the list                                                                                                           |
| Namarome Charles | -         | He is between two people who have been interviewed but he does not appear anywhere. He is asking why?                     |
| Mwanga Aziz      | -         | Crops left out Avocado and Matoke                                                                                         |
| Mutai Asadi      | 193       | Missing from the survey's list.                                                                                           |
| Wekesa John      | -         | Why are pegs in his land but he is not included                                                                           |
| Waluye Bruhani   |           | Not all the matooke was counted.                                                                                          |
| Chemonges Martin |           | The form shows that the land belongs to Siptayo Robert and yet he had already sold the land to Chemonges Martin.          |
| Kisa James       | Sikwa     | Land not surveyed, waiting to be surveyed too                                                                             |

**BULAMBULLI COMPLAINT LIST**

| No  | Names                          | S/No          | Type of complaint                                                                                         |
|-----|--------------------------------|---------------|-----------------------------------------------------------------------------------------------------------|
| 1.  | Swaibu Juma Masinde            | 296           | The names should read as Masinde Twaha Moran Juma                                                         |
| 2.  | Kitutu Innocent                | 288           | Names to read                                                                                             |
| 3.  | Cheromo Godfrey                | 340, 347, 349 | Part of the land is being claimed by Mwenyi David                                                         |
| 4.  | Asiya Mutan                    | 261           | Correct name is Nambuya Asha. And part of the land is sold to Mukhongo David Issa                         |
| 5.  | Mukwana                        | 378, 380      | Correct name is Webisa Patrick                                                                            |
| 6.  | Maifanane Issa                 | 263           | Affected crops not captured include:-<br>Oranges – 78<br>Mangoes – 05<br>Bush tree – 01                   |
| 7.  | Wekesa Kaleb                   |               | Pegs are in his land but not captured in the assessment forms                                             |
| 8.  | Zebulon Mutuma & Wabonga Peter | 362           | Following people appear on the forms:<br>Mukunya Abdu<br>Wajala Stephen<br>Mutuma George<br>Namuwu Alfred |
| 9.  | Wamalwa Stephen                |               | Does not appear on the assessment book                                                                    |
| 10. | Mwajuma Nabangala              |               | She was skipped                                                                                           |
| 11. | Kisa David                     | 393, 395, 404 | All land sold to Wimu Enterprises Ltd                                                                     |
| 12. | Lutoti John                    | 343           | Sold part of his land to Wanyonyi Godfrey who is also affected                                            |
| 13. | Moje John                      | 306           | Sold all his land to Kakayi Sili via                                                                      |
| 14. | Simiyi Right                   | 293           | Correct spelling is Simiyi Raiti                                                                          |
| 15. | Mustafa Mooli                  | 295           | True owner is Mamdali Sam Wasungui                                                                        |
| 16. | Masinde Juma                   | 143           | True owner is Masinde Juma Wepukhulu                                                                      |
| 17. | Nakasala Daniel & Gambwa John  | 276, 277      | Nalyanya Protus is not captured                                                                           |
| 18. | Mulemba & Khaukha              | 334, 305      | Masaba Richard and Gizamba Nadaga Kasimu have bought some of his land                                     |
| 19. | Bagai Mutamiru                 | 239           | All land sold to Mwanga Andrew, Mwanga Razak and Wakinya James                                            |



|                                                                                     |                                                      |                                                            |
|-------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------------|
|    | <p>Eng. Lwanga in blue giving his remarks</p>        | <p>Eng. Lwanga giving more explanation about the river</p> |
|    | <p>Mr. Nangai in blue giving the opening remarks</p> | <p>The project map being shown to the farmers</p>          |
|  | <p>Members Gathered at the Venue</p>                 | <p>Elizabeth sensitizing the community</p>                 |

Pictorial Expression of the First Stakeholder Meeting Held on 1<sup>st</sup> February 2018 at Atari Primary School Play Ground

| No  | Names                                                                             | S/No                                                                                                                          | Type of complaint                                                                                                                                                                                                                     |
|-----|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 20. | Kabeyi John, Wepolyo Augustine and Kundo Peter                                    | 335, 339, 345                                                                                                                 | Land shared amongst the following: Kabeyi John, Namakanda Rosemary Lubango Base, Mukhongo David Issa, Kisaka Sikola, Namono Sowena Wandvasi Mutawailbu, Musimani Ali Mwasame Godwin, Mwaswame Rashid Wamukote Shafik and Mugoma Bosco |
| 21. | Maliro Chris                                                                      | 372                                                                                                                           | Correct name is Maliro Chris Kuterema                                                                                                                                                                                                 |
| 22. | Muhamad Kidale                                                                    | 462                                                                                                                           | Correct name is Gidale Muhamed Gizamba                                                                                                                                                                                                |
| 23. | Nabiswa John                                                                      | 398                                                                                                                           | Part of the land sold to Wananda Stephen Richard who is also affected                                                                                                                                                                 |
| 24. | Inna Swaib Moran<br>Nabiye Zebuloni<br>Kiganda Micheal<br>Kibinga David<br>Majoni | 296<br>367<br>379<br>391                                                                                                      | These names appear on the assessment forms but do not appear in the list.                                                                                                                                                             |
| 25. | Mandali Sam<br>Nambuya Aisha<br>Mbogo Irene                                       |                                                                                                                               | The names are in the list but not captured in the assessment forms.                                                                                                                                                                   |
| 26. | Serial numbers not captured by the assessor                                       | 464,<br>465,<br>466,<br>467,<br>468,<br>469,<br>470,<br>471,<br>472,<br>473,<br>474,<br>475,<br>476,<br>477,<br>478, &<br>480 |                                                                                                                                                                                                                                       |
| 27. | Abdul Mukunya                                                                     |                                                                                                                               | Appears once as owner and twice as a co-owner.                                                                                                                                                                                        |

**Annex 2. MINUTES OF THE SECOND STAKEHOLDERS MEETING FOR ATARI IRRIGATION SCHEME HELD ON 8<sup>TH</sup> JUNE 2018 AT ATARI PRIMARY SCHOOL**

**MINUTES OF THE SECOND STAKEHOLDERS MEETING FOR ATARI IRRIGATION SCHEME HELD ON 8<sup>TH</sup> JUNE 2018 AT ATARI PRIMARY SCHOOL**

**Date:** 8<sup>th</sup> JUNE 2018  
**Venue:** Atari Primary School Play Ground  
**Time:** 14:00pm – 18:00pm  
**Language:** English, Lumasaba and Kiswahili

**Participants:**

| Stakeholder                                             | Number                                                                                                                 | Remark                                                                                                                                               |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ministry of Agriculture, Animal Industry, and Fisheries | 5                                                                                                                      | Commissioner Engineer Kato Kayizzi, Engineer Benon Lwanga, Engineer Vivienne Nakakinda Mutumba, Engineer Reagan Yoweri Okwanga and Nyagoma Catherine |
| PDCC                                                    | 4                                                                                                                      | From both sides                                                                                                                                      |
| PACC                                                    | 15                                                                                                                     | From both sides                                                                                                                                      |
| Community members (Farmers etc.)                        | 135                                                                                                                    | Including Project Affected Persons, and not affected persons.                                                                                        |
| Associated Engineering Surveyors Ltd.                   | 5                                                                                                                      | Including Managing Director, Surveyor, Valuer, Lawyer and Sociologists.                                                                              |
| Purpose                                                 | To update the Stakeholders on the progress of the RAP process and to solicit stakeholders concerns relating to the RAP |                                                                                                                                                      |

Sign : ..... Date: ..... Sign:..... Date: .....

Representative of MAAIF Eng. Benon Lwanga  
 Secretary RAP Consultant Mr. John B Orena Billa

Signed by

|                                                                                       |                                                       |
|---------------------------------------------------------------------------------------|-------------------------------------------------------|
|  | All members taking a closer look at the map           |
|    | Women were active during question time                |
|    | Mr. Juma Masinde in blue asking his question          |
|    | Mr. Chepor CAO Kween in the middle giving his remarks |
|  | Cherwyo Joselyn asking her question                   |
|    | Mr. Peter Weyaya (in blue) gave the closing remarks   |

## AGENDA

1. Prayer
2. Introduction
3. A brief from Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)
4. Presentation from the RAP Consultant-AES
5. Reactions, Questions and Answers
6. Closing Remarks

### Minute 1/06/2018: Opening Remarks

The meeting was called to order by Mr. Nangai Geoffrey, Chairperson Bulambuli PDCC Bulambuli District who was appointed to chair the meeting. He welcomed all members present and thereafter asked a volunteer to lead in a word of prayer and this was done by one of the farmers.

### Minute 2/06/2018: Introduction

The meeting began with introductions where leaders from the two districts of Kween and Bulambuli were requested to introduce the teams they came with from their respective districts. Members from MAAIF introduced themselves and also RAP Consultant's team. The rest of the members were requested to introduce themselves in groups depending on where they come from.

### Minute 3/06/2018: Project Objectives, Background and Scope from MAAIF

The Chairperson welcomed the participants and called the meeting to order. The team from the Ministry of Agriculture Animal Industry and Fisheries introduced themselves as well as the Consultants from Associated Engineers and Surveyors. Due to the large number of participants, it was decided that this was not necessary as they were going to register in the attendance list provided.

The Project Manager, Engineer Benon Lwanga, provided an elaborate introduction of the project, which was followed by a detailed overview by Ms. Elizabeth Aisu, a Senior Sociologist of the Consultancy team. Engineer Lwanga apologized for starting late as his team had to stop over at Bulambuli district headquarters for an official communication. Engineer Lwanga said highlighted that the project had now reached the climax of the RAP. Every PAP's details have been taken and a picture which the Consultant will show the meeting shortly. He also informed the meeting that outline design by the JICA team was also complete.

Engineer Lwanga assured the meeting that the project is following the JICA set up procedures to the letter and so the community should not get tired of waiting. He said that people should not talk about the Ngenge Irrigation scheme which is already under construction but it was just a matter of time that even ours of Atari is starting soon.

Engineer Lwanga informed the meeting that the Japanese are taking long to start because they want to do good job unlike the bridge in Kangole which was recently washed away by too much rains because not enough study was done.

Engineer Lwanga further informed the meeting that JICA team has to prepare a Soft Component. JICA team will come and work with you here, show you how the rice is grown and ensure that you succeed. Farmers have to maximize their income as much as possible, and that is what is called "Soft Component".

On Land Re-organization, Engineer informed the meeting that the Ministry is challenged financially, but planning for a model organized farming. Farmers who are willing to give land for this model organized farm can do so for a small area first to show others.

### Schedule of Construction:

The construction process is going to inconvenience people but for a short time. Construction will be in four phases, two phases in Sikwo and the other two in Bunambute. Once one area has been gazetted for construction, the farmers from that area will not be able to use that area. So there is need for farmers to plan for that period by storing food for time they will not be in production. This is mainly because of safety issues, no one should be injured or lose life due the construction equipment. The construction is likely to take six months to one year, under which that place is gazetted and will be no entry to farmers. He asked the farmers to be patient and cooperative.

### Minute 4/06/2018: Presentation from the Consultant:

Ms. Aisu registered her happiness of being before the meeting this time presenting the data so far collected way back in January and February 2018. The two studies done included;

- Social Economic Baseline study,
- RAP Census

### Social Economic Baseline Survey

The Social Economic Study was done in four (4) villages in Bunambute Sub County and three (3) in Sikwo. Interviews were carried on about 274 people and the report was produced pending approval from JICA and MAAIF before it can be disclosed to the public. Ms. Aisu pointed out that according to the social economic survey, it was noted that average age of the community was between 18 – 49 years of age which accounts to 70% and this means that the project will get the much needed labour. Ms. Aisu further noted that the survey also showed that most of the people in the project area are married and settled which is much needed for people to work together. 86% people interviewed are married in Bulambuli and 78% are married in Kween. All this adds up to the stability in the community which will embrace the project.

It was also noted that in the education standard in the project area was very poor, with only 1% of the respondents had attained university in Bulambuli and 0.9% had reached university in Kween district. Ms. Aisu informed the meeting that with this project, this is expected to change, because parents are expected to educate their children after getting income from the project.

It was also noted that most respondents Catholics, a good number were Muslims, Church of Uganda and others giving a good picture that majority of the people are religious, this helps in information dissemination, and it also confirms that the people in the project area live in harmony with each other despite affiliating to different religions which is very good for the project.

The study further showed that most people in the project area are mostly peasants and subsistence farmers. Public servants are more in Bulambuli. This project is expected to change this trend from subsistence farming to commercial farming.

In terms of vulnerability, the study showed that people in Bulambuli are older than those in Kween. Very few disabilities were reported in both districts, and people in Kween are poorer than their counterparts in Bulambuli.

Kundu Bernard: Asked that they were promised that the construction would start in March 2018 and they have been eagerly waiting because we expect to benefit a lot from this project. In addition we expect that after the land has been re-organized the flooding will be controlled as you can see we are really suffering with water which is everywhere right now.

**Answer:** Engineer Benon informed him that this project is being funded by a grant of over 100 Billion from the Government of Japan and for that matter all processes have to be followed to the dot since the Japanese are very strict and would not like to hurry the processes without proper documentation and ensuring that the project will succeed. He was informed the meeting that construction will not start until all PAPs are paid and right now we are in the process of completing the RAP, have people paid, then the detailed feasibility studies will take place. Construction is expected to begin 2020. He therefore requested the farmers to bear with the slow process but expect best results where all parties will be happy.

**2. Question:** Suluta John asked if his graves located within the project area will be compensated for.  
**Answer:** He was informed that compensation will be only for the land going to be affected by the irrigation infrastructure such as: roads, main canals, secondary canals and primary canals. However from the survey done no graves were identified in the affected land therefore no compensation will be given for graves which are not affected.

**3. Question:** Mukono Godfrey asked that during implementation people shall not be allowed to work in their fields within the project area, what method will be put in place in order for them to get food during construction?

**Answer:** MAAIF Commissioner, Mr. Kato reiterated that RAP study has budgeted for livelihood restoration for all the PAPs and some of this money will be used provide food during construction. However, he also cautioned PAPs to plan for this period and cooperate with MAAIF and the contractor in ensuring that people do not suffer much during the construction period. Farmers will also be required to volunteer land for land reorganization and farm demonstration which will be used as a model farm to show farmers on how to maximize yields from a small piece of land.

**4. Question:** Butali asked that during project implementation, our lands will be no go zone; does this mean that our land is now for government?

**Answer:** Engineer Lwanga responded that government was not going to take anybody's land, the purpose of the project is to eradicate poverty in the community and your land will remain yours. The request to avoid going to the land is only for safety purposes because huge equipment will be used and accidents are likely to take place therefore to be on the safe side people will be required to avoid going to the construction site which will be condoned off.

**5. Question:** Another question from Butali was whether the lawyer in the team was to help government to acquire their land or help the consultants.

**Answer:** Engineer Lwanga answered him that the lawyer was here to help guide on the legal matters arising out the land acquisition and he was here to help both MAAIF and PAPs. He again emphasized that the project is for the people but not for grabbing their land.

Ownership of houses; it was noted that 81% own houses, very few are renting and many are renting in Kween.

House status; many live in grass thatched huts, built with mud and wattle, most houses are not cemented. Ms. Aisu informed the meeting that this type of houses should change with the commencement of this project.

When the interviewed people were asked how they came to know about this project, 87% said they got the information from the sensitization teams, 51% from Local Council chairpersons and 17% from JICA members. Asked about Standard of living comparison within households, results showed that 44% are poor, 42% are average, 10% are very poor and 2% are rich. This trend is expected to change after the project because the main purpose of the irrigation scheme is to make people better economically.

#### **Project Affected Persons Census**

A census of all project affected persons was also conducted and this was aimed at getting all particulars of PAPs including the demographic characteristics, number of people in their households, identifying the amount of land affected by the project infrastructure, counting the crops and trees in the affected land and also identifying those whose houses or other property was going to be affected.

Members were informed that the project is going to affect approximately 423 household heads and 2007 individuals who are members of these households. Of these 172 are from Bulambuli District and 251 from Kween District. Among the PAPs in Bulambuli, 17 are female while 155 are men, in Kween 42 are female and 209 are male. There are also 65 people whose plots are in the buffer zone and these will also be compensated.

Members were also informed that some PAPs have more than one plot with some of them having as many as 7 – 8 plots. PAPs were advised not to wonder so much or compare their compensation money to others because those with many plots will receive more money.

Aisu informed the PAPs that the PAPs Register containing their details was going to be displayed at the SDA church for 3 days for them to go and confirm their details including spellings of their names before the final register is made. Even those PAPs whose photos were not taken the first time have a chance to take them this time round. PAPs were advised to be patient and not ask about how much they were assessed until the Chief Government Valuer verifies and approves the valuation report.

After the presentations, PAPs/members present were asked if the study results truly reflect what is on the ground. All were in agreement apart from district officials from Kween who said the results of latrine coverage were a bit exaggerated because they are aware that latrine coverage is low in their area. However, they were quick to say that the answers given during the interview could have been affected by the fact that people usually shy away in accepting that they do not have latrines. Otherwise all the rest of the results were confirmed to be true and the district officials requested for the copies of the RAP report to be disclosed in their districts and also for their libraries.

#### **Minute 5/06/2018: Reactions, Questions and questions**

##### **1. Question:**

6. **Question:** Amangusio informed the meeting that one of the PAPs is sick and admitted in Kapehorwa hospital, how will he be part of the ongoing exercise?
7. **Answer:** Ms. Elizabeth informed him that Rose will draft a note for him to give Amangusio or anybody next of kin the right to sign for him/her. Even those PAPs who are in prison will be given a consent note drafted by lawyer to take to them in prison to sign on and allow their next of kin to represent them in matters regarding their land.
8. **Question:** Another person complained that the project affected his land and houses and some houses have already fallen down and he was wondering when he will be compensated.
- Answer:** He was told that compensation cannot be done in piece meals, all people affected will be compensated at once when Chief Government Valuer approves the RAP report, he was requested to be patient and wait until the appropriate time comes. Upon consultation, it was ascertained that this particular person is outside the project area and his houses fell down due to him abandoning his home. So no compensation will be given to him since he is not part of those affected by the project.

**Minute 6/06/2018: Closing Remarks**

Engineer Kato Kayizzi from MAAIF made the closing remarks; he started by thanking all members for coming in such big numbers. He reminded them they have come a long way since 2013 when the idea was introduced to the farmers; indeed it was not easy to convince the farmers to accept the project. He thanked the PACC and PDCC members for the good work they have done in keeping the farmers informed about the project process.

He assured farmers that although funds for land re-organization were not yet found they as MAAIF are going to engage other donors/funders to assist in funding this component therefore farmers were requested to be patient and cooperative as they wait.

He also mentioned that rice growing comes with other disadvantages like keeping children out of school while helping parents to chase away birds. This will not improve on the education standards in the area. He therefore mentioned that he is going to lobby the JICA team to construct a Community Centre which can be used for night studies by students in the project area. The community hall can also be used for other purposes like holding meetings and training farmers.

He thanked the RAP Consultant (AES) for the good work done and asked them to ensure that the RAP approval process is expedited; he promised to personally follow up with colleagues in the Ministry of Lands, Housing and Urban Development in the Chief Government Valuer's office to fast track the RAP valuation report approval.

The meeting closed on a good note at 6:00 pm and all dispersed.

|                                                                                   |                                                                                   |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  |  |
|  |  |
| <p>Meeting in Progress</p> <p>Kween Team Introducing themselves</p>               |                                                                                   |

Signed

Chairman

Secretary

# Appendix-12. Water Balance Analysis

[ Case-FS ]

Water-Balance Analysis

River basin : Atari Irrigation Scheme

Metrology Station Name : Soroti

Year : 2004

First Seasi Second Season

Inigation Coverag(L/hec) : 680  
(Maize) : 0  
Irrigation efficiency : 69%

|                    |        |                                  |                  |                                               |               |     |    |                                              |                  |
|--------------------|--------|----------------------------------|------------------|-----------------------------------------------|---------------|-----|----|----------------------------------------------|------------------|
| Urban Population : | 0      | Unit water Requirement (Urban) : | 20 // person day | Number of Investock :                         | 1,720         | TLU | 0  | Number of cooperative members :              | 0                |
| Rural Population : | 44,000 | Unit water Requirement (Rural) : | 40 // person day | Average Unit water Requirement of Investock : | 50 // TLU/day |     | 60 | Average Unit water Requirement of Industry : | 60 // person day |

| S.N.                                          | Description | Jan     |         | Feb     |         | Mar     |         | Apr     |         | May     |         | June    |         | July    |         | Aug     |         | Sept    |         | Oct     |         | Nov.    |         | Dec.    |         | Total   |         |
|-----------------------------------------------|-------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|                                               |             | 15      | 16      | 15      | 13      | 15      | 16      | 15      | 15      | 15      | 15      | 15      | 15      | 15      | 15      | 15      | 15      | 15      | 15      | 15      | 15      | 15      | 15      | 15      | 15      |         | 100%    |
| <b>I. WATER REQUIREMENT</b>                   |             |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| <b>I.1. Irrigation Water Requirement</b>      |             |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| ETc (mm/day)                                  |             | 5.9     | 5.9     | 6.1     | 6.1     | 6.1     | 6.1     | 5.3     | 5.3     | 4.4     | 4.4     | 4.5     | 4.5     | 3.8     | 3.8     | 4.2     | 4.2     | 5.0     | 5.0     | 5.0     | 5.0     | 5.2     | 5.2     | 5.6     | 5.6     | 122.2   |         |
| CROPS (Paddy) Kc                              |             |         |         |         |         |         |         |         |         | 1.05    | 1.07    | 1.14    | 1.20    | 1.20    | 1.20    | 1.12    | 1.12    | 1.05    | 1.07    | 1.07    | 1.14    | 1.20    | 1.20    | 1.20    | 1.12    | 0.97    | 17.90   |
| ETc (mm/day)                                  |             |         |         |         |         |         |         |         |         | 4.62    | 4.71    | 5.13    | 5.40    | 4.56    | 4.56    | 4.70    | 4.07    | 5.25    | 5.35    | 5.35    | 5.70    | 6.00    | 6.24    | 6.24    | 6.27    | 5.43    | 84.23   |
| Shuntion & Paddling (mm/day)                  |             |         |         |         |         |         |         |         |         | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 20.00   |
| Precipitant (mm/day)                          |             |         |         |         |         |         |         |         |         | 15.62   | 15.62   | 15.62   | 15.62   | 15.62   | 15.62   | 15.62   | 15.62   | 15.62   | 15.62   | 15.62   | 15.62   | 15.62   | 15.62   | 15.62   | 15.62   | 15.62   | 15.62   |
| Total (mm/day)                                |             |         |         |         |         |         |         |         |         | 234.30  | 234.30  | 234.30  | 234.30  | 234.30  | 234.30  | 234.30  | 234.30  | 234.30  | 234.30  | 234.30  | 234.30  | 234.30  | 234.30  | 234.30  | 234.30  | 234.30  | 234.30  |
| Total (mm/half month)                         |             |         |         |         |         |         |         |         |         | 1171.50 | 1171.50 | 1171.50 | 1171.50 | 1171.50 | 1171.50 | 1171.50 | 1171.50 | 1171.50 | 1171.50 | 1171.50 | 1171.50 | 1171.50 | 1171.50 | 1171.50 | 1171.50 | 1171.50 | 1171.50 |
| <b>Rain (mm/half month)</b>                   |             |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Rain fall (mm)                                |             | 39.2    | 43.6    | 2.1     | 47.3    | 10.7    | 40.8    | 101.1   | 118.7   | 118.7   | 118.7   | 12.0    | 54.5    | 22.4    | 37.6    | 93.6    | 55.9    | 43.2    | 94.7    | 94.7    | 34.5    | 34.0    | 58.6    | 98.3    | 3.9     | 36.3    | 1,286   |
| Effective Rainfall (mm)                       |             | 27.0    | 29.0    | 0.0     | 34.0    | 0.0     | 28.0    | 70.0    | 85.0    | 85.0    | 85.0    | 9.0     | 38.0    | 14.0    | 21.0    | 72.0    | 40.0    | 18.0    | 53.0    | 53.0    | 24.0    | 4.0     | 29.0    | 68.0    | 0.0     | 25.0    | 808     |
| Effective Rainfall for Rice (mm)              |             | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    |
| Net Iri. Required per half month (mm)         |             | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    |
| Net Iri Field Required (L/ha)                 |             | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   |
| Net Iri Required (L/s)                        |             | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   |
| Net Iri Required (m <sup>3</sup> /s)          |             | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   |
| Gross Iri Required (m <sup>3</sup> /s)        |             | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   |
| Gross Iri Required (m <sup>3</sup> )          |             | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       |
| <b>I.2. Life Water Requirement</b>            |             |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Life Water Requirement (L/s)                  |             | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   | 20.37   |
| Life Water Requirement (m <sup>3</sup> /s)    |             | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   | 0.020   |
| Life Water Requirement (m <sup>3</sup> )      |             | 25,920  | 27,648  | 25,920  | 22,464  | 25,920  | 27,648  | 25,920  | 25,920  | 25,920  | 25,920  | 25,920  | 25,920  | 25,920  | 25,920  | 27,648  | 25,920  | 25,920  | 25,920  | 25,920  | 25,920  | 25,920  | 25,920  | 25,920  | 25,920  | 25,920  | 27,648  |
| <b>I.3. Water Requirement for Industries</b>  |             |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Water Requirement for Livestock (L/s)         |             | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    |
| Water Requirement for Industries (L/s)        |             | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    |
| Sub-total (L/s)                               |             | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    |
| Sub-total (m <sup>3</sup> /s)                 |             | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   | 0.001   |
| Sub-total (m <sup>3</sup> )                   |             | 1,296   | 1,382   | 1,296   | 1,123   | 1,296   | 1,382   | 1,296   | 1,296   | 1,296   | 1,296   | 1,296   | 1,296   | 1,296   | 1,296   | 1,382   | 1,296   | 1,296   | 1,296   | 1,296   | 1,296   | 1,296   | 1,296   | 1,296   | 1,296   | 1,296   | 1,382   |
| <b>I.4. Water Requirement for Environment</b> |             |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Total Water Requirement (m <sup>3</sup> /s)   |             | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   | 0.171   |
| Total Water Requirement (m <sup>3</sup> )     |             | 221,616 | 236,390 | 221,616 | 192,067 | 221,616 | 236,390 | 221,616 | 221,616 | 221,616 | 221,616 | 221,616 | 221,616 | 221,616 | 221,616 | 236,390 | 221,616 | 221,616 | 221,616 | 221,616 | 221,616 | 221,616 | 221,616 | 221,616 | 221,616 | 221,616 | 236,390 |

Water Balance Analysis

River basin : Atari Irrigation Scheme

Metrology Station Name : Soroti

Year : 2004

[ Case-FS ]

First Seasi Second Season

Irrigation Coverage(Excl)  
(Maize) : 680  
0  
69%

River basin : 572 ha  
0  
0

River maintenance flow : 103 mm2  
0.166 m3/hr/100mm2

Urban Population : 0  
44,000

Unit water Requirement (Urban) : 20 // person day  
40 // person day

Number of livestock : 1,720 TLU  
50 // TLU/day

Average Unit water Requirement of livestock : 60 // person day

Number of cooperative members : 0  
60 // person day

Average Unit water Requirement of Industry : 0

| S.N                            | Description                    | Jan     | Feb      | Mar      | Apr       | May       | June      | July      | Aug       | Sept      | Oct       | Nov.      | Dec.      | Total     |
|--------------------------------|--------------------------------|---------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| <b>Total Water Requirement</b> |                                |         |          |          |           |           |           |           |           |           |           |           |           |           |
|                                | Total Water Requirement (m3/s) | 0.192   | 0.192    | 0.192    | 0.192     | 1.497     | 0.867     | 0.799     | 0.750     | 1.855     | 0.755     | 0.779     | 0.490     | 0.730     |
|                                | Total Water Requirement (m3)   | 248,832 | 215,654  | 248,832  | 248,832   | 1,980,112 | 1,198,540 | 1,035,504 | 1,035,799 | 2,404,080 | 978,480   | 1,009,584 | 655,040   | 1,009,151 |
|                                | Total Water Requirement (MCM)  | 0.2     | 0.2      | 0.2      | 0.2       | 1.9       | 1.2       | 1.0       | 1.0       | 2.4       | 1.0       | 1.0       | 0.6       | 1.3       |
| <b>Discharges from basin</b>   |                                |         |          |          |           |           |           |           |           |           |           |           |           |           |
|                                | Discharges from basin (m3/s)   | 0.240   | 0.140    | 0.140    | 0.850     | 2.530     | 0.890     | 0.800     | 2.380     | 1.880     | 2.900     | 5.220     | 2.720     | 0.730     |
|                                | Discharges from basin (m3)     | 311,040 | 181,440  | 181,440  | 1,101,600 | 3,278,880 | 1,230,336 | 1,016,800 | 3,290,112 | 2,436,480 | 3,758,400 | 6,705,120 | 3,525,120 | 1,009,152 |
|                                | Discharges from basin (MCM)    | 0.3     | 0.2      | 0.2      | 1.1       | 3.3       | 1.2       | 1.0       | 3.3       | 2.4       | 3.8       | 6.8       | 3.5       | 1.0       |
| <b>Balance</b>                 |                                |         |          |          |           |           |           |           |           |           |           |           |           |           |
|                                | Discharges from basin (m3/s)   | 0.048   | ▲ 0.052  | ▲ 0.052  | 0.658     | 1.033     | 0.023     | 0.001     | 1.630     | 0.025     | 1.136     | 4.441     | 2.220     | 0.000     |
|                                | Discharges from basin (m3/s)   | 62,208  | ▲ 67,392 | ▲ 67,392 | 852,768   | 1,338,768 | 31,796    | 51,920    | 3,978,720 | 5,489,511 | 1,472,256 | 2,779,920 | 1,864,391 | 1         |
|                                | Discharges from basin (MCM)    | 0.1     | ▲ 0.1    | ▲ 0.1    | 0.9       | 1.3       | 0.0       | 0.1       | 2.3       | 0.0       | 1.5       | 2.8       | 2.0       | 0.0       |

Source: FS Revised

Water Balance Analysis

River basin : Atari Irrigation Scheme

Metrology Station Name : Soroti

Year : 2004

[ Case-OD ]

First Season, Second Season

Irrigation Coverage(Rice) : 550 680 ha River basin : 103 km<sup>2</sup>  
 (Maize) : 130 0 River maintenance flow : 0.166 m<sup>3</sup>/s/100m<sup>2</sup>  
 Irrigation efficiency : 60 %

Urban Population : 0  
 Rural Population : 44,000

Unit water Requirement (Urban) : 70 l/person/day  
 Unit water Requirement (Rural) : 40 l/person/day

Number of livestock : 1,200 TLU  
 Average Unit water Requirement of livestock : 50 l/TLU/day

Number of cooperative members : 0  
 Average Unit water Requirement of Industry : 60 l/person/day

| S.N.                                     | Description                    | Jan   | Feb  | Mar  | Apr   | May    | June   | July   | Aug    | Sep    | Oct    | Nov    | Dec    | Total  |
|------------------------------------------|--------------------------------|-------|------|------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Rice                                     | Ratio of Irrigation Area       | 50%   | 50%  | 50%  | 50%   | 50%    | 50%    | 50%    | 50%    | 50%    | 50%    | 50%    | 50%    | 50%    |
|                                          | Ratio of Irrigation Area       | 34%   | 34%  | 34%  | 34%   | 34%    | 34%    | 34%    | 34%    | 34%    | 34%    | 34%    | 34%    | 34%    |
|                                          | Ratio of Irrigation Area       | 50%   | 50%  | 50%  | 50%   | 50%    | 50%    | 50%    | 50%    | 50%    | 50%    | 50%    | 50%    | 50%    |
|                                          | Ratio of Irrigation Area       | 50%   | 50%  | 50%  | 50%   | 50%    | 50%    | 50%    | 50%    | 50%    | 50%    | 50%    | 50%    | 50%    |
|                                          | Days                           | 15    | 16   | 15   | 15    | 16     | 15     | 15     | 16     | 15     | 15     | 16     | 15     | 15     |
| <b>I-WATER REQUIREMENT</b>               |                                |       |      |      |       |        |        |        |        |        |        |        |        |        |
| <b>I.1. Irrigation Water Requirement</b> |                                |       |      |      |       |        |        |        |        |        |        |        |        |        |
|                                          | ETc (mm/day)                   | 5.9   | 6.1  | 6.1  | 5.3   | 4.4    | 4.5    | 3.8    | 4.2    | 5.0    | 5.0    | 5.2    | 5.6    | 122.2  |
|                                          | CROPS (Paddy) Kc               |       |      |      | 1.05  | 1.07   | 1.20   | 1.12   | 1.05   | 1.07   | 1.14   | 1.20   | 1.12   | 0.97   |
|                                          | ETc (mm/day)                   |       |      |      | 5.57  | 5.67   | 5.02   | 4.26   | 4.41   | 5.35   | 5.70   | 6.00   | 6.24   | 5.82   |
|                                          | Saturation & Paddling (mm/day) |       |      |      | 10.00 |        |        |        | 10.00  |        |        |        |        |        |
|                                          | Precipitation (mm/day)         | 2.00  | 2.00 | 2.00 | 2.00  | 2.00   | 2.00   | 2.00   | 2.00   | 2.00   | 2.00   | 2.00   | 2.00   | 2.00   |
|                                          | Total (mm/day)                 | 0.00  | 0.00 | 0.00 | 17.57 | 7.67   | 7.02   | 6.26   | 6.41   | 7.35   | 7.70   | 8.00   | 8.24   | 7.82   |
|                                          | CROPS (Paddy) Kc               |       |      |      | 1.05  | 1.07   | 1.20   | 1.12   | 1.05   | 1.07   | 1.14   | 1.20   | 1.12   | 0.97   |
|                                          | ETc (mm/day)                   |       |      |      | 5.57  | 4.71   | 5.02   | 4.56   | 4.07   | 5.25   | 5.35   | 5.70   | 6.24   | 6.27   |
|                                          | Saturation & Paddling (mm/day) |       |      |      | 10.00 |        |        |        |        | 10.00  |        |        |        |        |
|                                          | Precipitation (mm/day)         | 2.00  | 2.00 | 2.00 | 2.00  | 2.00   | 2.00   | 2.00   | 2.00   | 2.00   | 2.00   | 2.00   | 2.00   | 2.00   |
|                                          | Total (mm/day)                 | 0.00  | 0.00 | 0.00 | 15.57 | 6.71   | 7.02   | 6.56   | 6.07   | 7.25   | 7.35   | 7.70   | 8.24   | 7.43   |
|                                          | CROPS (Paddy) Kc               |       |      |      |       | 1.05   | 1.07   | 1.20   | 1.12   | 1.05   | 1.07   | 1.14   | 1.20   | 1.12   |
|                                          | ETc (mm/day)                   |       |      |      |       | 4.62   | 4.71   | 4.56   | 4.70   | 5.25   | 5.35   | 5.70   | 6.24   | 6.27   |
|                                          | Saturation & Paddling (mm/day) |       |      |      |       | 10.00  |        |        |        | 10.00  |        |        |        |        |
|                                          | Precipitation (mm/day)         | 2.00  | 2.00 | 2.00 | 2.00  | 2.00   | 2.00   | 2.00   | 2.00   | 2.00   | 2.00   | 2.00   | 2.00   | 2.00   |
|                                          | Total (mm/day)                 | 0.00  | 0.00 | 0.00 | 16.62 | 6.71   | 7.13   | 6.56   | 6.70   | 6.07   | 7.35   | 7.70   | 8.24   | 7.43   |
|                                          | Total (mm/half month)          | 39.37 |      |      | 86.97 | 115.04 | 112.01 | 109.62 | 111.00 | 119.67 | 121.77 | 126.37 | 123.60 | 121.52 |
|                                          | CROPS (Maize) Kc               |       |      |      | 0.30  | 0.39   | 0.75   | 1.10   | 0.70   | 0.30   | 0.39   | 0.75   | 1.10   | 0.70   |
|                                          | ETc (mm/day)                   |       |      |      | 1.59  | 2.07   | 3.30   | 4.88   | 2.66   | 1.50   | 1.95   | 3.75   | 5.55   | 6.24   |
|                                          | Saturation & Paddling (mm/day) |       |      |      | 0.00  | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   |
|                                          | Precipitation (mm/day)         | 0.00  | 0.00 | 0.00 | 0.00  | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   |
|                                          | Total (mm/day)                 | 0.00  | 0.00 | 0.00 | 1.59  | 2.07   | 3.30   | 4.88   | 2.66   | 1.50   | 1.95   | 3.75   | 5.55   | 6.24   |
|                                          | Total (mm/half month)          | 0.00  | 0.00 | 0.00 | 11.95 | 27.45  | 37.65  | 65.44  | 26.48  | 11.25  | 25.88  | 42.75  | 74.40  | 90.08  |
|                                          | CROPS (Maize) Kc               |       |      |      | 0.30  | 0.39   | 0.75   | 1.10   | 0.70   | 0.30   | 0.39   | 0.75   | 1.10   | 0.70   |
|                                          | ETc (mm/day)                   |       |      |      | 1.59  | 1.72   | 3.30   | 4.56   | 2.94   | 1.50   | 1.95   | 3.75   | 5.77   | 6.24   |
|                                          | Saturation & Paddling (mm/day) |       |      |      | 0.00  | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   |
|                                          | Precipitation (mm/day)         | 0.00  | 0.00 | 0.00 | 0.00  | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   |
|                                          | Total (mm/day)                 | 0.00  | 0.00 | 0.00 | 1.59  | 1.72   | 3.30   | 4.56   | 2.94   | 1.50   | 1.95   | 3.75   | 5.77   | 6.24   |
|                                          | Total (mm/half month)          | 37.20 | 6.64 |      | 11.95 | 27.45  | 37.65  | 65.44  | 26.48  | 11.25  | 25.88  | 42.75  | 74.40  | 93.60  |



Water Balance Analysis

River basin : Atari Irrigation Scheme

Metrology Station Name : Soroti

Year : 2004

[ Case-OD ]

First Season Second Season

Irrigation Coverage(Rce) : 550 680 ha

River basin : 103 km<sup>2</sup>

River maintenance flow : 0.166 m<sup>3</sup>/s/100m<sup>2</sup>

Irrigation efficiency : 60 %

Urban Population : 0

Rural Population : 44,000

Unit water Requirement (Urban) : 70 / person/day

Unit water Requirement (Rural) : 40 / person/day

Number of livestock : 1,220 TLU

Average Unit water Requirement of livestock : 50 / TLU/day

Number of cooperative members : 0

Average Unit water Requirement of Industry : 60 / person/day

| S.N.                                          | Description                                | Jan     | Feb     | Mar     | Apr       | May       | June      | July      | Aug       | Sep       | Oct       | Nov       | Dec       | Total      |
|-----------------------------------------------|--------------------------------------------|---------|---------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| <b>Rain (half month)</b>                      |                                            |         |         |         |           |           |           |           |           |           |           |           |           |            |
|                                               | Rain fall (mm)                             | 39.2    | 43.6    | 2.1     | 47.3      | 10.7      | 40.8      | 101.1     | 118.7     | 118.7     | 118.7     | 118.7     | 118.7     | 1,266      |
|                                               | Effective Rainfall (mm)                    | 27.0    | 29.0    | 0.0     | 34.0      | 0.0       | 28.0      | 70.0      | 85.0      | 85.0      | 85.0      | 85.0      | 85.0      | 808        |
|                                               | Effective Rainfall for Rice(mm)            | 27.0    | 0.0     | 0.0     | 0.0       | 0.0       | 0.0       | 70.0      | 85.0      | 85.0      | 85.0      | 85.0      | 85.0      | 808        |
|                                               | Effective Rainfall for Maize(mm)           | 0.0     | 6.64    | 0.0     | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0        |
|                                               | Net Irr. Required per half month (mm)      | 12.37   | 0.0     | 0.0     | 0.0       | 16.97     | 30.04     | 67.73     | 103.01    | 71.62     | 76.00     | 82.92     | 77.78     | 1,337.67   |
|                                               | Net Irr. Field Required (L/s/ha)           | 0.095   | 0.000   | 0.000   | 0.000     | 0.131     | 0.232     | 0.523     | 0.745     | 0.553     | 0.586     | 0.640     | 0.563     | 10.11      |
|                                               | Net Irr. Required (L/s)                    | 52.250  | 0.000   | 0.000   | 0.000     | 72.050    | 127.600   | 287.650   | 409.750   | 304.15    | 322.30    | 352.00    | 309.65    | 6,270.40   |
|                                               | Net Irr. Required (m <sup>3</sup> s)       | 0.052   | 0.000   | 0.000   | 0.000     | 0.128     | 0.138     | 0.288     | 0.410     | 0.304     | 0.322     | 0.352     | 0.310     | 6.27       |
|                                               | Net Irr. Required per half month (mm)      | 37.20   | 0.00    | 0.00    | 0.00      | 11.93     | 27.45     | 37.65     | 65.44     | 78.00     | 81.00     | 85.55     | 54.72     | 482.36     |
|                                               | Net Irr. Field Required (L/s/ha)           | 0.287   | 0.000   | 0.000   | 0.000     | 0.092     | 0.212     | 0.291     | 0.473     | 0.602     | 0.625     | 0.586     | 0.396     | 3.66       |
|                                               | Net Irr. Required (L/s)                    | 37.310  | 0.000   | 0.000   | 0.000     | 11.940    | 27.560    | 37.830    | 61.490    | 78.260    | 81.250    | 85.780    | 51.480    | 476.06     |
|                                               | Net Irr. Required (m <sup>3</sup> s)       | 0.037   | 0.000   | 0.000   | 0.000     | 0.012     | 0.028     | 0.038     | 0.061     | 0.078     | 0.081     | 0.066     | 0.051     | 0.48       |
|                                               | Net Irr. Required (m <sup>3</sup> s)       | 0.089   | 0.000   | 0.000   | 0.000     | 0.084     | 0.156     | 0.326     | 0.471     | 0.382     | 0.408     | 0.418     | 0.361     | 0.291      |
|                                               | Gross Irr. Required (m <sup>3</sup> s)     | 0.148   | 0.000   | 0.000   | 0.000     | 0.140     | 0.260     | 0.543     | 0.785     | 0.637     | 0.672     | 0.697     | 0.602     | 11.25      |
|                                               | Gross Irr. Required (m <sup>3</sup> )      | 191.808 | 0       | 0       | 0         | 181.440   | 356.960   | 703.728   | 1,085.184 | 825.552   | 870.912   | 903.312   | 832.205   | 14,868.144 |
| <b>1.2. Life Water Requirement</b>            |                                            |         |         |         |           |           |           |           |           |           |           |           |           |            |
|                                               | Life Water Requirement (L/s)               | 20.37   | 20.37   | 20.37   | 20.37     | 20.37     | 20.37     | 20.37     | 20.37     | 20.37     | 20.37     | 20.37     | 20.37     | 488.88     |
|                                               | Life Water Requirement (m <sup>3</sup> s)  | 0.020   | 0.020   | 0.020   | 0.020     | 0.020     | 0.020     | 0.020     | 0.020     | 0.020     | 0.020     | 0.020     | 0.020     | 0.48       |
|                                               | Life Water Requirement (m <sup>3</sup> )   | 25.920  | 27.648  | 25.920  | 27.648    | 25.920    | 27.648    | 25.920    | 27.648    | 25.920    | 27.648    | 25.920    | 27.648    | 630.720    |
| <b>1.3. Water Requirement for Industries</b>  |                                            |         |         |         |           |           |           |           |           |           |           |           |           |            |
|                                               | Water Requirement for Livestock (L/s)      | 1.00    | 1.00    | 1.00    | 1.00      | 1.00      | 1.00      | 1.00      | 1.00      | 1.00      | 1.00      | 1.00      | 1.00      | 23.89      |
|                                               | Water Requirement for Industries (L/s)     | 0.00    | 0.00    | 0.00    | 0.00      | 0.00      | 0.00      | 0.00      | 0.00      | 0.00      | 0.00      | 0.00      | 0.00      | 0.00       |
|                                               | Sub-total (L/s)                            | 1.00    | 1.00    | 1.00    | 1.00      | 1.00      | 1.00      | 1.00      | 1.00      | 1.00      | 1.00      | 1.00      | 1.00      | 23.89      |
|                                               | Sub-total (m <sup>3</sup> s)               | 0.001   | 0.001   | 0.001   | 0.001     | 0.001     | 0.001     | 0.001     | 0.001     | 0.001     | 0.001     | 0.001     | 0.001     | 0.02       |
|                                               | Sub-total (m <sup>3</sup> )                | 1.296   | 1.382   | 1.296   | 1.382     | 1.296     | 1.382     | 1.296     | 1.382     | 1.296     | 1.382     | 1.296     | 1.382     | 31.533     |
| <b>1.4. Water Requirement for Environment</b> |                                            |         |         |         |           |           |           |           |           |           |           |           |           |            |
|                                               | Total Water Requirement (m <sup>3</sup> s) | 0.171   | 0.171   | 0.171   | 0.171     | 0.171     | 0.171     | 0.171     | 0.171     | 0.171     | 0.171     | 0.171     | 0.171     | 4.10       |
|                                               | Total Water Requirement (m <sup>3</sup> )  | 221.616 | 236.390 | 221.616 | 236.390   | 221.616   | 236.390   | 221.616   | 236.390   | 221.616   | 236.390   | 221.616   | 236.390   | 5,389.653  |
| <b>Total Water Requirement</b>                |                                            |         |         |         |           |           |           |           |           |           |           |           |           |            |
|                                               | Total Water Requirement (m <sup>3</sup> s) | 0.340   | 0.192   | 0.192   | 0.332     | 0.452     | 0.735     | 0.889     | 0.977     | 0.829     | 0.864     | 0.889     | 0.794     | 15.9       |
|                                               | Total Water Requirement (m <sup>3</sup> )  | 440.640 | 265.420 | 248.832 | 430.272   | 585.792   | 952.560   | 1,152.144 | 1,197.444 | 1,074.384 | 1,119.744 | 1,152.144 | 1,097.625 | 20,923.050 |
| <b>Discharges from basin</b>                  |                                            |         |         |         |           |           |           |           |           |           |           |           |           |            |
|                                               | Discharges from basin (m <sup>3</sup> s)   | 0.610   | 0.640   | 0.560   | 0.960     | 1.260     | 1.900     | 2.370     | 3.000     | 3.000     | 3.000     | 3.400     | 2.000     | 33.06      |
|                                               | Discharges from basin (m <sup>3</sup> )    | 790.560 | 884.736 | 725.760 | 1,244.160 | 1,632.960 | 2,462.400 | 3,071.520 | 4,147.200 | 4,147.200 | 4,147.200 | 4,761.600 | 2,592.000 | 45,581.024 |
|                                               | Discharges from basin (MCM)                | 0.8     | 0.9     | 0.7     | 1.2       | 1.6       | 2.5       | 3.1       | 3.1       | 3.1       | 3.1       | 4.1       | 2.0       | 45.6       |
| <b>Balance</b>                                |                                            |         |         |         |           |           |           |           |           |           |           |           |           |            |
|                                               | Discharges from basin (m <sup>3</sup> s)   | 0.270   | 0.448   | 0.568   | 0.388     | 0.388     | 1.165     | 0.041     | 2.146     | 2.273     | 0.430     | 0.250     | 1.110     | 17.21      |
|                                               | Discharges from basin (m <sup>3</sup> )    | 349.920 | 619.316 | 476.928 | 433.888   | 1,047.168 | 1,509.840 | 318.816   | 2,781.216 | 3,142.196 | 557.280   | 324.000   | 1,488.560 | 22,657.974 |
|                                               | Discharges from basin (MCM)                | 0.3     | 0.6     | 0.5     | 0.8       | 1.0       | 1.5       | 0.1       | 2.8       | 3.1       | 0.6       | 0.3       | 1.4       | 22.5       |

# MAIN SUMMARY OF COST

## Appendix 13.-Building design

| MAIN SUMMARY                                                                             |                         |          |                      |
|------------------------------------------------------------------------------------------|-------------------------|----------|----------------------|
| BILL NO                                                                                  | DESCRIPTION             | PAGE NO. | AMOUNT (UGX)         |
| 1                                                                                        | PROPOSED WAREHOUSE      | 1/S/4    | 1,181,691,000        |
| 2                                                                                        | PROPOSED GARAGE         | 2/S/10   | 141,238,360          |
| 3                                                                                        | PROPOSED ADMINISTRATION | 3/S/16   | 335,276,800          |
| 4                                                                                        | EXTERNAL WORKS          | 4/S/22   | 302,750,500          |
| 5                                                                                        | PROPOSED WAREHOUSE      | 5/S/26   | 837,665,600          |
| SUB-TOTAL 1                                                                              |                         |          | 2,798,622,260        |
| <b>ADD: CONTINGENCIES</b> (To be expended in whole or in part as directed by the Client) |                         | 5%       | 139,931,113          |
| SUB-TOTAL 2                                                                              |                         |          | 2,938,553,373        |
| ADD: VAT                                                                                 |                         | 18%      | 528,939,607          |
| <b>GRAND TOTAL</b>                                                                       |                         |          | <b>3,467,492,980</b> |

|                          |         |             |
|--------------------------|---------|-------------|
| Japanese Yen             | @0.0311 | 107,839,032 |
| the United State Dallars | @112.05 | 962,419     |

**PROPOSED WAREHOUSE**

| ELEMENT | DESCRIPTION                                                                            | AMOUNT (UGX)  |
|---------|----------------------------------------------------------------------------------------|---------------|
|         | <p>BILL No. 1</p> <p><u>PROPOSED WAREHOUSE</u><br/>SUMMARY</p>                         |               |
| 1       | SUBSTRUCTURE                                                                           | 379,319,300   |
| 2       | SUPERSTRUCTURE                                                                         | 390,990,200   |
| 3       | ROOF CONSTRUCTION AND CEILING                                                          | 366,381,500   |
| 4       | ELECTRICAL                                                                             | 45,000,000    |
|         | <p><b>TOTAL BILL No.1 (PROPOSED RESIDENTIAL UNITS)</b><br/>CARRIED TO MAIN SUMMARY</p> | 1,181,691,000 |

**BILL No. 1**  
**PROPOSED WAREHOUSE**

PROPOSED WAREHOUSE

| ITEM | DESCRIPTION                                                                                                                                                                                                  | UNIT           | QTY   | RATE (UGX) | AMOUNT (UGX)      |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|------------|-------------------|
|      | <b>ELEMENT No.1<br/>SUBSTRUCTURE<br/>Excavations and Earthworks</b>                                                                                                                                          |                |       |            |                   |
| A    | Excavate Oversite to remove vegetable soil, shrubs, small trees and the like, average 200mm thick, and cart away from site                                                                                   | m <sup>2</sup> | 2,500 | 5,000      | 12,500,000        |
| B    | Excavate to reduce levels not exceeding 150mm deep                                                                                                                                                           | m <sup>3</sup> | 375   | 5,000      | 1,875,000         |
| C    | Excavate surface trenches: not exceeding 1.50 metres deep from reduced levels to receive wall foundations                                                                                                    | m <sup>3</sup> | 195   | 5,000      | 975,000           |
| D    | Ditto: the column pad foundation to the same depth                                                                                                                                                           | m <sup>3</sup> | 98    | 6,000      | 585,000           |
| F    | Allow for keeping excavations free from all water                                                                                                                                                            | Item           | 1     | 1,500,000  | 1,500,000         |
| G    | Allow for supporting sides of excavations                                                                                                                                                                    | Item           | 1     | 3,500,000  | 3,500,000         |
| H    | Return, fill and ram selected excavated materials around foundations in layers not exceeding 200mm thick                                                                                                     | m <sup>3</sup> | 190   | 5,000      | 950,000           |
| I    | Remove surplus excavated materials from site                                                                                                                                                                 | m <sup>3</sup> | 90    | 12,000     | 1,080,000         |
|      | <b>Hardcore filling</b>                                                                                                                                                                                      |                |       |            |                   |
| J    | 150mm bed, consolidated, levelled and blinded with a layer of sand (measured separately).                                                                                                                    | m <sup>2</sup> | 2,450 | 15,000     | 36,750,000        |
| K    | 50mm Thick sand blinding to hardcore bed                                                                                                                                                                     | m <sup>2</sup> | 2,450 | 5,000      | 12,250,000        |
|      | <b>Termidor 25 EC' or other equal approved anti-termite chemical treatment: applied by an approved professional pest control specialist: strictly in accordance with the manufacturer's instructions: to</b> |                |       |            |                   |
| L    | Sides and bottom of foundations                                                                                                                                                                              | m <sup>2</sup> | 155   | 1,500      | 232,500           |
| M    | Ditto. But to hardcore area                                                                                                                                                                                  | m <sup>2</sup> | 2,450 | 1,500      | 3,675,000         |
|      | <b>Total Carried to Collection of Element No. 1 (SUBSTRUCTURE)</b>                                                                                                                                           |                |       |            | <b>75,872,500</b> |
|      | <b>Vibrated plain in-situ concrete (Class 15) as described in:-</b>                                                                                                                                          |                |       |            |                   |
| B    | 200mm Thick in strip foundations                                                                                                                                                                             | m <sup>2</sup> | 28    | 80,000     | 2,240,000         |

BILL No. 1 : 1/1/1

SUBSTRUCTURE

PROPOSED WAREHOUSE

| ITEM | DESCRIPTION                                                                                                                                                                                                     | UNIT           | QTY   | RATE (UGX) | AMOUNT (UGX)       |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|------------|--------------------|
| C    | 150mm Thick in Oversite Concrete slab<br><b>Vibrated reinforced concrete grade 25 as described in:-</b>                                                                                                         | m <sup>2</sup> | 2,500 | 80,000     | 200,000,000        |
| E    | Column bases                                                                                                                                                                                                    | m <sup>3</sup> | 23    | 550,000    | 12,650,000         |
| F    | Column starter stubs                                                                                                                                                                                            | m <sup>3</sup> | 3     | 550,000    | 1,650,000          |
| G    | Groundbeam                                                                                                                                                                                                      | m <sup>3</sup> | 24    | 550,000    | 13,200,000         |
| I    | <b>Mild steel round bars to BS 4483 as described including cutting to length, bending, hoisting and fixing</b><br>8mm diameter bars: in column stubs                                                            | Kg             | 648   | 4,000      | 2,592,800          |
| J    | <b>High yield square twisted cold formed bars to BS4461 including cutting to length, bending, hoisting and fixing and including all necessary tying wire and spacing blocks</b><br>12mm diameter bars: in bases | Kg             | 1,629 | 4,000      | 6,516,000          |
| K    | 16mm diameter bars: in column starter stubs                                                                                                                                                                     | Kg             | 610   | 4,000      | 2,440,000          |
|      | <b>Sawn formwork as described to:-</b>                                                                                                                                                                          |                |       |            |                    |
| M    | Sides: of column bases                                                                                                                                                                                          | m <sup>2</sup> | 90    | 18,000     | 1,620,000          |
| N    | Ditto: of column stubs                                                                                                                                                                                          | m <sup>2</sup> | 58    | 18,000     | 1,044,000          |
|      | Ditto: of ground beam                                                                                                                                                                                           | m <sup>2</sup> | 158   | 18,000     | 2,844,000          |
| O    | <b>Solid burnt clay brickwork in cement sand (1:4) mortar as described in:-</b><br>200mm plinth walling                                                                                                         | m <sup>2</sup> | 398   | 50,000     | 19,900,000         |
|      | <b>Total Carried to Collection of Element No. 1 (SUBSTRUCTURE)</b>                                                                                                                                              |                |       |            | <b>266,696,800</b> |
|      | <b>Damp proof membrane</b>                                                                                                                                                                                      |                |       |            |                    |
| A    | Single layer of 1000 gauge polythene laid on blinded hardcore with 150mm minimum side and end laps                                                                                                              | m <sup>2</sup> | 2,450 | 2,500      | 6,125,000          |
| B    | <b>A142 BRC Mesh with 200mm end and side laps in:-</b><br>Oversite Concrete Slab                                                                                                                                | m <sup>2</sup> | 2,450 | 12,500     | 30,625,000         |
|      | <b>Total Carried to Collection of Element No. 1 (SUBSTRUCTURE)</b>                                                                                                                                              |                |       |            | <b>36,750,000</b>  |
|      | <b>Collection of Element No.1(SUBSTRUCTURE)</b>                                                                                                                                                                 |                |       |            |                    |

BILL No. 1 : 1/1/2

SUBSTRUCTURE

PROPOSED WAREHOUSE

| ITEM | DESCRIPTION                                                             | UNIT | QTY | RATE (UGX) | AMOUNT (UGX)       |
|------|-------------------------------------------------------------------------|------|-----|------------|--------------------|
|      | FROM PAGE 1/1/1                                                         |      |     |            | 75,872,500         |
|      | FROM PAGE 1/1/2                                                         |      |     |            | 266,696,800        |
|      | FROM PAGE 1/1/3                                                         |      |     |            | 36,750,000         |
|      | <b>TOTAL ELEMENT No. 1 (SUBSTRUCTURE)<br/>(CARRIED TO BILL SUMMARY)</b> |      |     |            | <b>379,319,300</b> |

PROPOSED GARAGE

| ITEM | DESCRIPTION                                                                                                                                                                                                                                     | UNIT                                                                 | QTY                   | RATE (UGX)                               | AMOUNT (UGX)                                      |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|-----------------------|------------------------------------------|---------------------------------------------------|
| A    | <b>ELEMENT No. 2<br/>SUPERSTRUCTURE</b><br><b>Element A - WALLING AND FRAME</b><br>Hessian based bituminous felt or other approved damp-proof course laid on and including 25mm cement and sand (1:3) mortar as described under:-<br>200mm wall | m                                                                    | 210                   | 2,000                                    | 420,000                                           |
| B    | <b>WALLING</b><br><u>Solid concrete blockwork in cement sand (1:4) mortar as described in:-</u><br>200mm Thick walling                                                                                                                          | m <sup>2</sup>                                                       | 1,491                 | 55,000                                   | 82,005,000                                        |
| C    | <b>FRAME</b><br><u>Vibrated insitu concrete grade 25 as described:-</u><br>Columns<br>Beam at 2.8m<br>Ring beams<br>150mm Solid slab                                                                                                            | m <sup>3</sup><br>m <sup>3</sup><br>m <sup>3</sup><br>m <sup>3</sup> | 12<br>18<br>14<br>16  | 550,000<br>550,000<br>550,000<br>550,000 | 6,820,000<br>10,120,000<br>7,590,000<br>8,800,000 |
| G    | <u>Mild steel round bars to BS 4483 as described including cutting to length, bending, hoisting and fixing</u><br>8mm diameter bars: in column<br>8mm diameter bars: in Beam at 2.8m<br>8mm diameter bars: in ring beam                         | Kg<br>Kg<br>Kg                                                       | 648<br>648<br>648     | 4,000<br>4,000<br>4,000                  | 2,592,800<br>2,592,800<br>2,592,800               |
| H    | <u>High tensile ribbed steel bar reinforcement as described:-</u><br>12mm Diameter bars (in Columns)<br>12mm Diameter bars (in ringbeams)                                                                                                       | Kg<br>Kg                                                             | 577<br>854            | 4,000<br>4,000                           | 2,309,200<br>3,414,400                            |
| M    | 12mm Diameter bars (in beams)<br>16mm Diameter bars (in beams)<br>16mm Diameter bars (in Columns)                                                                                                                                               | Kg<br>Kg<br>Kg                                                       | 845<br>1,011<br>1,138 | 4,000<br>4,000<br>4,000                  | 3,380,000<br>4,044,800<br>4,550,400               |
|      | <b>Total Carried to Collection of Element No. 2 (SUPERSTRUCTURE)</b>                                                                                                                                                                            |                                                                      |                       |                                          | <b>141,232,200</b>                                |
| O    | <u>Sawn Formwork as described to:-</u><br>Sides and soffits of beam at 2.8m                                                                                                                                                                     | m <sup>2</sup>                                                       | 158                   | 18,000                                   | 2,844,000                                         |

PROPOSED GARAGE

| ITEM | DESCRIPTION                                                                                                                                                                                                                                                                                     | UNIT           | QTY   | RATE (UGX) | AMOUNT (UGX)      |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|------------|-------------------|
|      | Sides and soffits of Columns                                                                                                                                                                                                                                                                    | m <sup>2</sup> | 216   | 18,000     | 3,888,000         |
|      | Sides and soffits of ringbeams                                                                                                                                                                                                                                                                  | m <sup>2</sup> | 138   | 18,000     | 2,484,000         |
|      | Sides and soffits of slab                                                                                                                                                                                                                                                                       | m <sup>2</sup> | 234   | 18,000     | 4,212,000         |
|      | <b>Element C - DOORS</b><br><b>Pre-cast concrete grade 25</b><br>200 x 100mm Lintel reinforced and including 4No 12mm diameter steel bars and 6mm mild steel links at 200mm centres including hoisting and bedding in position in cement mortar (1:3)                                           | m              | 36    | 36,000     | 1,296,000         |
|      | <b>STEEL CASEMENT</b><br><b>Supply, assemble and fix steel doors constructed from standard steel sections to BS 1474:1972 bronze anodised before delivery to site complete with 5mm Thick sheet glass glazed with rubber beads, including all necessary ironmongery, to Architect's details</b> | No             | 9     | 7,500,000  | 67,500,000        |
|      | Main Entrance door size 4000 x 4000mm high overall                                                                                                                                                                                                                                              | No             | 9     | 7,500,000  | 67,500,000        |
|      | <b>Element D - INTERNAL WALL FINISHES</b>                                                                                                                                                                                                                                                       |                |       |            |                   |
|      | <b>Plastering</b><br>15mm Cement, lime and sand (1:2:9) plaster in two coats trowelled hard and smooth on walls                                                                                                                                                                                 | m <sup>2</sup> | 1,272 | 15,000     | 19,080,000        |
|      | <b>Painting</b><br>Prepare and apply one mist coat and three finishing coats first grade matt emulsion paint : on Plastered walls                                                                                                                                                               | m <sup>2</sup> | 2,450 | 9,000      | 22,050,000        |
|      | <b>Element E - FLOOR FINISHES</b><br>25mm Cement and sand (1:3) screed finished to receive tiles (measured separately) to:                                                                                                                                                                      | m <sup>2</sup> | 2,450 | 10,000     | 24,500,000        |
|      | General floor areas                                                                                                                                                                                                                                                                             | m <sup>2</sup> | 2,450 | 10,000     | 24,500,000        |
|      | <b>Total Carried to Collection of Element No. 2 (SUPERSTRUCTURE)</b>                                                                                                                                                                                                                            |                |       |            | <b>65,630,000</b> |
|      | <b>Porcelain floor tiling laid on cement and sand screed (measured separately) with and including tile adhesive including pointing to all joints:</b>                                                                                                                                           |                |       |            |                   |
|      | 8mm Thick tiles (General areas)                                                                                                                                                                                                                                                                 | m <sup>2</sup> | 2,450 | 60,000     | 147,000,000       |
|      | <b>Element G - EXTERNAL FINISHES</b><br><b>WALLS</b>                                                                                                                                                                                                                                            |                |       |            |                   |

BILL No. 1:

2/2/2

PROPOSED GARAGE

| ITEM | DESCRIPTION                                                                                                                    | UNIT           | QTY   | RATE (UGX) | AMOUNT (UGX)       |
|------|--------------------------------------------------------------------------------------------------------------------------------|----------------|-------|------------|--------------------|
| A    | <b>Rendering</b><br>25mm Thick cement and sand (1:4) render. wood floated: on masonry                                          | m <sup>2</sup> | 1,092 | 12,000     | 13,104,000         |
| C    | <b>Painting</b><br>Prepare and apply three coats of first grade weatheguard Mumoran Textured paint : on rendered wall surfaces | m <sup>2</sup> | 1,092 | 22,000     | 24,024,000         |
|      | <b>Total Carried to Collection of Element No. 2 (SUPERSTRUCTURE)</b>                                                           |                |       |            | <b>184,128,000</b> |
|      | <b>Collection of Element No. 2 (SUPERSTRUCTURE)</b>                                                                            |                |       |            |                    |
|      | FROM PAGE 1/2/1                                                                                                                |                |       |            | 141,232,200        |
|      | FROM PAGE 1/2/4                                                                                                                |                |       |            | 65,630,000         |
|      | FROM PAGE 1/2/5                                                                                                                |                |       |            | 184,128,000        |
|      | <b>TOTAL ELEMENT No. 2 (SUPERSTRUCTURE)</b><br><b>CARRIED TO BILL SUMMARY</b>                                                  |                |       |            | <b>390,990,200</b> |

BILL No. 1:

2/2/3

PROPOSED WAREHOUSE

| ITEM | DESCRIPTION                                                                                                                                                                                                                                                                | UNIT           | QTY   | RATE (UGX) | AMOUNT (UGX) |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|------------|--------------|
|      | <b>Roof Construction</b><br><b>The following in roof construction comprising of structural steel rectangular and square hollow sections in trusses welded and jointed with gusset plates and bolts including hoisting and fixing approximately 20mm above ground level</b> |                |       |            |              |
|      | <b>The following in 31 No. (Type T1) Trusses of 30m span</b>                                                                                                                                                                                                               |                |       |            |              |
| A    | 50 x 100 x 5mm RHS Tie beam                                                                                                                                                                                                                                                | kg             | 7,899 | 9,000      | 71,086,500   |
| B    | 50 x 100 x 5mm RHS Rafters                                                                                                                                                                                                                                                 | kg             | 7,617 | 9,000      | 68,551,200   |
| C    | 50 x 60 x 4mm RHS Internal members                                                                                                                                                                                                                                         | kg             | 4,799 | 9,000      | 43,192,800   |
| C    | 40 x 40 x 3mm SHS Bracing members                                                                                                                                                                                                                                          | kg             | 2,680 | 9,000      | 24,120,000   |
| C    | 30 x 30 x 2mm SHS Bracing members                                                                                                                                                                                                                                          | kg             | 976   | 9,000      | 8,784,000    |
|      | <b>Roof Covering</b>                                                                                                                                                                                                                                                       |                |       |            |              |
| A    | IT - 4 profile resin coated (gauge 26) pre-painted galvanized iron roofing sheets fixed in accordance with manufacturer's specifications with approved bolts                                                                                                               | m <sup>2</sup> | 2,125 | 45,000     | 95,625,000   |
| B    | Half round matching ridge / hip capping with galvanised ms filler blocks of roof profile shape fitted to edges of capping                                                                                                                                                  | lm             | 63    | 14,000     | 882,000      |
| C    | 150 x 50 x 20x 2mm zed purlins with anti sag rods at mid span                                                                                                                                                                                                              | lm             | 1,498 | 35,000     | 52,430,000   |
|      | <b>Truss fixing</b>                                                                                                                                                                                                                                                        |                |       |            |              |
| D    | 16mm diameter bolts grade 4.6, 250mm long with head nut and washer on either side of bolt                                                                                                                                                                                  | no             | 134   | 9,500      | 1,273,000    |
| D    | 14mm diameter bolts grade 4.6, 100mm long with head nut and washer on either side of bolt                                                                                                                                                                                  | no             | 46    | 9,500      | 437,000      |
|      | Total Carried to Collection of Element No. 1 (SUBSTRUCTURE)                                                                                                                                                                                                                |                |       |            | 366,381,500  |

BILL No. 1 :

1/5/1

ROOF

PROPOSED RESIDENTIAL UNITS

| ITEM | DESCRIPTION                                                                                                                         | UNIT | QTY | RATE (UGX) | AMOUNT (UGX)      |
|------|-------------------------------------------------------------------------------------------------------------------------------------|------|-----|------------|-------------------|
|      | <b>ELEMENT No. 4</b><br><b>ELECTRICAL INSTALLATIONS</b><br><b>(All provisional)</b>                                                 |      |     |            |                   |
| A    | Allow a Provisional sum of Forty five million Shillings Only(UGX 45,000,000) for Electrical installation, distribution and fittings | PS   | 1   | 45,000,000 | 45,000,000        |
|      | <b>TOTAL ELEMENT No. 9 (ELECTRICAL INSTALLATIONS) CARRIED TO BILL SUMMARY</b>                                                       |      |     |            | <b>45,000,000</b> |

BILL No. 1 :

1/7/1

ELECTRICAL

**PROPOSED GARAGE**

| ELEMENT | DESCRIPTION                                                                      | AMOUNT (UGX)       |
|---------|----------------------------------------------------------------------------------|--------------------|
|         | BILL No. 2                                                                       |                    |
|         | <u>PROJECT GARAGE</u><br>SUMMARY                                                 |                    |
| 1       | SUBSTRUCTURE                                                                     | 35,393,760         |
| 2       | SUPERSTRUCTURE                                                                   | 30,899,000         |
| 3       | ROOF CONSTRUCTION AND CEILING                                                    | 69,945,600         |
| 4       | ELECTRICAL                                                                       | 5,000,000          |
|         | <b>TOTAL BILL No. 1 (PROPOSED RESIDENTIAL UNITS)<br/>CARRIED TO MAIN SUMMARY</b> | <b>141,238,360</b> |

**BILL No. 2  
PROPOSED GARAGE**



PROPOSED WAREHOUSE

| ITEM | DESCRIPTION                                                                                                                                                                                                  | UNIT           | QTY | RATE (UGX) | AMOUNT (UGX)     |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|------------|------------------|
|      | <b>ELEMENT No.1<br/>SUBSTRUCTURE<br/>Excavations and Earthworks</b>                                                                                                                                          |                |     |            |                  |
| A    | Excavate Oversite to remove vegetable soil, shrubs, small trees and the like, average 200mm thick, and cart away from site                                                                                   | m <sup>2</sup> | 200 | 5,000      | 1,000,000        |
| B    | Excavate to reduce levels not exceeding 150mm deep                                                                                                                                                           | m <sup>3</sup> | 30  | 5,000      | 150,000          |
| C    | Excavate surface trenches: not exceeding 1.50 metres deep from reduced levels to receive wall foundations                                                                                                    | m <sup>3</sup> | 51  | 5,000      | 256,500          |
| D    | Ditto: the column pad foundation to the same depth                                                                                                                                                           | m <sup>3</sup> | 5   | 6,000      | 31,800           |
| E    | Allow for keeping excavations free from all water                                                                                                                                                            | Item           | 1   | 500,000    | 500,000          |
| F    | Allow for supporting sides of excavations                                                                                                                                                                    | Item           | 1   | 500,000    | 500,000          |
| G    | Return, fill and ram selected excavated materials around foundations in layers not exceeding 200mm thick                                                                                                     | m <sup>3</sup> | 21  | 5,000      | 105,000          |
| H    | Remove surplus excavated materials from site                                                                                                                                                                 | m <sup>3</sup> | 10  | 12,000     | 114,000          |
|      | <b>Hardcore filling</b>                                                                                                                                                                                      |                |     |            |                  |
| I    | 150mm bed, consolidated, levelled and blinded with a layer of sand (measured separately).                                                                                                                    | m <sup>2</sup> | 167 | 15,000     | 2,505,000        |
| J    | 50mm Thick sand blinding to hardcore bed                                                                                                                                                                     | m <sup>2</sup> | 167 | 5,000      | 835,000          |
|      | <b>Termidor 25 EC' or other equal approved anti-termite chemical treatment: applied by an approved professional pest control specialist: strictly in accordance with the manufacturer's instructions: to</b> |                |     |            |                  |
| K    | Sides and bottom of foundations                                                                                                                                                                              | m <sup>2</sup> | 49  | 1,500      | 73,500           |
| L    | Ditto. But to hardcore area                                                                                                                                                                                  | m <sup>2</sup> | 167 | 1,500      | 250,500          |
|      | <b>Total Carried to Collection of Element No. 1 (SUBSTRUCTURE)</b>                                                                                                                                           |                |     |            | <b>6,321,300</b> |
|      | <b>Vibrated plain in-situ concrete (Class 15) as described in:-</b>                                                                                                                                          |                |     |            |                  |
| A    | 200mm Thick in strip foundations                                                                                                                                                                             | m <sup>2</sup> | 7   | 80,000     | 552,000          |

BILL No. 2 : 1/1/1

SUBSTRUCTURE

PROPOSED WAREHOUSE

| ITEM | DESCRIPTION                                                                                                                                                                     | UNIT           | QTY | RATE (UGX) | AMOUNT (UGX)      |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|------------|-------------------|
| B    | 150mm Thick in Oversite Concrete slab<br><b>Vibrated reinforced concrete grade 25 as described in:-</b>                                                                         | m <sup>2</sup> | 167 | 80,000     | 13,360,000        |
| C    | Column bases                                                                                                                                                                    | m <sup>3</sup> | 5   | 550,000    | 2,887,500         |
| D    | Column starter stubs                                                                                                                                                            | m <sup>3</sup> | 1   | 550,000    | 495,000           |
|      | Groundbeam                                                                                                                                                                      | m <sup>3</sup> | 3   | 550,000    | 1,881,000         |
| E    | <b>Mild steel round bars to BS 4483 as described including cutting to length, bending, hoisting and fixing</b><br>8mm diameter bars: in column stubs                            | Kg             | 143 | 4,000      | 572,000           |
|      | <b>High yield square twisted cold formed bars to BS4461 including cutting to length, bending, hoisting and fixing and including all necessary tying wire and spacing blocks</b> |                |     |            |                   |
| F    | 12mm diameter bars: in bases                                                                                                                                                    | Kg             | 515 | 4,000      | 2,058,400         |
| G    | 16mm diameter bars: in column starter stubs                                                                                                                                     | Kg             |     | 4,000      | -                 |
|      | <b>Sawn formwork as described to:-</b>                                                                                                                                          |                |     |            |                   |
| H    | Sides: of column bases                                                                                                                                                          | m <sup>2</sup> | 37  | 18,000     | 666,000           |
| I    | Ditto: of column stubs                                                                                                                                                          | m <sup>2</sup> | 18  | 18,000     | 324,000           |
| J    | Ditto: of ground beam                                                                                                                                                           | m <sup>2</sup> | 3   | 18,000     | 61,560            |
|      | <b>Solid burnt clay brickwork in cement sand (1:4) mortar as described in:-</b>                                                                                                 |                |     |            |                   |
| K    | 200mm plinth walling                                                                                                                                                            | m <sup>2</sup> | 74  | 50,000     | 3,710,000         |
|      | <b>Total Carried to Collection of Element No. 1 (SUBSTRUCTURE)</b>                                                                                                              |                |     |            | <b>26,567,460</b> |
|      | <b>Damp proof membrane</b>                                                                                                                                                      |                |     |            |                   |
| A    | Single layer of 1000 gauge polythene laid on blinded hardcore with 150mm minimum side and end laps                                                                              | m <sup>2</sup> | 167 | 2,500      | 417,500           |
|      | <b>A142 BRC Mesh with 200mm end and side laps in:-</b>                                                                                                                          |                |     |            |                   |
| B    | Oversite Concrete Slab                                                                                                                                                          | m <sup>2</sup> | 167 | 12,500     | 2,087,500         |
| C    | Provide base plates 300x300x12mm thick and fixed to the concrete starter columns                                                                                                | No             | 10  | 125,000    | 1,250,000         |
| D    | <b>20mm diameter bolts grade 4.6, 350mm long with head nut and washer on either side of bolt</b>                                                                                | no             | 40  | 25,000     | 1,000,000         |

1/1/2

SUBSTRUCTURE

PROPOSED WAREHOUSE

| ITEM | DESCRIPTION                                                           | UNIT | QTY | RATE (UGX) | AMOUNT (UGX)      |
|------|-----------------------------------------------------------------------|------|-----|------------|-------------------|
|      | Total Carried to Collection of Element No. 1 (SUBSTRUCTURE)           |      |     |            | 2,505,000         |
|      | <u>Collection of Element No. 1 (SUBSTRUCTURE)</u>                     |      |     |            |                   |
|      | FROM PAGE 1/1/1                                                       |      |     |            | 6,321,300         |
|      | FROM PAGE 1/1/2                                                       |      |     |            | 26,567,460        |
|      | FROM PAGE 1/1/3                                                       |      |     |            | 2,505,000         |
|      | <b>TOTAL ELEMENT No. 1 (SUBSTRUCTURE)<br/>CARRIED TO BILL SUMMARY</b> |      |     |            | <b>35,393,760</b> |

BILL No. 2 :

1/1/3

SUBSTRUCTURE

PROPOSED WAREHOUSE

| ITEM | DESCRIPTION                                                                                                                                                 | UNIT           | QTY   | RATE (UGX) | AMOUNT (UGX)      |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|------------|-------------------|
|      | <u>ELEMENT No. 2<br/>SUPERSTRUCTURE</u>                                                                                                                     |                |       |            |                   |
|      | <u>FRAME</u><br>Steel members of grade 275                                                                                                                  |                |       |            |                   |
| A    | Columns (254x102x22kg)                                                                                                                                      | Kg             | 834   | 9,500      | 7,923,000         |
| B    | Ring beams (254x102x22kg)                                                                                                                                   | Kg             | 1,188 | 9,500      | 11,286,000        |
|      | <u>Element E - FLOOR FINISHES</u><br>25mm Cement and sand (1:3) screed finished to receive tiles (measured separately) to:                                  |                |       |            |                   |
| A    | General floor areas                                                                                                                                         | m <sup>2</sup> | 167   | 10,000     | 1,670,000         |
|      | <u>Total Carried to Collection of Element No. 2 (SUPERSTRUCTURE)</u>                                                                                        |                |       |            | <b>20,879,000</b> |
|      | <u>Porcelain tiles floor tiling laid on cement and sand screed (measured separately) with and including tile adhesive including pointing to all joints:</u> |                |       |            |                   |
| B    | 8mm Thick tiles (General areas)                                                                                                                             | m <sup>2</sup> | 167   | 60,000     | 10,020,000        |
|      | <u>Total Carried to Collection of Element No. 2 (SUPERSTRUCTURE)</u>                                                                                        |                |       |            | <b>10,020,000</b> |
|      | <u>Collection of Element No. 2 (SUPERSTRUCTURE)</u>                                                                                                         |                |       |            |                   |
|      | FROM PAGE 1/2/4                                                                                                                                             |                |       |            | 20,879,000        |
|      | FROM PAGE 1/2/5                                                                                                                                             |                |       |            | 10,020,000        |
|      | <b>TOTAL ELEMENT No. 2 (SUPERSTRUCTURE)<br/>CARRIED TO BILL SUMMARY</b>                                                                                     |                |       |            | <b>30,899,000</b> |

BILL No. 2 :

2/2/1

PROPOSED WAREHOUSE

| ITEM | DESCRIPTION                                                                                                                                                                                                                                                             | UNIT           | QTY   | RATE (UGX) | AMOUNT (UGX) |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|------------|--------------|
|      | <b>Roof Construction</b><br><u>The following in roof construction comprising of structural steel round and square hollow sections in trusses welded and jointed with gusset plates and bolts including hoisting and fixing approximately 8.0mm above reserved level</u> |                |       |            |              |
|      | <b>The following in 6 No. (Type T2) Trusses of 9m span</b>                                                                                                                                                                                                              |                |       |            |              |
| A    | 40 x 60 x 4mm RHS Tie beam                                                                                                                                                                                                                                              | kg             | 342   | 9,000      | 3,078,000    |
| B    | 40 x 60 x 4mm SHS Rafter                                                                                                                                                                                                                                                | kg             | 411   | 9,000      | 3,699,000    |
| C    | 40 x 40 x 3mm SHS Internal members                                                                                                                                                                                                                                      | kg             | 243   | 9,000      | 2,187,000    |
| D    | 30 x 30 x 2mm SHS Bracing members                                                                                                                                                                                                                                       | kg             | 109   | 9,000      | 984,600      |
| E    | 25 x 25 x 2mm SHS Bracing members<br><b>(End of 6 No. Trusses)</b>                                                                                                                                                                                                      | kg             | 87    | 9,000      | 783,000      |
|      | <b>Roof Covering</b>                                                                                                                                                                                                                                                    |                |       |            |              |
| F    | IT - 4 profile resin coated (gauge 26) pre-painted galvanized iron roofing sheets fixed in accordance with manufacturer's specifications with approved bolts                                                                                                            | m <sup>2</sup> | 215   | 45,000     | 9,675,000    |
| G    | Half round matching ridge / hip capping with galvanised ms filler blocks of roof profile shape fitted to edges of capping                                                                                                                                               | lm             | 24    | 14,000     | 336,000      |
| H    | Expanded metal lath over eaves nailed to and including 50 x 100mm framing and battens 15mm thick cement/sand backing and plaster                                                                                                                                        | m <sup>2</sup> | 167   | 60,000     | 10,020,000   |
| I    | 150 x 50 x 20x 2mm zed purlins with anti sag rods at mid span                                                                                                                                                                                                           | lm             | 1,056 | 35,000     | 36,960,000   |
|      | <b>Truss fixing</b>                                                                                                                                                                                                                                                     |                |       |            |              |
| J    | 12mm diameter bolts grade 4.6, 250mm long with head nut and washer on either side of bolt                                                                                                                                                                               | no             | 234   | 9,500      | 2,223,000    |
|      | Total Carried to Collection of Element No. 1 (ROOF AND CEILING)                                                                                                                                                                                                         |                |       |            | 69,945,600   |

PROPOSED RESIDENTIAL UNITS

| ITEM | DESCRIPTION                                                                                                                   | UNIT | QTY | RATE (UGX) | AMOUNT (UGX)     |
|------|-------------------------------------------------------------------------------------------------------------------------------|------|-----|------------|------------------|
|      | <b>ELEMENT No. 5</b><br><b>ELECTRICAL INSTALLATIONS</b><br><b>(All provisional)</b>                                           |      |     |            |                  |
| A    | Allow a Provisional sum of Five million Shillings Only (UGX 5,000,000) for Electrical installation, distribution and fittings | PS   | 1   | 5,000,000  | 5,000,000        |
|      | <b>TOTAL ELEMENT No. 9 (ELECTRICAL INSTALLATIONS) CARRIED TO BILL SUMMARY</b>                                                 |      |     |            | <b>5,000,000</b> |

**PROPOSED RESIDENTIAL UNITS**

| ELEMENT | DESCRIPTION                                                                             | AMOUNT (UGX) |
|---------|-----------------------------------------------------------------------------------------|--------------|
|         | <p>BILL No. 3</p> <p><b><u>PROPOSED TRAINING CENTER</u></b><br/>SUMMARY</p>             |              |
| 1       | SUBSTRUCTURE                                                                            | 89,068,000   |
| 2       | SUPERSTRUCTURE                                                                          | 88,090,300   |
| 3       | ROOF CONSTRUCTION AND CEILING                                                           | 133,118,500  |
| 4       | ELECTRICAL                                                                              | 25,000,000   |
|         | <p><b>TOTAL BILL No. 2 (PROPOSED RESIDENTIAL HOUSE)</b><br/>CARRIED TO MAIN SUMMARY</p> | 335,276,800  |

**BILL No. 3**

**PROPOSED TRAINING CENTER**

PROPOSED TRAINING CENTER

| ITEM | DESCRIPTION                                                                                                                                                                                                  | UNIT           | QTY | RATE (UGX) | AMOUNT (UGX)      |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|------------|-------------------|
|      | <b>ELEMENT No.1<br/>SUBSTRUCTURE<br/>Excavations and Earthworks</b>                                                                                                                                          |                |     |            |                   |
| A    | Excavate Oversite to remove vegetable soil, shrubs, small trees and the like, average 200mm thick, and cart away from site                                                                                   | m <sup>2</sup> | 310 | 5,000      | 1,550,000         |
| B    | Excavate to reduce levels not exceeding 150mm deep                                                                                                                                                           | m <sup>3</sup> | 58  | 5,000      | 290,000           |
| C    | Excavate surface trenches: not exceeding 1.50 metres deep from reduced levels to receive wall foundations                                                                                                    | m <sup>3</sup> | 126 | 5,000      | 630,000           |
| D    | Ditto: the column pad foundation to the same depth                                                                                                                                                           | m <sup>3</sup> | 11  | 6,000      | 67,200            |
| E    | Allow for keeping excavations free from all water                                                                                                                                                            | Item           | 1   | 1,000,000  | 1,000,000         |
| F    | Allow for supporting sides of excavations                                                                                                                                                                    | Item           | 1   | 2,000,000  | 2,000,000         |
| G    | Return, fill and ram selected excavated materials around foundations in layers not exceeding 200mm thick                                                                                                     | m <sup>3</sup> | 86  | 5,000      | 430,000           |
| H    | Remove surplus excavated materials from site                                                                                                                                                                 | m <sup>3</sup> | 67  | 12,000     | 804,000           |
|      | <b>Hardcore filling</b>                                                                                                                                                                                      |                |     |            |                   |
| I    | 150mm bed, consolidated, levelled and blinded with a layer of sand (measured separately).                                                                                                                    | m <sup>2</sup> | 386 | 15,000     | 5,790,000         |
| J    | 50mm Thick sand blinding to hardcore bed                                                                                                                                                                     | m <sup>2</sup> | 386 | 5,000      | 1,930,000         |
|      | <b>Termidor 25 EC' or other equal approved anti-termite chemical treatment: applied by an approved professional pest control specialist: strictly in accordance with the manufacturer's instructions: to</b> |                |     |            |                   |
| K    | Sides and bottom of foundations                                                                                                                                                                              | m <sup>2</sup> | 32  | 1,500      | 48,000            |
| L    | Ditto. But to hardcore area                                                                                                                                                                                  | m <sup>2</sup> | 386 | 1,500      | 579,000           |
|      | <b>Total Carried to Collection of Element No. 1 (SUBSTRUCTURE)</b>                                                                                                                                           |                |     |            | <b>15,118,200</b> |
|      | <b>Vibrated plain in-situ concrete (Class 15) as described in:-</b>                                                                                                                                          |                |     |            |                   |
| M    | 200mm Thick in strip foundations                                                                                                                                                                             | m <sup>2</sup> | 14  | 80,000     | 1,120,000         |

BILL No. 3: 1/1/1

SUBSTRUCTURE

PROPOSED TRAINING CENTER

| ITEM | DESCRIPTION                                                                                                                                                                     | UNIT           | QTY | RATE (UGX) | AMOUNT (UGX)      |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|------------|-------------------|
| N    | 150mm Thick in Oversite Concrete slab<br><b>Vibrated reinforced concrete grade 25 as described in:-</b>                                                                         | m <sup>2</sup> | 386 | 80,000     | 30,880,000        |
| O    | Column bases                                                                                                                                                                    | m <sup>3</sup> | 11  | 550,000    | 6,160,000         |
| P    | Column starter stubs                                                                                                                                                            | m <sup>3</sup> | 2   | 550,000    | 1,056,000         |
| Q    | Groundbeam<br><b>Mild steel round bars to BS 4483 as described including cutting to length, bending, hoisting and fixing</b>                                                    | m <sup>3</sup> | 7   | 550,000    | 3,960,000         |
| R    | 8mm diameter bars: in column stubs                                                                                                                                              | Kg             | 75  | 4,000      | 300,000           |
|      | <b>High yield square twisted cold formed bars to BS4461 including cutting to length, bending, hoisting and fixing and including all necessary tying wire and spacing blocks</b> |                |     |            |                   |
| S    | 12mm diameter bars: in bases                                                                                                                                                    | Kg             | 338 | 4,000      | 1,351,680         |
| T    | 12mm diameter bars: in column starter stubs                                                                                                                                     | Kg             | 225 | 4,000      | 901,120           |
|      | <b>Sawn formwork as described to:-</b>                                                                                                                                          |                |     |            |                   |
| U    | Sides: of column bases                                                                                                                                                          | m <sup>2</sup> | 45  | 18,000     | 810,000           |
| V    | Ditto: of column stubs                                                                                                                                                          | m <sup>2</sup> | 11  | 18,000     | 198,000           |
| W    | Ditto: of ground beam                                                                                                                                                           | m <sup>2</sup> | 72  | 18,000     | 1,296,000         |
|      | <b>Solid burnt clay brickswork in cement sand (1:4) mortar as described in:-</b>                                                                                                |                |     |            |                   |
| X    | 200mm plinth walling                                                                                                                                                            | m <sup>2</sup> | 420 | 50,000     | 21,000,000        |
|      | <b>Total Carried to Collection of Element No. 1 (SUBSTRUCTURE)</b>                                                                                                              |                |     |            | <b>69,064,800</b> |
|      | <b>Damp proof membrane</b>                                                                                                                                                      |                |     |            |                   |
| A    | Single layer of 1000 gauge polythene laid on blinded hardcore with 200mm minimum side and end laps                                                                              | m <sup>2</sup> | 24  | 2,500      | 60,000            |
| B    | <b>A142 BRC Mesh with 200mm end and side laps in:</b><br>Oversite Concrete Slab                                                                                                 | m <sup>2</sup> | 386 | 12,500     | 4,825,000         |
|      | <b>Total Carried to Collection of Element No. 1 (SUBSTRUCTURE)</b>                                                                                                              |                |     |            | <b>4,885,000</b>  |
|      | <b>Collection of Element No.1(SUBSTRUCTURE)</b>                                                                                                                                 |                |     |            |                   |

BILL No. 3: 1/1/2

SUBSTRUCTURE

PROPOSED TRAINING CENTER

| ITEM | DESCRIPTION                                                           | UNIT | QTY | RATE (UGX) | AMOUNT (UGX)      |
|------|-----------------------------------------------------------------------|------|-----|------------|-------------------|
|      | FROM PAGE 1/1/1                                                       |      |     |            | 15,118,200        |
|      | FROM PAGE 1/1/2                                                       |      |     |            | 69,064,800        |
|      | FROM PAGE 1/1/3                                                       |      |     |            | 4,885,000         |
|      | <b>TOTAL ELEMENT No. 1 (SUBSTRUCTURE)<br/>CARRIED TO BILL SUMMARY</b> |      |     |            | <b>89,068,000</b> |

PROPOSED TRAINING CENTER

| ITEM | DESCRIPTION                                                                                                                                                                            | UNIT           | QTY | RATE (UGX) | AMOUNT (UGX)      |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|------------|-------------------|
|      | <b>ELEMENT No. 2<br/>SUPERSTRUCTURE</b>                                                                                                                                                |                |     |            |                   |
|      | <b>Element A - WALLING AND FRAME</b><br>Hessian based bituminous felt or other approved damp-proof course laid on and including 25mm cement and sand (1:3) mortar as described under:- |                |     |            |                   |
| A    | 200mm wall                                                                                                                                                                             | m              | 120 | 2,000      | 240,000           |
|      | <b>WALLING</b><br>Solid concrete blockwork in cement sand (1:4) mortar as described in:-                                                                                               |                |     |            |                   |
| B    | 200mm Thick walling                                                                                                                                                                    | m <sup>2</sup> | 420 | 55,000     | 23,100,000        |
|      | <b>FRAME</b><br>Vibrated insitu concrete grade 25 as described:                                                                                                                        |                |     |            |                   |
| C    | Columns                                                                                                                                                                                | m <sup>3</sup> | 5   | 550,000    | 2,750,000         |
| D    | Ring beams                                                                                                                                                                             | m <sup>3</sup> | 10  | 550,000    | 5,280,000         |
|      | Mild steel round bars to BS 4483 as described including cutting to length, bending, hoisting and fixing                                                                                |                |     |            |                   |
| E    | 8mm diameter bars: in column                                                                                                                                                           | Kg             | 203 | 4,500      | 912,000           |
| F    | 8mm diameter bars: in ring beam                                                                                                                                                        | Kg             | 328 | 4,500      | 1,476,000         |
|      | High tensile ribbed steel bar reinforcement as described:                                                                                                                              |                |     |            |                   |
| G    | 12mm Diameter bars (in Columns)                                                                                                                                                        | Kg             | 451 | 4,500      | 2,027,700         |
| H    | 12mm Diameter bars (in ringbeams)                                                                                                                                                      | Kg             | 644 | 4,500      | 2,898,000         |
|      | <b>Total Carried to Collection of Element No. 2 (SUPERSTRUCTURE)</b>                                                                                                                   |                |     |            | <b>38,684,300</b> |
|      | <b>Sawn Formwork as described to:</b>                                                                                                                                                  |                |     |            |                   |
| I    | Sides and soffits of Columns                                                                                                                                                           | m <sup>2</sup> | 82  | 18,000     | 1,474,560         |
| J    | Sides and soffits of ringbeams                                                                                                                                                         | m <sup>2</sup> | 117 | 18,000     | 2,104,200         |
|      | <b>Element C - DOORS</b><br>Precast concrete grade 25                                                                                                                                  |                |     |            |                   |

| ITEM | DESCRIPTION                                                                                                                                                                                                                                                                                       | UNIT | QTY | RATE (UGX) | AMOUNT (UGX)     |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|------------|------------------|
| A    | 200 x 100mm Lintel reinforced and including 4No 12mm diameter steel bars and 6mm mild steel links at 200mm centres including hoisting and bedding in position in cement mortar (1:3)                                                                                                              | m    | 2   | 36,000     | 75,600           |
|      | <b>STEEL CASEMENT</b><br><u>Supply, assemble and fix steel doors constructed from standard steel sections to BS 1474:1972 bronze anodised before delivery to site complete with 5mm Thick sheet glass glazed with rubber beads, including all necessary ironmongery, to Architect's details</u>   |      |     |            |                  |
| B    | Main Entrance door size 1200 x 2400mm high overall                                                                                                                                                                                                                                                | No   | 1   | 1,500,000  | 1,500,000        |
| C    | Main Entrance door size 900 x 2400mm high overall                                                                                                                                                                                                                                                 | No   | 1   | 550,000    | 550,000          |
|      | <b>Element B - WINDOWS</b><br><u>Precast Concrete Grade 25 as described</u>                                                                                                                                                                                                                       |      |     |            |                  |
| A    | 300 x 65mm (average) Weathered and throated cill, bedded and jointed in cement mortar (1:3) and finished fair on exposed faces                                                                                                                                                                    | m    | 36  | 12,000     | 428,400          |
|      | <b>STEEL CASEMENT</b><br><u>Supply, assemble and fix Steel Windows constructed from standard steel sections to BS 1474:1972 bronze anodised before delivery to site complete with 5mm Thick sheet glass glazed with rubber beads, including all necessary ironmongery, to Architect's details</u> |      |     |            |                  |
| B    | Window size 2100 x 1500mm high overall                                                                                                                                                                                                                                                            | No   | 17  | 850,000    | 14,450,000       |
| C    | <b>Painting</b><br>Prepare and apply three coats of emulsion paint on concrete cill 200 - 300mm girth                                                                                                                                                                                             | m    | 187 | 7,500      | 1,402,500        |
| D    | <b>Timber Doors</b><br><u>45mm Thick leaf solid complete core interior quality flush door with hardwood veneer in filling; all to Architect's details;</u><br>Door size 1200 x 2400mm high with pvo                                                                                               | No   | 1   | 1,800,000  | 1,800,000        |
| E    | Door size 900 x 2400mm high with pvo                                                                                                                                                                                                                                                              | No   | 2   | 950,000    | 1,900,000        |
|      | <b>Total Carried to Collection of Element No. 2 (SUPERSTRUCTURE)</b>                                                                                                                                                                                                                              |      |     |            | <b>5,102,500</b> |
| F    | Door stopper                                                                                                                                                                                                                                                                                      | No   | 2   | 5,000      | 10,000           |
| G    | Single acting stainless steel ball bearings hinges                                                                                                                                                                                                                                                | Prs  | 2   | 18,000     | 36,000           |

| ITEM | DESCRIPTION                                                                                                                                                 | UNIT           | QTY | RATE (UGX) | AMOUNT (UGX)      |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|------------|-------------------|
| H    | <b>Painting</b><br>Prepare and apply three coats of polyurethane varnish on wood surfaces                                                                   | m <sup>2</sup> | 5   | 9,000      | 45,360            |
| I    | Do. But on wood surfaces 200 - 300mm girth                                                                                                                  | m              | 20  | 2,700      | 55,080            |
| J    | Do. But on wood surfaces not exceeding 100mm girth                                                                                                          | m              |     | 1,000      | -                 |
|      | <b>Element D - INTERNAL WALL FINISHES</b>                                                                                                                   |                |     |            |                   |
| A    | <b>Plastering</b><br>15mm Cement,lime and sand (1:2:9) plaster in two coats trowelled hard and smooth on walls                                              | m <sup>2</sup> | 546 | 15,000     | 8,190,000         |
|      | <b>Painting</b><br><u>Prepare and apply one mist coat and three finishing coats first grade matt emulsion paint : on</u>                                    |                |     |            |                   |
| B    | Plastered walls                                                                                                                                             | m <sup>2</sup> | 546 | 9,000      | 4,914,000         |
|      | <b>Element E - FLOOR FINISHES</b><br><u>25mm Cement and sand (1:3) screed finished to receive tiles (measured separately) to:</u>                           |                |     |            |                   |
| A    | General floor areas                                                                                                                                         | m <sup>2</sup> | 386 | 10,000     | 3,860,000         |
|      | <b>Total Carried to Collection of Element No. 2 (SUPERSTRUCTURE)</b>                                                                                        |                |     |            | <b>16,964,000</b> |
|      | <u>Porcelain tiles floor tiling laid on cement and sand screed (measured separately) with and including tile adhesive including pointing to all joints;</u> |                |     |            |                   |
| B    | 8mm Thick tiles (General areas)                                                                                                                             | m <sup>2</sup> | 386 | 60,000     | 23,160,000        |
|      | <b>Element G - EXTERNAL FINISHES</b><br><b>WALLS</b>                                                                                                        |                |     |            |                   |
| A    | <b>Rendering</b><br>25mm Thick cement and sand (1:4) render, wood floated: on masonry                                                                       | m <sup>2</sup> | 273 | 12,000     | 3,276,000         |
| B    | <b>Painting</b><br>Prepare and apply three coats of first grade weatherguard Marmoran Textured paint : on rendered wall surfaces                            | m <sup>2</sup> | 273 | 22,000     | 6,006,000         |
|      | <b>Total Carried to Collection of Element No. 2 (SUPERSTRUCTURE)</b>                                                                                        |                |     |            | <b>32,442,000</b> |
|      | <b>Collection of Element No. 2 (SUPERSTRUCTURE)</b>                                                                                                         |                |     |            |                   |

PROPOSED TRAINING CENTER

| ITEM | DESCRIPTION                                                             | UNIT | QTY | RATE (UGX) | AMOUNT (UGX)      |
|------|-------------------------------------------------------------------------|------|-----|------------|-------------------|
|      | FROM PAGE 1/2/1                                                         |      |     |            | 38,684,300        |
|      | FROM PAGE 1/2/4                                                         |      |     |            | 16,964,000        |
|      | FROM PAGE 1/2/5                                                         |      |     |            | 32,442,000        |
|      | <b>TOTAL ELEMENT No. 2 (SUPERSTRUCTURE)<br/>CARRIED TO BILL SUMMARY</b> |      |     |            | <b>88,090,300</b> |

PROPOSED WAREHOUSE

| ITEM | DESCRIPTION                                                                                                                                                                                                                                                                  | UNIT           | QTY   | RATE (UGX) | AMOUNT (UGX)       |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|------------|--------------------|
|      | <b>Roof Construction</b><br><u>The following in roof construction comprising of structural steel round and square hollow sections in trusses welded and jointed with gusset plates and bolts including hoisting and fixing approximately 8.0mm plate required to be used</u> |                |       |            |                    |
| A    | <b>The following in 6 No. (Type T3) Trusses of 18m span</b><br>50 x80 x 5mm Angle RHS Rafters                                                                                                                                                                                | kg             | 2,319 | 9,000      | 20,866,500         |
| B    | 50 x 50 x 4mm SHS Internal members<br><b>(End of 6 No. Trusses)</b>                                                                                                                                                                                                          | kg             | 1,098 | 9,000      | 9,882,000          |
|      | <b>Roof Covering</b>                                                                                                                                                                                                                                                         |                |       |            |                    |
| C    | IT - 4 profile resin coated (gauge 26) pre-painted galvanized iron roofing sheets fixed in accordance with manufacturer's specifications with approved bolts                                                                                                                 | m <sup>2</sup> | 483   | 45,000     | 21,735,000         |
| D    | Half round matching ridge / hip capping with galvanised ms filler blocks of roof profile shape fitted to edges of capping                                                                                                                                                    | lm             | 85    | 14,000     | 1,190,000          |
| E    | Expanded metal lath over eaves nailed to and including 50 x 100mm framing and battens 15mm thick cement/sand backing and plaster                                                                                                                                             | m <sup>2</sup> | 386   | 60,000     | 23,160,000         |
| F    | 150 x 50 x 20x 2mm zed purlins with anti sag rods at mid span                                                                                                                                                                                                                | lm             | 1,576 | 35,000     | 55,160,000         |
|      | <b>Truss fixing</b>                                                                                                                                                                                                                                                          |                |       |            |                    |
| G    | 14mm diameter bolts grade 4.6, 250mm long with head nut and washer on either side of bolt                                                                                                                                                                                    | no             | 150   | 7,500      | 1,125,000          |
|      | <b>Total Carried to Collection of Element No. 1 (ROOF)</b>                                                                                                                                                                                                                   |                |       |            | <b>133,118,500</b> |



PROPOSED RESIDENTIAL UNITS

| ITEM                                                                   | DESCRIPTION                                                                                                                                                                                                                             | UNIT | QTY | RATE (UGX) | AMOUNT (UGX) |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|------------|--------------|
| A                                                                      | <p>ELEMENT No. 5</p> <p><u>ELECTRICAL INSTALLATIONS</u></p> <p><u>(All provisional)</u></p> <p>Allow a Provisional sum of twenty five million Shillings Only(UGX 25,000,000) for Electrical installation, distribution and fittings</p> | PS   | 1   | 25,000,000 | 25,000,000   |
| TOTAL ELEMENT No. 9 (ELECTRICAL INSTALLATIONS) CARRIED TO BILL SUMMARY |                                                                                                                                                                                                                                         |      |     |            | 25,000,000   |

**BILL No. 4**

**PROPOSED EXTERNAL WORKS**

PROPOSED EXTERNAL WORKS

| ELEMENT | DESCRIPTION                                                                  | AMOUNT (UGX)       |
|---------|------------------------------------------------------------------------------|--------------------|
|         | BILL No. 4                                                                   |                    |
|         | <b>PROPOSED RESIDENTIAL UNITS SUMMARY</b>                                    |                    |
| 1       | EXTERNAL WORKS                                                               | 210,910,500        |
| 2       | FURNITURE                                                                    | 91,840,000         |
|         | <b>TOTAL BILL No. 2 (PROPOSED RESIDENTIAL HOUSE) CARRIED TO MAIN SUMMARY</b> | <b>302,750,500</b> |

PROPOSED EXTERNAL WORKS

| Item                               | Description                                                                                                                                                                                                                                                                                                            | Qty  | Unit    | Rate (USHS) | Amount (USHS) |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------|-------------|---------------|
| <b>EXTERNAL WORKS</b>              |                                                                                                                                                                                                                                                                                                                        |      |         |             |               |
| A                                  | <b>Wall Fencing</b><br>Provide materials and construct a wall fence including the foundation and plastering                                                                                                                                                                                                            | 275  | SM      | 55,000      | 15,125,000    |
| B                                  | <b>Razor wire</b><br>500mm diameter coiled razor wire with sharp pointed razors, fixed on top of chainlink fence (M/S) to detail                                                                                                                                                                                       | 90   | LM      | 25,000      | 2,250,000     |
| C                                  | <b>Mild Steel Gates</b><br>Fabricate and fix Mild steel gate size 5000mm wide x 2500mm high overall in 2No operable leaves in 75mm x 75mm x 6mm RHS framing including 50 x 50mm x 4mm thick SHS pointed rails & braces, stiffeners, complete with bolts, locks, hinges, fixing lugs all to Architect's detailed design | 1    | NO.     | 5,000,000   | 5,000,000     |
| F                                  | Prepare and apply three coats of gloss oil paint on steel gate (Both sides)                                                                                                                                                                                                                                            | 31   | SM      | 15,000      | 465,000       |
| G                                  | Ditto emulsion paint on rendered gate columns                                                                                                                                                                                                                                                                          | 2    | SM      | 15,000      | 30,000        |
| <b>Total carried to collection</b> |                                                                                                                                                                                                                                                                                                                        |      |         |             |               |
| <b>22,870,000</b>                  |                                                                                                                                                                                                                                                                                                                        |      |         |             |               |
| M                                  | <b>Interlocking paver blocks</b><br>Provide all the materials necessary to cast concrete of 150mm thick and of grade 15 on the compound                                                                                                                                                                                | 1760 | SM      | 45,000      | 79,200,000    |
| O                                  | <b>Parking lines</b><br>25mm wide yellow parking lines                                                                                                                                                                                                                                                                 | 9    | LM      | 4,500       | 40,500        |
|                                    | <b>Gardening</b>                                                                                                                                                                                                                                                                                                       |      |         |             |               |
| P                                  | <b>Grass seedlings</b><br>Allow for the construction of a generator room                                                                                                                                                                                                                                               | 3    | lumpsum | 15,000,000  | 45,000,000    |
| Q                                  | Allow for the construction of a toilet including the septic tank to the clients requirement a sum of twenty million shillings                                                                                                                                                                                          | 1    | lumpsum | 20,000,000  | 20,000,000    |
|                                    | <b>Storm water channel</b>                                                                                                                                                                                                                                                                                             |      |         |             |               |
| R                                  | 300mm Wide x 200mm deep (internal) drainage channel comprising precast concrete storm water channel : including excavation, and disposal as per Architect's detail                                                                                                                                                     | 235  | LM      | 80,000      | 18,800,000    |
|                                    | <b>GENERATOR ROOM</b>                                                                                                                                                                                                                                                                                                  |      |         |             |               |
| S                                  | Allow a Provisional sum of Ten million Shillings Only(UGX 10,000,000) for the construction of a generator room to completion                                                                                                                                                                                           | PS   | 1       | 10,000,000  | 10,000,000    |
|                                    | <b>TOILET</b>                                                                                                                                                                                                                                                                                                          |      |         |             |               |
| T                                  | Allow a Provisional sum of fifteen million Shillings Only(UGX 15,000,000) for the construction of a toilet to completion                                                                                                                                                                                               | PS   | 1       | 15,000,000  | 15,000,000    |

PROPOSED EXTERNAL WORKS

| Item | Description                                                           | Qty | Unit | Rate (USHS) | Amount (USHS)      |
|------|-----------------------------------------------------------------------|-----|------|-------------|--------------------|
|      | Total carried to collection                                           |     |      |             | 188,040,500        |
|      | <b>COLLECTION</b>                                                     |     |      |             |                    |
|      | Total carried forward from page 2/1                                   |     |      |             | 22,870,000         |
|      | Total carried forward from page 2/2                                   |     |      |             | 188,040,500        |
|      | <b>Total carried to summary</b>                                       |     |      |             | <b>210,910,500</b> |
|      | <b>COLLECTION</b>                                                     |     |      |             |                    |
|      | Collection of Element No.1                                            |     |      |             |                    |
|      | FROM PAGE 3/1/1                                                       |     |      |             | 210,910,500        |
|      | <b>TOTAL ELEMENT No. 1 (SUBSTRUCTURE)<br/>CARRIED TO BILL SUMMARY</b> |     |      |             | <b>210,910,500</b> |

FURNITURE

| Item | Description                                                           | Unit | Qty | Rate (USHS) | Amount (USHS)     |
|------|-----------------------------------------------------------------------|------|-----|-------------|-------------------|
|      | <b>EXTERNAL WORKS</b>                                                 |      |     |             |                   |
| A    | Office desk                                                           | no.  | 15  | 750,000     | 11,250,000        |
| B    | Office Chair                                                          | no.  | 15  | 350,000     | 5,250,000         |
| C    | <b>Bookshelf for office</b>                                           | no.  | 6   | 1,500,000   | 9,000,000         |
| D    | Chair equipped small table for training room                          | no.  | 70  | 150,000     | 10,500,000        |
| E    | Curtain for office, entrance hole & training room                     | m    | 24  | 35,000      | 840,000           |
| F    | Pallet for agricultural product storage                               | no.  | 100 | 550,000     | 55,000,000        |
|      | <b>Total carried to collection</b>                                    |      |     |             | <b>91,840,000</b> |
|      | <b>COLLECTION</b>                                                     |      |     |             |                   |
|      | Total carried forward from page 2/1                                   |      |     |             | 91,840,000        |
|      | <b>TOTAL ELEMENT No. 1 (SUBSTRUCTURE)<br/>CARRIED TO BILL SUMMARY</b> |      |     |             | <b>91,840,000</b> |

**PROPOSED WAREHOUSE 2**

| ELEMENT | DESCRIPTION                                                                            | AMOUNT (UGX) |
|---------|----------------------------------------------------------------------------------------|--------------|
|         | <p>BILL No. 5</p> <p><u>PROPOSED WAREHOUSE</u><br/>SUMMARY</p>                         |              |
| 1       | SUBSTRUCTURE                                                                           | 231,976,500  |
| 2       | SUPERSTRUCTURE                                                                         | 277,010,400  |
| 3       | ROOF CONSTRUCTION AND CEILING                                                          | 293,678,700  |
| 4       | ELECTRICAL                                                                             | 35,000,000   |
|         | <p><b>TOTAL BILL No.1 (PROPOSED RESIDENTIAL UNITS)</b><br/>CARRIED TO MAIN SUMMARY</p> | 837,665,600  |

**BILL No. 5**

**PROPOSED WAREHOUSE 2**

PROPOSED WAREHOUSE. 2

| ITEM | DESCRIPTION                                                                                                                                                                                                  | UNIT           | QTY   | RATE (UGX) | AMOUNT (UGX)      |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|------------|-------------------|
|      | <b>ELEMENT No.1<br/>SUBSTRUCTURE<br/>Excavations and Earthworks</b>                                                                                                                                          |                |       |            |                   |
| A    | Excavate Oversite to remove vegetable soil, shrubs, small trees and the like, average 200mm thick, and cart away from site                                                                                   | m <sup>2</sup> | 1,370 | 5,000      | 6,850,000         |
| B    | Excavate to reduce levels not exceeding 150mm deep                                                                                                                                                           | m <sup>3</sup> | 206   | 5,000      | 1,030,000         |
| C    | Excavate surface trenches: not exceeding 1.50 metres deep from reduced levels to receive wall foundations                                                                                                    | m <sup>3</sup> | 189   | 5,000      | 945,000           |
| D    | Ditto: the column pad foundation to the same depth                                                                                                                                                           | m <sup>3</sup> | 265   | 6,000      | 1,590,000         |
| F    | Allow for keeping excavations free from all water                                                                                                                                                            | Item           | 1     | 1,200,000  | 1,200,000         |
| G    | Allow for supporting sides of excavations                                                                                                                                                                    | Item           | 1     | 2,500,000  | 2,500,000         |
| H    | Return, fill and ram selected excavated materials around foundations in layers not exceeding 200mm thick                                                                                                     | m <sup>3</sup> | 145   | 5,000      | 725,000           |
| I    | Remove surplus excavated materials from site                                                                                                                                                                 | m <sup>3</sup> | 56    | 12,000     | 672,000           |
|      | <b>Hardcore filling</b>                                                                                                                                                                                      |                |       |            |                   |
| J    | 150mm bed, consolidated, levelled and blinded with a layer of sand (measured separately).                                                                                                                    | m <sup>2</sup> | 1,370 | 15,000     | 20,550,000        |
| K    | 50mm Thick sand blinding to hardcore bed                                                                                                                                                                     | m <sup>2</sup> | 1,370 | 5,000      | 6,850,000         |
|      | <b>Termidor 25 EC' or other equal approved anti-termite chemical treatment: applied by an approved professional pest control specialist: strictly in accordance with the manufacturer's instructions: to</b> |                |       |            |                   |
| L    | Sides and bottom of foundations                                                                                                                                                                              | m <sup>2</sup> | 125   | 1,500      | 187,500           |
| M    | Ditto. But to hardcore area                                                                                                                                                                                  | m <sup>2</sup> | 1,370 | 1,500      | 2,055,000         |
|      | <b>Total Carried to Collection of Element No. 1 (SUBSTRUCTURE)</b>                                                                                                                                           |                |       |            | <b>45,154,500</b> |
| B    | <b>Vibrated plain in-situ concrete (Class 15) as described in:-</b><br><b>Vibrated plain concrete grade 20 as described in:-</b><br>200mm Thick in strip foundations                                         | m <sup>2</sup> | 16    | 80,000     | 1,296,000         |

BILL No. 5 : PROPOSED WAREHOUSE 2 1/1/1

SUBSTRUCTURE

PROPOSED WAREHOUSE. 2

| ITEM | DESCRIPTION                                                                                                                                                                     | UNIT           | QTY   | RATE (UGX) | AMOUNT (UGX)       |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|------------|--------------------|
| C    | 150mm Thick in Oversite Concrete slab<br><b>Vibrated reinforced concrete grade 25 as described in:-</b>                                                                         | m <sup>2</sup> | 1,370 | 80,000     | 109,600,000        |
| E    | Column bases                                                                                                                                                                    | m <sup>3</sup> | 18    | 550,000    | 9,735,000          |
| F    | Column starter stubs                                                                                                                                                            | m <sup>3</sup> | 2     | 550,000    | 1,155,000          |
|      | Groundbeam                                                                                                                                                                      | m <sup>3</sup> | 18    | 550,000    | 9,900,000          |
| G    | <b>Mild steel round bars to BS 4483 as described including cutting to length, bending, hoisting and fixing</b><br>8mm diameter bars: in column stubs                            | Kg             | 623   | 4,000      | 2,492,000          |
|      | <b>High yield square twisted cold formed bars to BS4461 including cutting to length, bending, hoisting and fixing and including all necessary tying wire and spacing blocks</b> |                |       |            |                    |
| I    | 12mm diameter bars: in bases                                                                                                                                                    | Kg             | 1,589 | 4,000      | 6,356,000          |
| J    | 16mm diameter bars: in column starter stubs                                                                                                                                     | Kg             | 589   | 4,000      | 2,356,000          |
|      | <b>Sawn formwork as described to:-</b>                                                                                                                                          |                |       |            |                    |
| M    | Sides: of column bases                                                                                                                                                          | m <sup>2</sup> | 87    | 18,000     | 1,566,000          |
| N    | Ditto: of column stubs                                                                                                                                                          | m <sup>2</sup> | 54    | 18,000     | 972,000            |
| O    | Ditto: of ground beam                                                                                                                                                           | m <sup>2</sup> | 158   | 18,000     | 2,844,000          |
|      | <b>Solid burnt clay brickswork in cement sand (1:4) mortar as described in:-</b>                                                                                                |                |       |            |                    |
| P    | 200mm plinth walling                                                                                                                                                            | m <sup>2</sup> | 360   | 50,000     | 18,000,000         |
|      | <b>Total Carried to Collection of Element No. 1 (SUBSTRUCTURE)</b>                                                                                                              |                |       |            | <b>166,272,000</b> |
|      | <b>Damp proof membrane</b>                                                                                                                                                      |                |       |            |                    |
| A    | Single layer of 1000 gauge polythene laid on blinded hardcore with 150mm minimum side and end laps                                                                              | m <sup>2</sup> | 1,370 | 2,500      | 3,425,000          |
| B    | <b>A142 BRC Mesh with 200mm end and side laps in:-</b><br>Oversite Concrete Slab                                                                                                | m <sup>2</sup> | 1,370 | 12,500     | 17,125,000         |
|      | <b>Total Carried to Collection of Element No. 1 (SUBSTRUCTURE)</b>                                                                                                              |                |       |            | <b>20,550,000</b>  |
|      | <b>Collection of Element No.1(SUBSTRUCTURE)</b>                                                                                                                                 |                |       |            |                    |

BILL No. 5 : PROPOSED WAREHOUSE 2 1/1/2

SUBSTRUCTURE

PROPOSED WAREHOUSE. 2

| ITEM | DESCRIPTION                                                             | UNIT | QTY | RATE (UGX) | AMOUNT (UGX)       |
|------|-------------------------------------------------------------------------|------|-----|------------|--------------------|
|      | FROM PAGE 1/1/1                                                         |      |     |            | 45,154,500         |
|      | FROM PAGE 1/1/2                                                         |      |     |            | 166,272,000        |
|      | FROM PAGE 1/1/3                                                         |      |     |            | 20,550,000         |
|      | <b>TOTAL ELEMENT No. 1 (SUBSTRUCTURE)<br/>(CARRIED TO BILL SUMMARY)</b> |      |     |            | <b>231,976,500</b> |

PROPOSED WAREHOUSE 2

| ITEM | DESCRIPTION                                                                                                                                           | UNIT           | QTY   | RATE (UGX) | AMOUNT (UGX)       |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|------------|--------------------|
|      | <b>ELEMENT No. 2<br/>SUPERSTRUCTURE</b>                                                                                                               |                |       |            |                    |
|      | <b>Element A - WALLING AND FRAME</b>                                                                                                                  |                |       |            |                    |
|      | <b>Hessian based bituminous felt or other approved damp-proof course laid on and including 25mm cement and sand (1:3) mortar as described under:-</b> |                |       |            |                    |
| A    | 200mm wall                                                                                                                                            | m              | 180   | 2,000      | 360,000            |
|      | <b>WALLING</b>                                                                                                                                        |                |       |            |                    |
|      | <b>Solid concrete blockwork in cement sand (1:4) mortar as described in:-</b>                                                                         |                |       |            |                    |
| B    | 200mm Thick walling                                                                                                                                   | m <sup>2</sup> | 1,008 | 55,000     | 55,440,000         |
|      | <b>FRAME</b>                                                                                                                                          |                |       |            |                    |
|      | <b>Vibrated insitu concrete grade 25 as described:</b>                                                                                                |                |       |            |                    |
| C    | Columns                                                                                                                                               | m <sup>3</sup> | 12    | 550,000    | 6,820,000          |
| D    | Beam at 2.8m                                                                                                                                          | m <sup>3</sup> | 18    | 550,000    | 10,120,000         |
| E    | Ring beams                                                                                                                                            | m <sup>3</sup> | 14    | 550,000    | 7,590,000          |
| F    | 150mm Solid slab                                                                                                                                      | m <sup>3</sup> | 16    | 550,000    | 8,800,000          |
|      | <b>Mild steel round bars to BS 4483 as described including cutting to length, bending, hoisting and fixing</b>                                        |                |       |            |                    |
| G    | 8mm diameter bars: in column                                                                                                                          | Kg             | 648   | 4,000      | 2,592,800          |
| H    | 8mm diameter bars: in Beam at 2.8m                                                                                                                    | Kg             | 564   | 4,000      | 2,256,000          |
| I    | 8mm diameter bars: in ring beam                                                                                                                       | Kg             | 613   | 4,000      | 2,452,000          |
|      | <b>High tensile ribbed steel bar reinforcement as described:</b>                                                                                      |                |       |            |                    |
| J    | 12mm Diameter bars (in Columns)                                                                                                                       | Kg             | 577   | 4,000      | 2,309,200          |
| K    | 12mm Diameter bars (in ringbeams)                                                                                                                     | Kg             | 854   | 4,000      | 3,414,400          |
| L    | 12mm Diameter bars (in beams)                                                                                                                         | Kg             | 845   | 4,000      | 3,380,000          |
| M    | 16mm Diameter bars (in beams)                                                                                                                         | Kg             | 897   | 4,000      | 3,588,000          |
| N    | 16mm Diameter bars (in Columns)                                                                                                                       | Kg             | 1,083 | 4,000      | 4,332,000          |
|      | <b>Total Carried to Collection of Element No. 2 (SUPERSTRUCTURE)</b>                                                                                  |                |       |            | <b>113,454,400</b> |
|      | <b>Sawn Formwork as described to:</b>                                                                                                                 |                |       |            |                    |
| O    | Sides and soffits of beam at 2.8m                                                                                                                     | m <sup>2</sup> | 134   | 18,000     | 2,412,000          |

PROPOSED WAREHOUSE 2

| ITEM | DESCRIPTION                                                                                                                                                                                                                                                                                                                                           | UNIT           | QTY   | RATE (UGX) | AMOUNT (UGX)      |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|------------|-------------------|
| P    | Sides and soffits of Columns                                                                                                                                                                                                                                                                                                                          | m <sup>2</sup> | 189   | 18,000     | 3,402,000         |
| Q    | Sides and soffits of ringbeams                                                                                                                                                                                                                                                                                                                        | m <sup>2</sup> | 105   | 18,000     | 1,890,000         |
| A    | <b>Element C - DOORS</b><br><b>Pre-cast concrete grade 25</b><br>200 x 100mm Lintel reinforced and including 4No 12mm diameter steel bars and 6mm mild steel links at 200mm centres including hoisting and bedding in position in cement mortar (1:3)                                                                                                 | m              | 28    | 36,000     | 1,008,000         |
| B    | <b>STEEL CASEMENT</b><br><b>Supply, assemble and fix steel doors constructed from standard steel sections to BS 1474:1972 bronze anodised before delivery to site complete with 5mm Thick sheet glass glazed with rubber beads, including all necessary ironmongery, to Architect's details</b><br>Main Entrance door size 4000 x 4000mm high overall | No             | 7     | 7,500,000  | 52,500,000        |
| A    | <b>Element D - INTERNAL WALL FINISHES</b><br><b>Plastering</b><br>15mm Cement,lime and sand (1:2:9) plaster in two coats trowelled hard and smooth on walls                                                                                                                                                                                           | m <sup>2</sup> | 1,272 | 15,000     | 19,080,000        |
| D    | <b>Painting</b><br><b>Prepare and apply one mist coat and three finishing coats first grade matt emulsion paint : on</b><br>Plastered walls                                                                                                                                                                                                           | m <sup>2</sup> | 1,272 | 9,000      | 11,448,000        |
| A    | <b>Element E - FLOOR FINISHES</b><br><b>25mm Cement and sand (1:3) screed finished to receive tiles (measured separately) to:</b><br>General floor areas                                                                                                                                                                                              | m <sup>2</sup> | 1,370 | 10,000     | 13,700,000        |
|      | <b>Total Carried to Collection of Element No. 2 (SUPERSTRUCTURE)</b>                                                                                                                                                                                                                                                                                  |                |       |            | <b>44,228,000</b> |
| B    | <b>Element G - EXTERNAL FINISHES</b><br><b>WALLS</b><br><b>Rendering</b><br>8mm Thick tiles (General areas)                                                                                                                                                                                                                                           | m <sup>2</sup> | 1,370 | 60,000     | 82,200,000        |

A13-22

PROPOSED WAREHOUSE 2

| ITEM | DESCRIPTION                                                                                                                             | UNIT           | QTY   | RATE (UGX) | AMOUNT (UGX)       |
|------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|------------|--------------------|
| A    | 25mm Thick cement and sand (1:4) render wood floated: on masonry                                                                        | m <sup>2</sup> | 1,092 | 12,000     | 13,104,000         |
| C    | <b>Painting</b><br>Prepare and apply three coats of first grade weatheguard <b>Mur Moran Textured paint</b> : on rendered wall surfaces | m <sup>2</sup> | 1,092 | 22,000     | 24,024,000         |
|      | <b>Total Carried to Collection of Element No. 2 (SUPERSTRUCTURE)</b>                                                                    |                |       |            | <b>119,328,000</b> |
|      | <b>Collection of Element No. 2 (SUPERSTRUCTURE)</b><br>FROM PAGE 1/2/1                                                                  |                |       |            | 113,454,400        |
|      | FROM PAGE 1/2/4                                                                                                                         |                |       |            | 44,228,000         |
|      | FROM PAGE 1/2/5                                                                                                                         |                |       |            | 119,328,000        |
|      | <b>TOTAL ELEMENT No. 2 (SUPERSTRUCTURE) CARRIED TO BILL SUMMARY</b>                                                                     |                |       |            | <b>277,010,400</b> |

PROPOSED WAREHOUSE

| ITEM | DESCRIPTION                                                                                                                                                                                                                                                                     | UNIT           | QTY   | RATE (UGX) | AMOUNT (UGX) |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|------------|--------------|
|      | <b>Roof Construction</b><br><u>The following in roof construction comprising of structural steel rectangular and square hollow sections in trusses welded and jointed with gusset plates and bolts including hoisting and fixing approximately 4 items above mentioned item</u> |                |       |            |              |
|      | <b>The following in 31 No. (Type T1) Trusses of 30m span</b>                                                                                                                                                                                                                    |                |       |            |              |
| A    | 50 x 100 x 5mm RHS Tie beam                                                                                                                                                                                                                                                     | kg             | 5,967 | 9,000      | 53,703,000   |
| B    | 50 x 100 x 5mm RHS Rafters                                                                                                                                                                                                                                                      | kg             | 5,894 | 9,000      | 53,046,000   |
| C    | 50 x 60 x 4mm RHS Internal members                                                                                                                                                                                                                                              | kg             | 3,599 | 9,000      | 32,393,700   |
| C    | 40 x 40 x 3mm SHS Bracing members                                                                                                                                                                                                                                               | kg             | 1,876 | 9,000      | 16,884,000   |
| C    | 30 x 30 x 2mm SHS Bracing members                                                                                                                                                                                                                                               | kg             | 564   | 9,000      | 5,076,000    |
|      | <b>Roof Covering</b>                                                                                                                                                                                                                                                            |                |       |            |              |
| A    | IT - 4 profile resin coated (gauge 26) pre-painted galvanized iron roofing sheets fixed in accordance with manufacturer's specifications with approved bolts                                                                                                                    | m <sup>2</sup> | 2,125 | 45,000     | 95,625,000   |
| B    | Half round matching ridge / hip capping with galvanised ms filler blocks of roof profile shape fitted to edges of capping                                                                                                                                                       | lm             | 63    | 14,000     | 882,000      |
| C    | Expanded metal lath over eaves nailed to and including 50 x 100mm framing and battens 15mm thick cement/sand backing and plaster                                                                                                                                                | m <sup>2</sup> |       | 60,000     | -            |
| J    | 150 x 50 x 20x 2mm zed purlins with anti sag rods at mid span                                                                                                                                                                                                                   | lm             | 1,498 | 23,000     | 34,454,000   |
|      | <b>Truss fixing</b>                                                                                                                                                                                                                                                             |                |       |            |              |
| K    | 14mm diameter bolts grade 4.6, 250mm long with head nut and washer on either side of bolt                                                                                                                                                                                       | no             | 134   | 9,500      | 1,273,000    |
| L    | 12mm diameter bolts grade 4.6, 250mm long with head nut and washer on either side of bolt                                                                                                                                                                                       | no             | 36    | 9,500      | 342,000      |
|      | <b>Total Carried to Collection of Element No. 1</b>                                                                                                                                                                                                                             |                |       |            | 293,678,700  |

PROPOSED RESIDENTIAL UNITS

| ITEM | DESCRIPTION                                                                                                                                                                                                                 | UNIT | QTY | RATE (UGX) | AMOUNT (UGX) |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|------------|--------------|
|      | <b>ELEMENT No. 5</b><br><b>ELECTRICAL INSTALLATIONS</b><br><b>(All provisional)</b><br>Allow a Provisional sum of Thirty five million Shillings Only(UGX 35,000,000) for Electrical installation, distribution and fittings | PS   | 1   | 35,000,000 | 35,000,000   |
|      | <b>TOTAL ELEMENT No. 9 (ELECTRICAL INSTALLATIONS) CARRIED TO BILL SUMMARY</b>                                                                                                                                               |      |     |            | 35,000,000   |

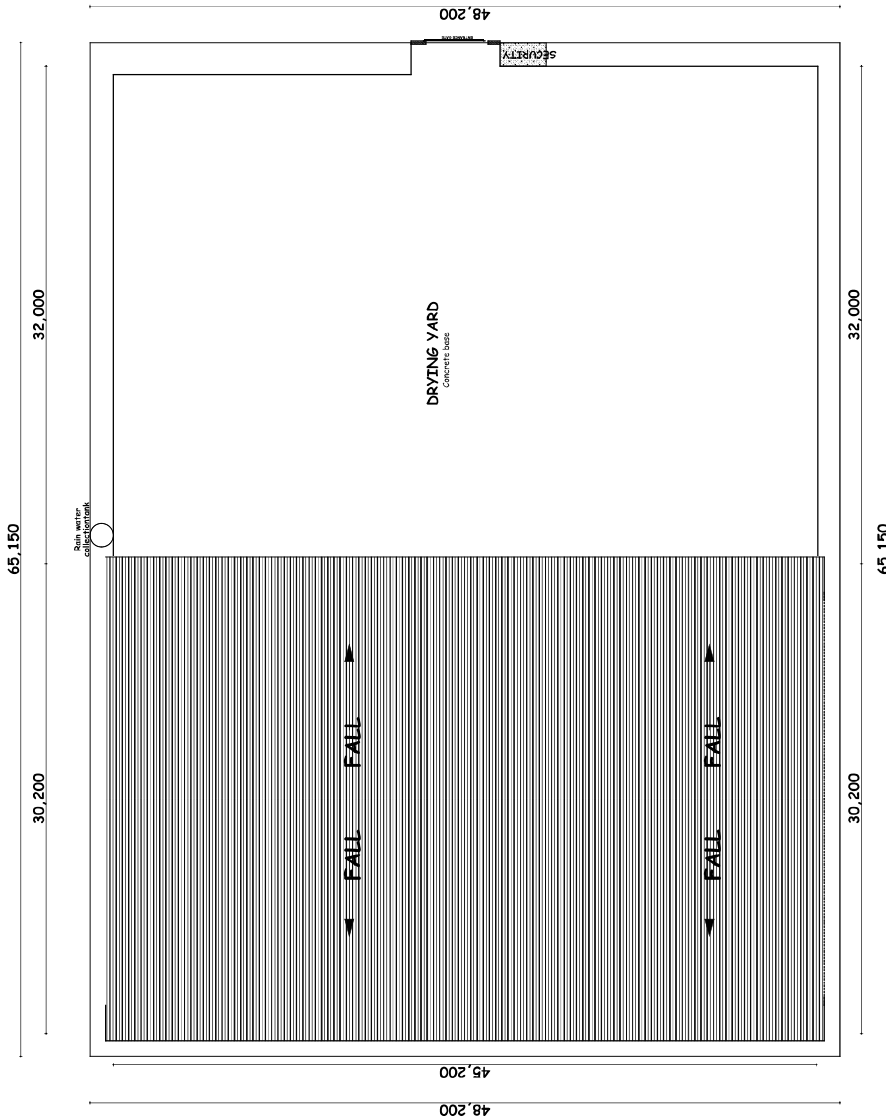






# Bulambuli Plans

DRAFT



0. - SITE LAYOUT PLAN  
SCALE 1:150

| NO  | date | description | REVISIONS |
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FIGURE 1  
**THE PREPARATORY SURVEY ON THE PROJECT FOR A TRANSPORTATION SYSTEM IN THE REPUBLIC OF JAMAICA**

Client  
 JAMAICA  
 Client's Signature

Work Stage Working drawings (Draft)

Drawing No. Genecil layout

CONSULTANTS

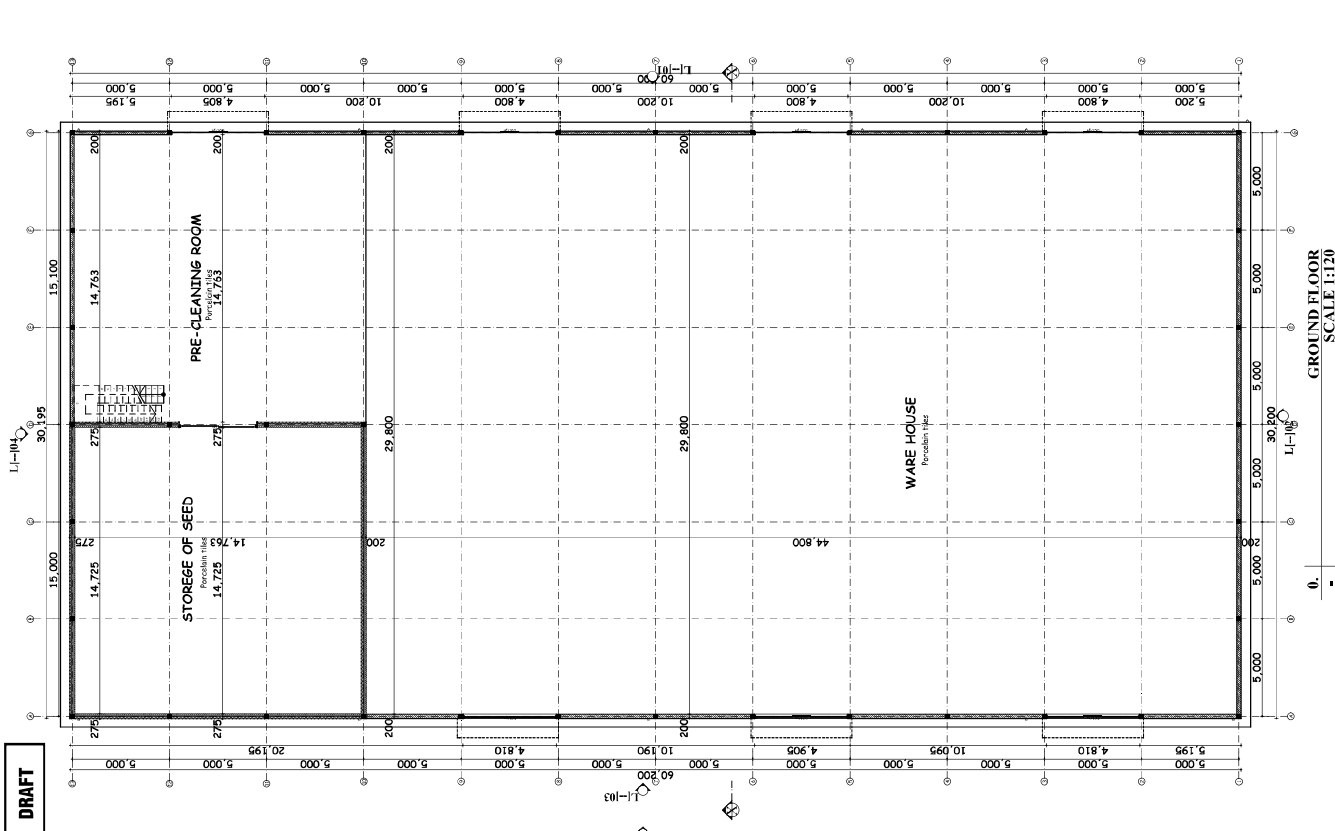
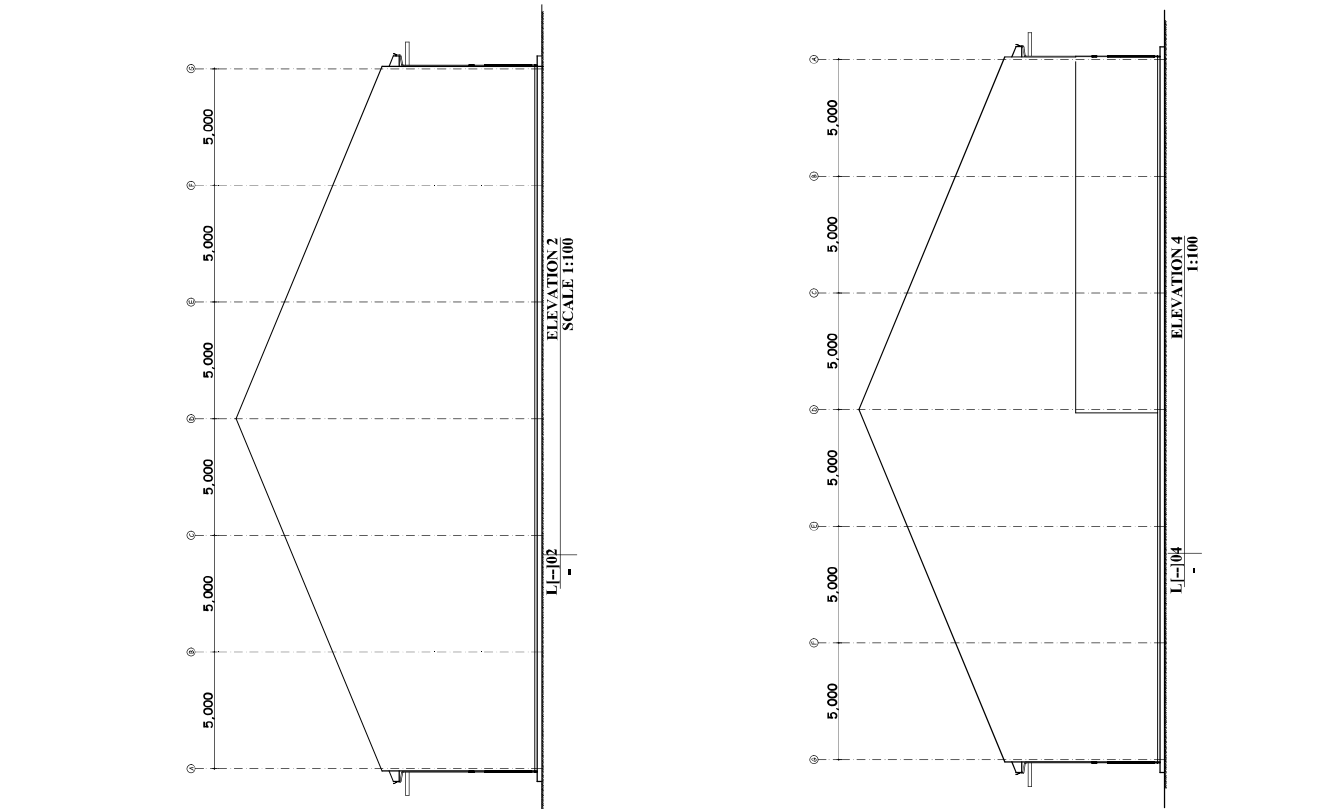
**Sanyu Consultants Inc.**

Structural Engineers  
 Mechanical and Electrical Engineers

|          |             |         |
|----------|-------------|---------|
| Scale    | Sheet       | Checked |
| Revising | Drawing No. |         |

# Kween Plans

| NO  | NOTES                                                                                                                                   |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------|
| 1.  | All dimensions to be indicated in millimeters. All dimensions shall be rounded up to the nearest millimeter.                            |
| 2.  | All walls to be 200mm thick to be rendered with hoop reinforcement in accordance with SANS 10400-1.                                     |
| 3.  | All concrete to be cast in accordance with SANS 10400-1 and to be finished with a smooth surface.                                       |
| 4.  | All primary work to be in accordance with NQCF - 1000 and to be finished with a smooth surface.                                         |
| 5.  | When drawn passes under existing structures, the structure shall be reinforced with hoop reinforcement in accordance with SANS 10400-1. |
| 6.  | All waste pipes and floor drains to be recessed and the waste to be piped to the appropriate sewerage system.                           |
| 7.  | All windows and doors to be set down on ground floor to be in accordance with SANS 10400-1.                                             |
| 8.  | All doors to be set down on ground floor to be in accordance with SANS 10400-1.                                                         |
| 9.  | Site cover and fully doors to be set down on ground floor to be in accordance with SANS 10400-1.                                        |
| 10. | All internal plaster to be two coats and finished.                                                                                      |
| 11. | All internal walls to be finished with a smooth surface.                                                                                |
| 12. | Provide C1, 25 x 100 mm water down pipes and 100 x 100 mm down pipes with translucent down stream.                                      |
| 13. | All painting to be in accordance with SANS 10400-1.                                                                                     |
| 14. | Submit a report of 100mm above the perimeter of building.                                                                               |
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**THE PREPARATOR SURVEY ON THE PROJECT FOR AN IRRIGATION SYSTEM IN THE REPUBLIC OF UGANDA**

Client: **Ministry of Agriculture**

Work Stage: **Working drawings (Draft)**

Drawing No: **Ground floor and Elevations (Wire base)**

CONSULTANTS:

**Sanyu Consultants Inc.**

Structural Engineers

Mechanical and Electrical Engineers

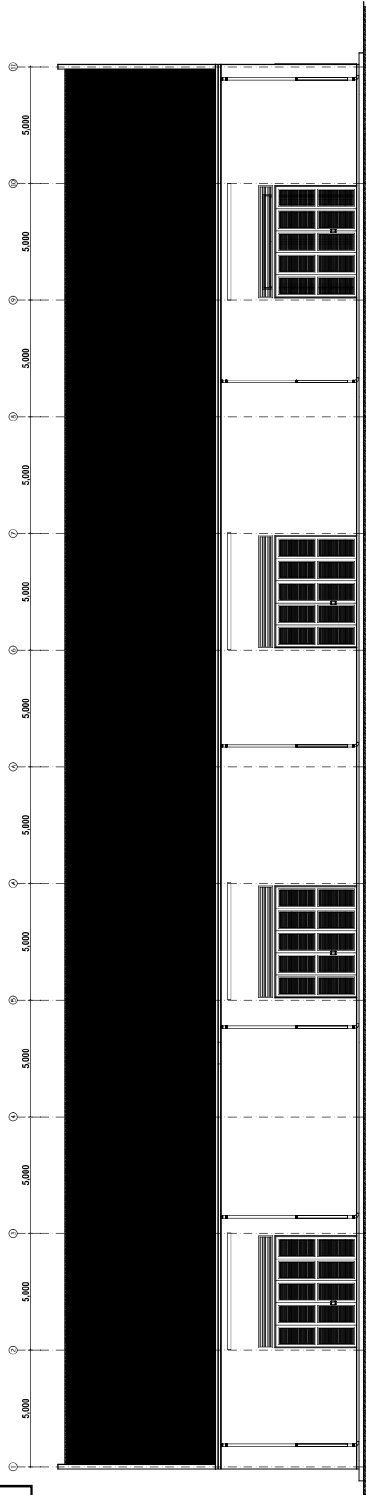
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Project No: **1000**

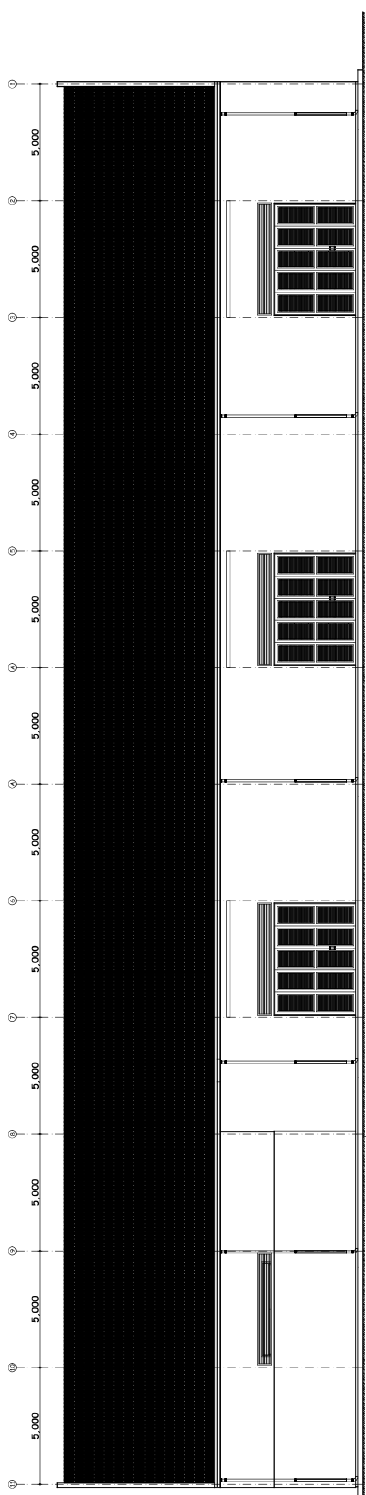
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# Kween Plans

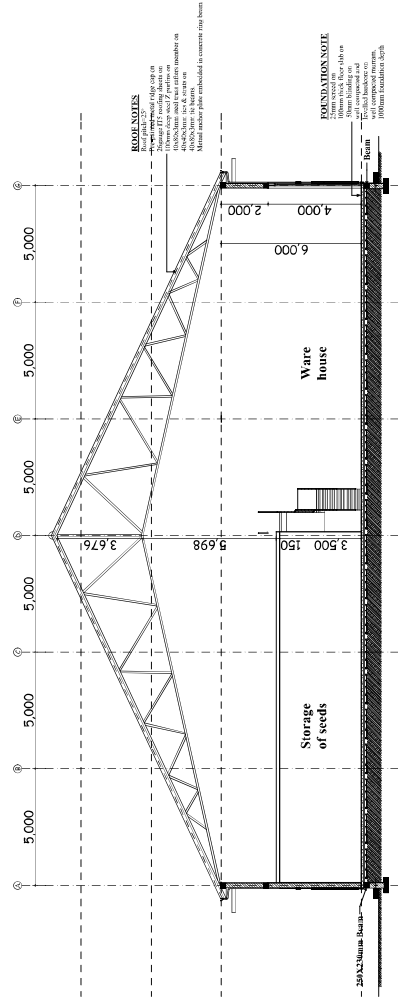
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**ELEVATION 1**  
SCALE 1:100



**ELEVATION 3**  
SCALE 1:100



**Building Section**  
SCALE 1:100

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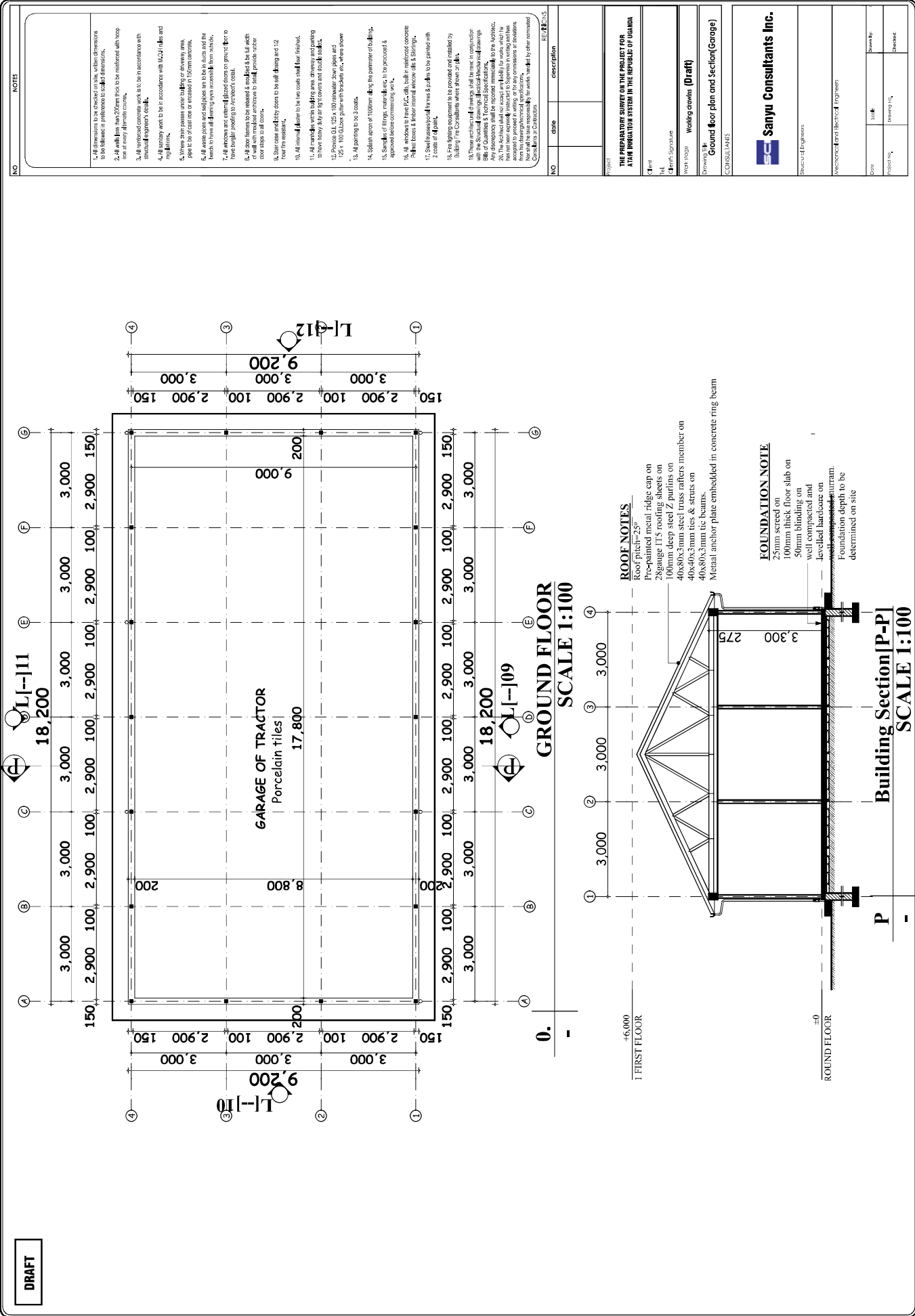
description

REVISIONS

1. All dimensions to be indicated in millimeters. Dimensions shall be rounded up to the nearest millimeter.
2. All walls shall be 200mm thick to be rendered with hoop reinforcement.
3. All reinforced concrete work to be in accordance with relevant Engineering Codes.
4. All primary work to be in accordance with M.C.P. files and specifications.
5. Where slabs are under existing or existing area, they shall be cast on a minimum 100mm concrete.
6. All waste pipes and pipes are to be recessed into the concrete to be of 50mm depth from the bottom.
7. All windows and doors shall be set down on ground floor to have a height of 2100mm above ground level.
8. All doors to be solid & moulded & to be 1800mm high & 900mm wide. All doors to be 1800mm high & 900mm wide.
9. Site cases shall be fully sealed to be self-cleaning and 172mm high.
10. All internal plaster to be two coats and 12mm thick.
11. All internal walls to be finished with 12mm thick plaster to have a finish of 1800mm and 1800mm thick.
12. Provide C.I. 25 x 100mm rainwater down pipes and 125 x 100mm G.I. pipes with translucent down stream.
13. All painting to be 3 coats.
14. Submit a report of 1000mm along the perimeter of building.
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| Project:                            | <b>THE PREPARATORY SURVEY OF THE PROJECT FOR A RAIN WATER SYSTEM IN THE REPUBLIC OF GUINEA</b> |           |          |
| Client:                             | Sanyu Consultants Inc.                                                                         |           |          |
| Working drawings (Draft)            | Section and Elevation (Ware house)                                                             |           |          |
| CONSULTANTS                         | Sanyu Consultants Inc.                                                                         |           |          |
| Structural Engineers                | Sanyu Consultants Inc.                                                                         |           |          |
| Mechanical and Electrical Engineers | Sanyu Consultants Inc.                                                                         |           |          |
| Date:                               | Scale:                                                                                         | Drawn by: | Checked: |

# Kween Plans



**DRAFT**

NO. NOTES

1. All dimensions to be checked on site, within dimensions to be allowed in preference to factory dimensions.
2. All walls less than 200mm thick to be reinforced with hoops in every alternate course.
3. All reinforced concrete work to be in accordance with structural design & code.
4. All masonry work to be in accordance with MCA rules and regulations.
5. Where rain passes under building or driveway area, place it to be cast out or enclosed in 150mm concrete.
6. All waste pipes and soil pipes are to be in place and the joints to have all their joints sealed with mastic.
7. All windows and external glazed doors on ground floor to have double glazing to protect cost.
8. All door frames to be treated & sealed to be full with mastic to prevent moisture to build, provide other door seals to all doors.
9. Steel cases and dry doors to be self-aligning and 1/2 inch from wall.
10. All internal doors to be iron case steel door finish.
11. All windows which building are driveway and parking to have heavy duty fly or fly covers and double glazing.
12. Provide G.L. 125 x 100 mm water down pipes and 125 x 100 G.L. down gutter with brackets etc. where shown.
13. All painting to be 3 coats.
14. Slatting steps of 100mm. 40 by the perimeter of building.
15. Sundry fittings, materials, etc. to be provided & approved by the contractor.
16. All items to be installed in accordance with drawings.
17. Steel reinforcement for walls & pillars to be placed with a cover of 40mm.
18. The fitting equipment to be provided one (1) each by the contractor and the contractor to be shown on drawings.
19. These drawings are prepared by the contractor in accordance with the specifications of the South African Council of Quantity Surveyors & Technical Specifications. Any discrepancy shall be reported immediately to the architect. The contractor shall be responsible for any omissions or omissions in the drawings. The contractor shall be responsible for any omissions or omissions in the drawings. The contractor shall be responsible for any omissions or omissions in the drawings.

NO. date description

| PROJECT                                                                               |          |
|---------------------------------------------------------------------------------------|----------|
| THE PREPARATORY SURVEY OF THE PROJECT FOR A NEW BUILDING FOR THE REPAIR OF FOUNDATION |          |
| Client                                                                                |          |
| Tel                                                                                   |          |
| Client Signature                                                                      |          |
| Working drawings (Draft)                                                              |          |
| Drawing No.                                                                           |          |
| Ground floor plan and section (Garage)                                                |          |
| CONSULTANTS                                                                           |          |
|                                                                                       |          |
| Structural Engineers                                                                  |          |
| Mechanical and Electrical Engineers                                                   |          |
| Date                                                                                  | Scale    |
| Prepared by                                                                           | Drawn by |
| Checked by                                                                            | Checked  |

**ROOF NOTES**

- Roof pitch=25°
- Pre-painted metal ridge cap on
- 28 gauge 175 roofing sheets on
- 100mm deep steel Z purlins on
- 40x80x3mm steel truss rafters member on
- 40x40x3mm ties & struts on
- 40x80x3mm tie beams.
- Metal anchor plate embedded in concrete ring beam

**FOUNDATION NOTE**

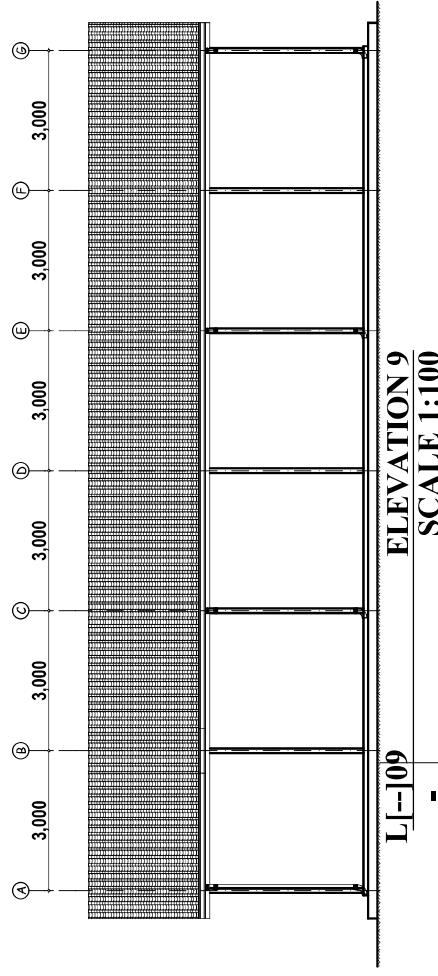
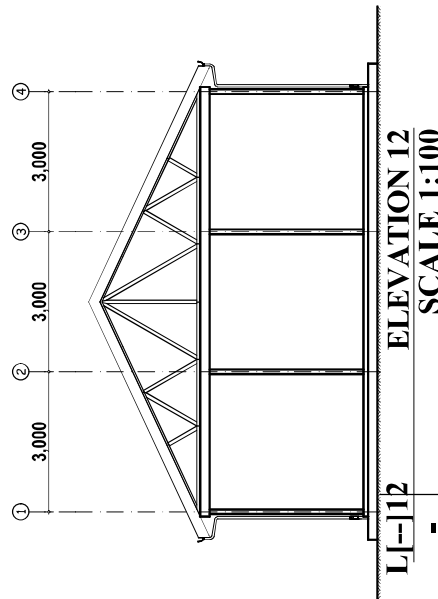
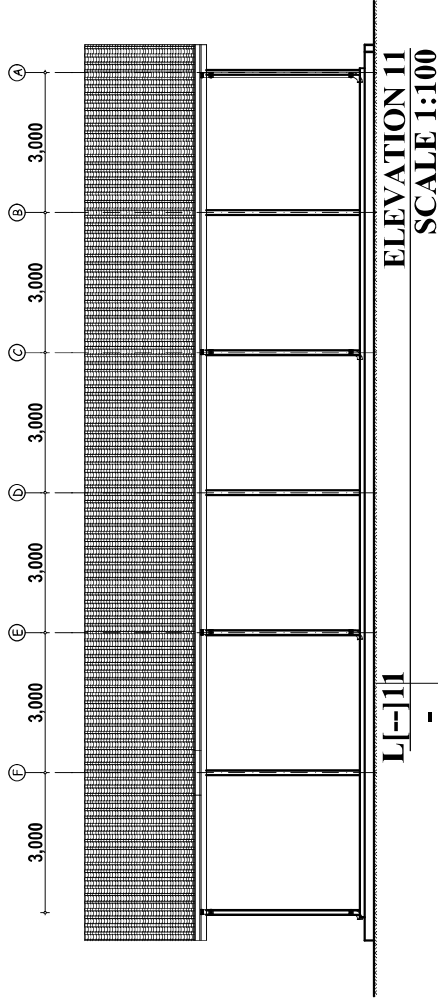
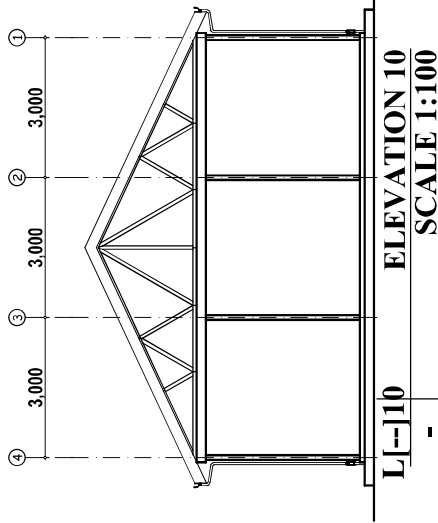
- 25mm screed on
- 100mm thick floor slab on
- 50mm blinding on
- well compacted and levelled hardcore on
- Foundation depth to be determined on site

**GROUND FLOOR SCALE 1:100**

**Building Section P-P SCALE 1:100**

# Kween Plans

DRAFT



NO

NOTES

1. All dimensions to be checked on site, within dimensions to be allowed in preference to factory dimensions.
2. All walls less than 200mm thick to be reinforced with hoop bars at every alternate course.
3. All reinforced concrete work to be in accordance with structural design & detail.
4. All masonry to be in accordance with MJ21 rules and regulations.
5. Where rain passes under building or driveway area, place top of gas trap or enclosed in 100mm concrete.
6. All waste pipes and soil pipes are to be in ducts and the ducts to have all floor levels accessible from outside.
7. All windows and external glazed doors on ground floor to have double glazing to prevent heat loss.
8. All door frames to be treated & sealed to be all with concrete to prevent moisture to build under other concrete to all doors.
9. Steel reinforcement to be self boring and 12 size for walls.
10. All internal doors to be low cost steel foot finished.
11. All windows with building are driveway and parking to have heavy duty fly or light covers and double seals.
12. Provide G.L. 125 x 100 mm water down pipes and 125 x 100 G.L. down pipes with traps etc. where shown.
13. All painting to be 3 coats.
14. Slightly slope of 1:100mm to be the perimeter of building.
15. Sample fittings, materials, to be purchased & approved by the contractor.
16. Windows to have 150mm thick reinforced concrete lintels & frames and window and sills.
17. Steel reinforcement frames & pillars to be placed with a cover of 40mm.
18. The lifting equipment to be provided one (1) by the contractor to be used where shown on plan.
19. The structural drawings shall be used in conjunction with the specifications and standards of the Building Code of Queensland & Technical Specifications. Any discrepancy shall be reported immediately to the architect. The contractor shall be responsible for any omissions or omissions to be provided in writing, or for any omissions or omissions that shall be the responsibility for works, provided by other nominated contractors in contract.

NO

description

Project

THE PREPARATION SURVEY ON THE PROJECT FOR A HIGH RISE BUILDING SYSTEM IN THE TERRACE OF QUANDA

Client

Unit

Client's Signature

Working drawings (Draft)

System's

Elevation (Garage)

CONSULTANTS



Structural Engineers

Mechanical and Electrical Engineers

Date

Scale

Drawn by

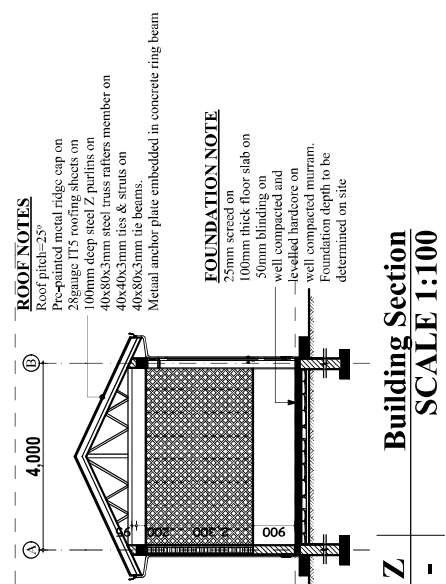
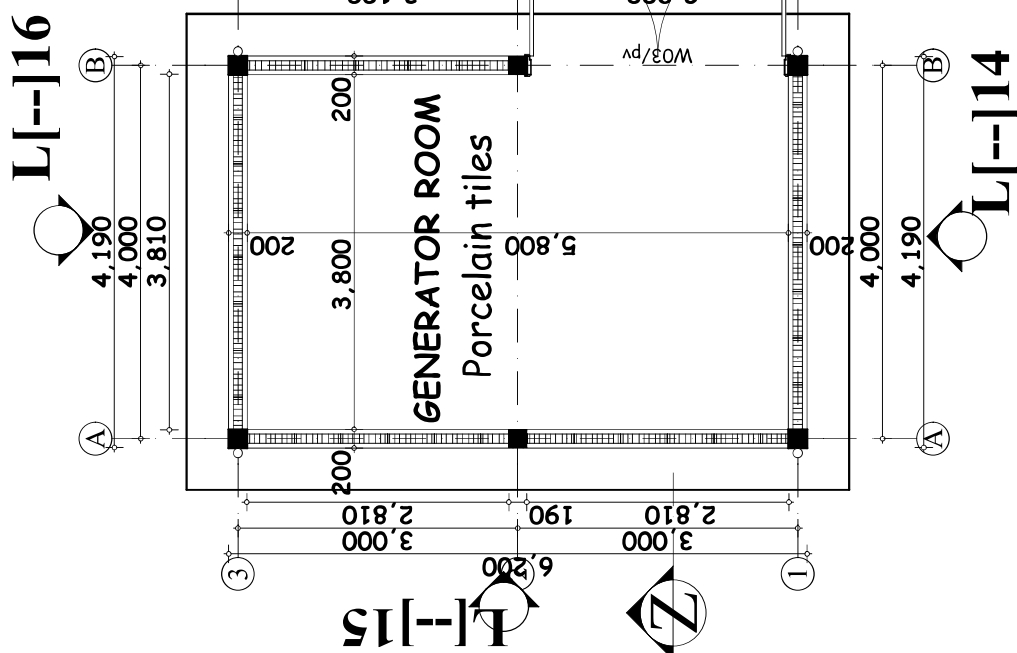
Checked







DRAFT



Building Section  
SCALE 1:100

| NO | DATE | DESCRIPTION | REVISIONS |
|----|------|-------------|-----------|
|    |      |             |           |
|    |      |             |           |

Project: THE PREPARATION SUMMIT OF THE PROJECT FOR A REHABILITATION SYSTEM IN THE PROVINCE OF QUNDA

Client: ...

Scale: Working drawings (Draft)

Drawn by: ...

Checked by: ...

Structural Engineers: ...

Mechanical and Electrical Engineers: ...

Sanyu Consultants Inc.

Structural Engineers

Mechanical and Electrical Engineers

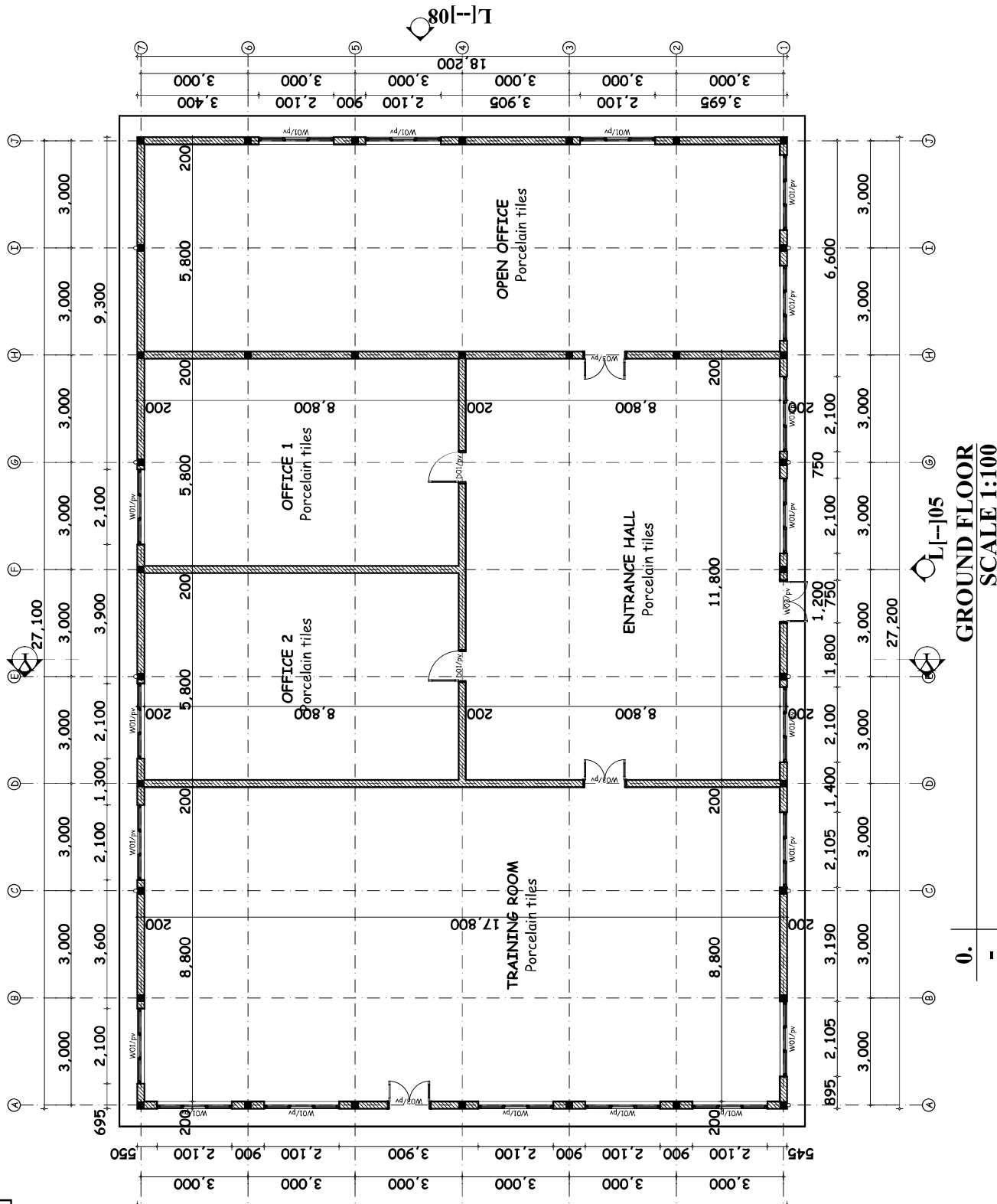
Done: ...

Checked: ...



**DRAFT**

| NO  | NOTES                                                                                                             |
|-----|-------------------------------------------------------------------------------------------------------------------|
| 1.  | All dimensions to be checked on site, within 5% tolerance to be allowed in preference to field measurements.      |
| 2.  | All walls to be finished with plaster, with top surface to be finished to level.                                  |
| 3.  | All reinforced concrete work to be in accordance with structural drawings.                                        |
| 4.  | Primary work to be in accordance with W.O.I. and structural drawings.                                             |
| 5.  | Where steel plates are used in any of the above areas, they shall be of the same grade as the main reinforcement. |
| 6.  | Where plates and reinforcement are to be used, the reinforcement shall be placed in accordance with the design.   |
| 7.  | All windows and external glazed doors on ground floor to be finished to the correct level.                        |
| 8.  | All door frames to be finished to the correct level with the door to be finished to the correct level.            |
| 9.  | Where a door is to be finished to the correct level, the door shall be finished to the correct level.             |
| 10. | All internal doors to be of the same size and finish.                                                             |
| 11. | All windows to be of the same size and finish.                                                                    |
| 12. | Where a window is to be finished to the correct level, the window shall be finished to the correct level.         |
| 13. | All painting to be in accordance with the design.                                                                 |
| 14. | Where a wall is to be finished to the correct level, the wall shall be finished to the correct level.             |
| 15. | Where a ceiling is to be finished to the correct level, the ceiling shall be finished to the correct level.       |
| 16. | Where a floor is to be finished to the correct level, the floor shall be finished to the correct level.           |
| 17. | Where a staircase is to be finished to the correct level, the staircase shall be finished to the correct level.   |
| 18. | Where a lift is to be finished to the correct level, the lift shall be finished to the correct level.             |
| 19. | Where a ramp is to be finished to the correct level, the ramp shall be finished to the correct level.             |
| 20. | Where a platform is to be finished to the correct level, the platform shall be finished to the correct level.     |
| 21. | Where a landing is to be finished to the correct level, the landing shall be finished to the correct level.       |
| 22. | Where a shaft is to be finished to the correct level, the shaft shall be finished to the correct level.           |
| 23. | Where a well is to be finished to the correct level, the well shall be finished to the correct level.             |
| 24. | Where a tank is to be finished to the correct level, the tank shall be finished to the correct level.             |
| 25. | Where a chamber is to be finished to the correct level, the chamber shall be finished to the correct level.       |
| 26. | Where a room is to be finished to the correct level, the room shall be finished to the correct level.             |
| 27. | Where a suite is to be finished to the correct level, the suite shall be finished to the correct level.           |
| 28. | Where a flat is to be finished to the correct level, the flat shall be finished to the correct level.             |
| 29. | Where a house is to be finished to the correct level, the house shall be finished to the correct level.           |
| 30. | Where a building is to be finished to the correct level, the building shall be finished to the correct level.     |

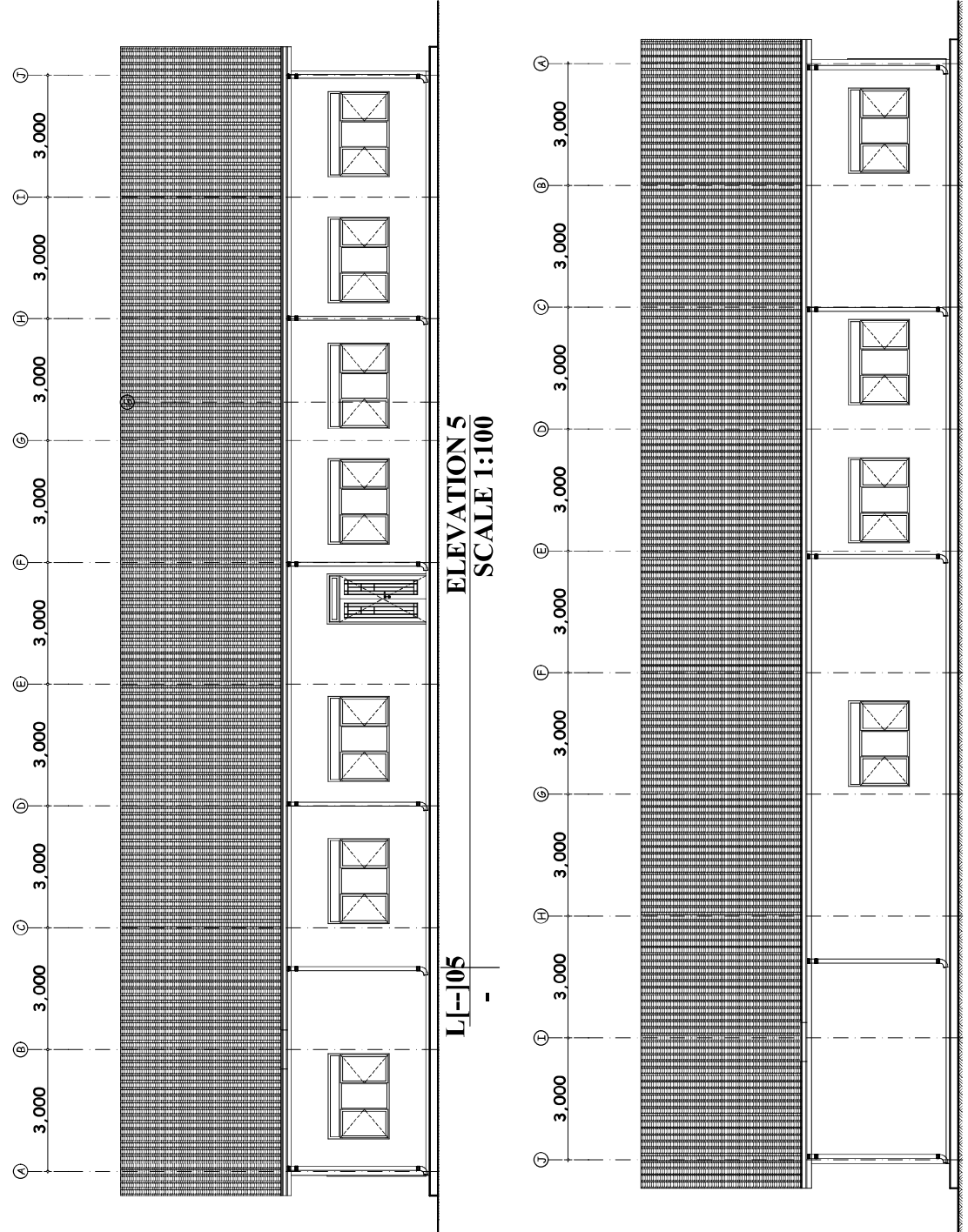


**GROUND FLOOR**  
**SCALE 1:100**

**0.**

# Kween Plans

**DRAFT**



**ELEVATION 5**  
**SCALE 1:100**

NO

NOTES

1. All dimensions to be checked against, within dimensions to be allowed in preference to other statements.
2. All walls less than 200mm thick to be reinforced with hoop iron in every alternate course.
3. All reinforced concrete work to be in accordance with structural design & detail.
4. All masonry work to be in accordance with MCM rules and regulations.
5. Where rain passes under building or driveway area, place it by a gas trap or enclosed in 150mm concrete.
6. All waste pipes and soil pipes are to be in ducts and the ducts to have all their joints made with lead or bitumastic.
7. All windows and external glazed doors on ground floor to have bronze powder to protect cost.
8. All door frames to be treated & sealed to be all with concrete to ensure to finish, provide outer concrete to all doors.
9. Steel casework & heavy doors to be self closing and 1/2 hour fire resistant.
10. All internal doors to be low cost steel door finish.
11. All windows with building are driveway and parking to have heavy duty light covers and double glazing.
12. Provide G.L. 125 x 100 minimum door plates and 125 x 100 floor plates with brackets etc. where shown.
13. All painting to be 3 coats.
14. Spacing of 100mm dia by the perimeter of building.
15. Sample of fittings, materials, etc. to be provided & approved by the contractor.
16. All windows to have 100 dia. call for details concrete structure & reinforced concrete slab & beams.
17. Steel reinforcement frames & pillars to be painted with 2 coats of 40mm.
18. The painting equipment to be provided one (1) established by the contractor where shown on plan.
19. The structural drawings shall be based on the design of the client & the design shall be in accordance with the Code of Quantities & Technical Specifications. Any discrepancy shall be reported immediately to the architect.
20. The contractor shall be responsible for the design of the building and shall be responsible for the design of the building and shall be responsible for the design of the building.

NO

date

description

REVISIONS

Project  
**THE PREPARATORY SURVEY OF THE PROJECT FOR ARA PRODUCTION SYSTEM IN THE REPUBLIC OF UGANDA**

Client  
Name  
Client Signature

Work Shop  
**Working drawings (Draft)**

Drawn by  
**Elevations (Office & training m)**

CONSULTANTS

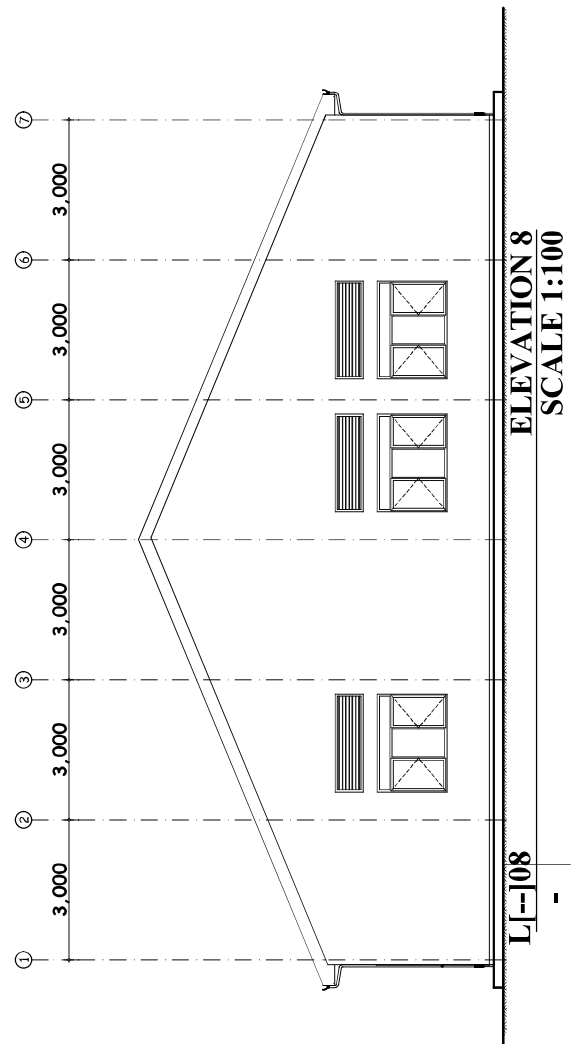
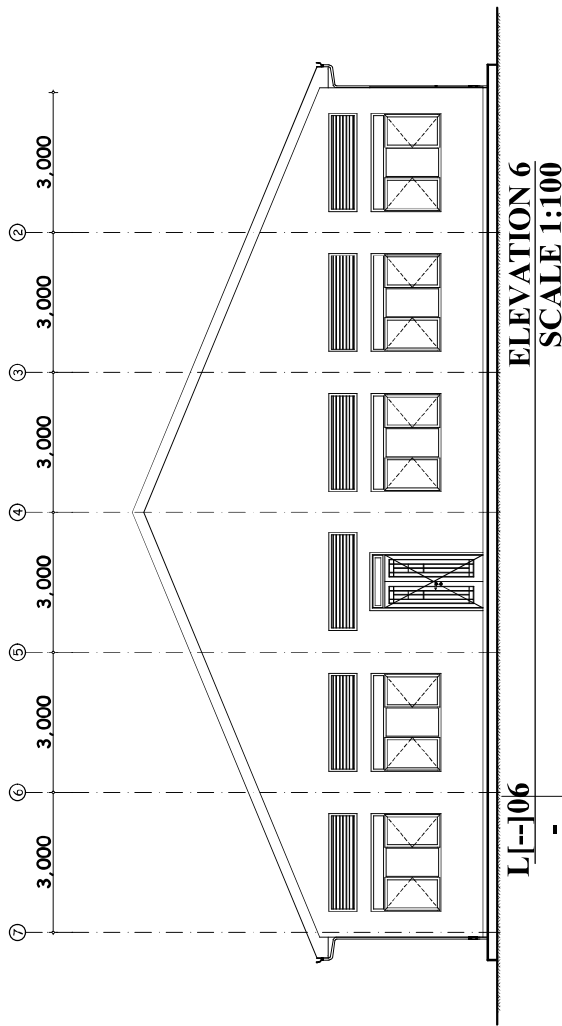
**SC Sanyu Consultants Inc.**

Structural Engineers  
Mechanical and Electrical Engineers

|      |       |          |
|------|-------|----------|
| Date | Scale | Drawn by |
|      |       |          |
|      |       |          |

# Kween Plans

DRAFT



NO

date

description

REVISES

1. All dimensions to be checked on site, within dimensions to be allowed in preference to factory dimensions.
2. All walls less than 200mm thick to be reinforced with hoop iron at every alternate course.
3. All reinforced concrete work to be in accordance with structural drawings & notes.
4. All primary work to be in accordance with M.C.A. rules and regulations.
5. Where rain passes under building or driveway area, place to be of cast iron or enclosed in 150mm concrete.
6. All waste pipes and soil pipes are to be in ducts and the ducts to have all floor to floor accessibly from outside.
7. All windows and external glazed doors on ground floor to have double glazing to correct code.
8. All door frames to be reinforced & sealed to be full with concrete to prevent moisture to spill, provide other access to all doors.
9. Steel cases and heavy doors to be self closing and 1/2 hour fire resistant.
10. All internal doors to be low cost steel foot finished.
11. All windows with building area driveway and parking to have heavy duty fly screens and double glazing.
12. Provide G.L. 125 x 100 mm water down pipes and 125 x 100 G.L. down pipes with traps etc. where shown.
13. All painting to be 3 coats.
14. Spacing of 100mm dia. to be perimeter of building.
15. Sample of fittings, materials, etc. to be produced & approved by the contracting party.
16. Windows to have 100 dia. with fly screens and concrete to be finished & waterproofed before building.
17. Steel reinforcement frames & pillars to be painted with 2 coats of 400gms.
18. The lifting equipment to be provided one installed by the contractor & one stored on site when not in use.
19. The structural drawings shall be based on regulations of the Building Code of Australia & Technical Specifications. Any discrepancy shall be reported immediately to the architect. The contractor shall be responsible for any omissions or omissions to be provided in writing, or for any omissions or omissions that shall be the responsibility for works, handled by other nominated Subcontractors or Contractors.

**PROJECT**  
THE PROVISION SUPPLY OF THE PROJECT FOR  
A NEW BUILDING SYSTEM IN THE STATE OF QUEENSLAND

**CLIENT**  
Tel: \_\_\_\_\_  
Client Signature: \_\_\_\_\_

**WORK SHOP**  
Working drawings (Draft)

**DESIGNED BY**  
Elevators (Office & training m)

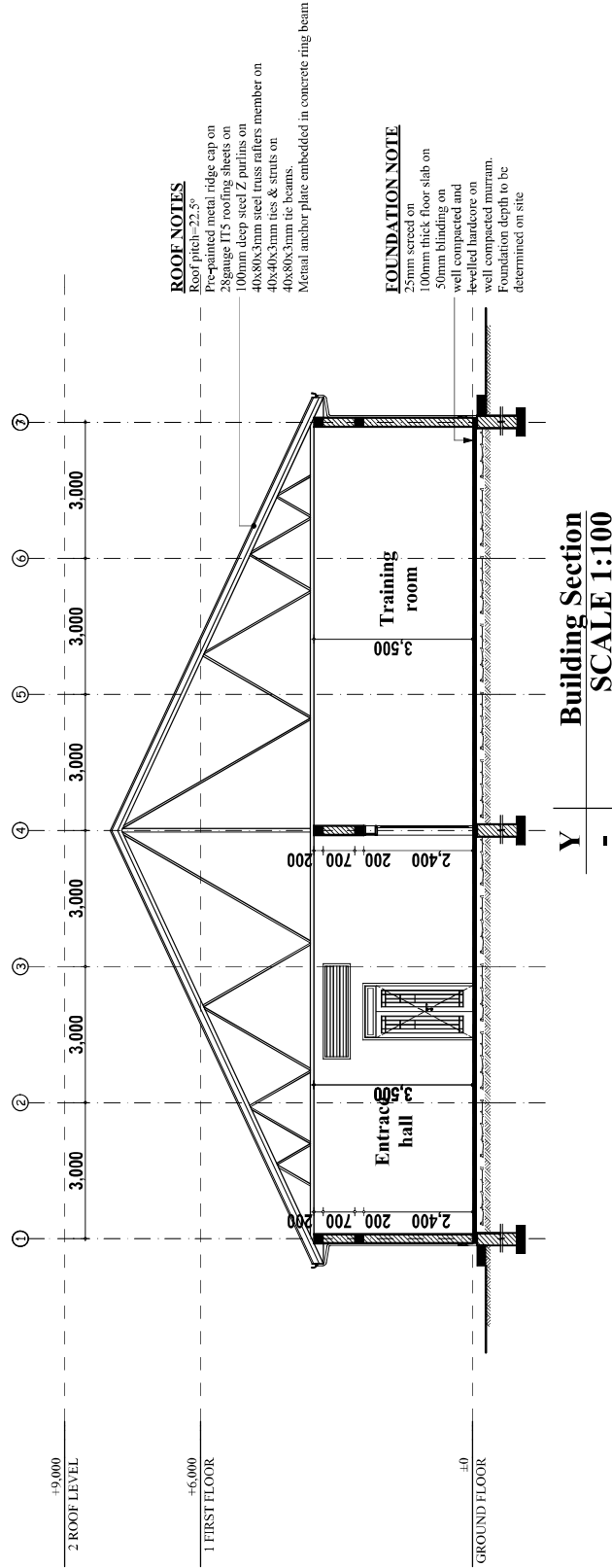
**CONSULTANTS**

**SC Sanyu Consultants Inc.**

Structural Engineers  
Mechanical and Electrical Engineers

|             |               |          |
|-------------|---------------|----------|
| Date        | Scale         | Drawn By |
| Revised No. | Issued by No. | Checked  |

**DRAFT**



| NO | DATE | DESCRIPTION | REV |
|----|------|-------------|-----|
|    |      |             |     |

| NO  | NOTES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.  | All dimensions to be checked on site, within dimensions to be obtained in preference to building instructions.                                                                                                                                                                                                                                                                                                                                                                                |
| 2.  | All walls less than 200mm thick to be reinforced with hoop iron in every alternate course.                                                                                                                                                                                                                                                                                                                                                                                                    |
| 3.  | All reinforced concrete work to be in accordance with structural drawings & details.                                                                                                                                                                                                                                                                                                                                                                                                          |
| 4.  | All primary work to be in accordance with N.C.C. rules and regulations.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 5.  | Where steel passes under building or driveway area, plate to be of cast iron or encased in 150mm concrete.                                                                                                                                                                                                                                                                                                                                                                                    |
| 6.  | All waste pipes and soil pipes are to be in ducts and the ducts to have all bearing types necessary from outside.                                                                                                                                                                                                                                                                                                                                                                             |
| 7.  | All windows and external glazed doors on ground floor to have double glazing to prevent heat loss.                                                                                                                                                                                                                                                                                                                                                                                            |
| 8.  | All door frames to be reinforced & embedded in full with concrete to prevent fire spread to other side of door.                                                                                                                                                                                                                                                                                                                                                                               |
| 9.  | Steel cases for heavy doors to be self-aligning and 1/2 inch fire resistant.                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 10. | All internal doors to be two case steel door finish.                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 11. | All windows with building area driveway and parking to have heavy duty fly or fly covers and double sashes.                                                                                                                                                                                                                                                                                                                                                                                   |
| 12. | Provision G.L. 125 x 100 mm water down pipes and 125 x 100 G.L. down gullies with traps etc. where shown.                                                                                                                                                                                                                                                                                                                                                                                     |
| 13. | All painting to be as shown.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 14. | Spall size of 100mm. 4/8 by the perimeter of walls.                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 15. | Sample of fillings, materials etc. to be prepared & approved before commencing work.                                                                                                                                                                                                                                                                                                                                                                                                          |
| 16. | Where windows to have P.C. sill, call for details of concrete.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 17. | Steel reinforcement for ties & purlins to be pinned with a gauge of 40mm.                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 18. | The lifting equipment to be provided one (1) rated by building the contractor where shown on P.L.                                                                                                                                                                                                                                                                                                                                                                                             |
| 19. | The structural drawings shall be used in conjunction with the Bill of Materials & Technical Specifications. Any discrepancy shall be reported immediately to the architect. The contractor shall be responsible for ensuring that the drawings have been checked and approved by the architect prior to proceeding with the work. The contractor shall be responsible for any omissions or omissions in the drawings and shall be responsible for any omissions or omissions in the drawings. |

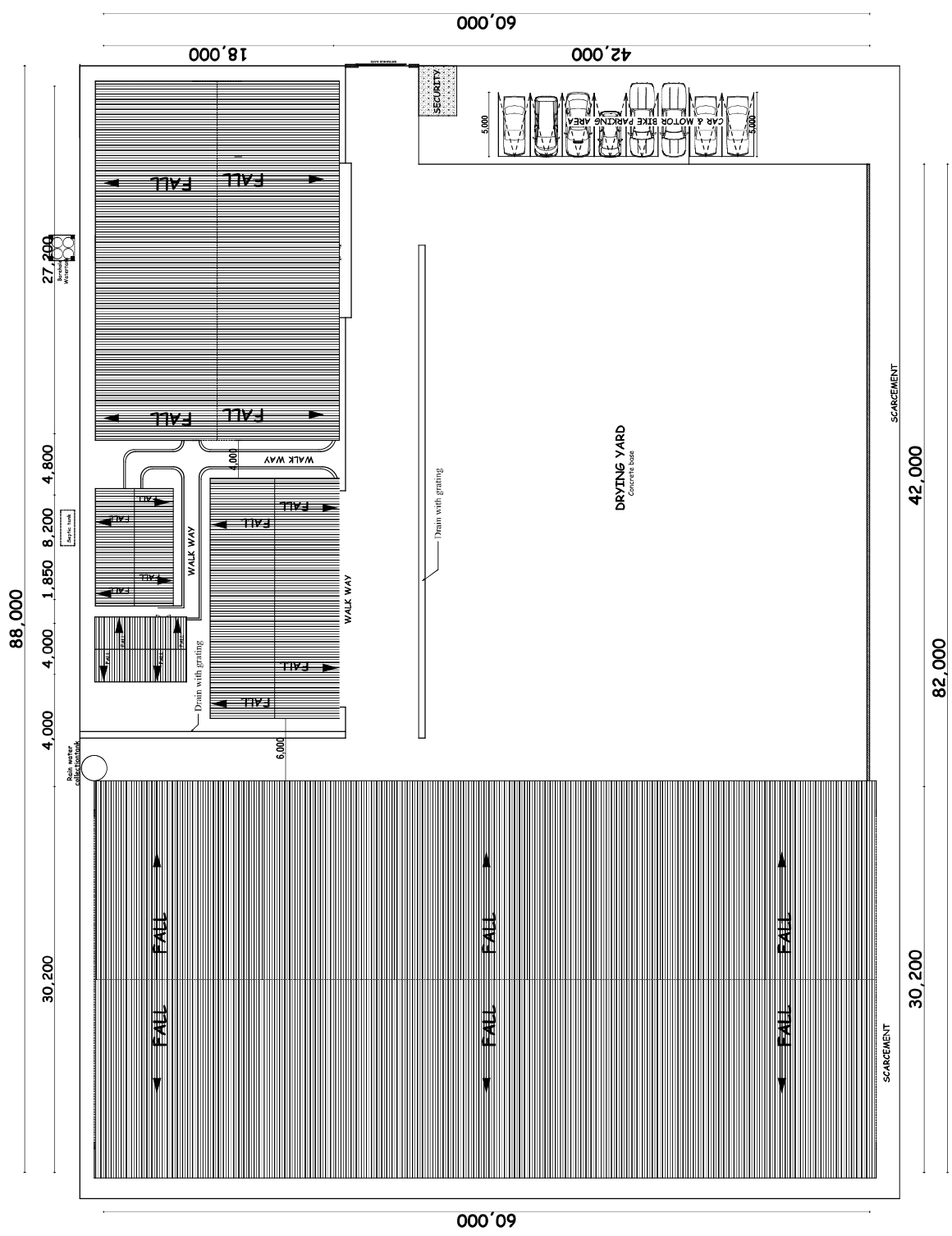
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|------------|---------------------------------------------------------------------------------------------------|
| Project    | THE PREPARATORY SURVEY OF THE PROJECT FOR A TRAINING ROOM SYSTEM IN THE REHABILITATION OF QUINALA |
| Client     |                                                                                                   |
| Drawn      |                                                                                                   |
| Checked    |                                                                                                   |
| Work shop  | Working drawings (Draft)                                                                          |
| Drawn by   | Section (Office & Training rm)                                                                    |
| Checked by |                                                                                                   |
| Scale      |                                                                                                   |
| Drawn by   |                                                                                                   |
| Checked by |                                                                                                   |

**Sanyu Consultants Inc.**

Structural Engineers  
 Mechanical and Electrical Engineers

# Kween Plans

**DRAFT**



| NO   | date | description                                                                                       | REVISED |
|------|------|---------------------------------------------------------------------------------------------------|---------|
| 1.   |      | As shown on the site plan, all dimensions shall be in accordance with the approved site plan.     |         |
| 2.   |      | All walls shall be 200mm thick to be finished with hoop reinforcement.                            |         |
| 3.   |      | All reinforced concrete work to be in accordance with the relevant Engineering Code.              |         |
| 4.   |      | All primary work to be in accordance with N.O.P. - 100 and applicable codes.                      |         |
| 5.   |      | When steel passes under building or driveway area, pipe to be cast in concrete in 100mm concrete. |         |
| 6.   |      | All waste pipes and all pipes are to be recessed into the concrete floor of the building.         |         |
| 7.   |      | All windows and doors to be set in concrete floor to be cast in concrete.                         |         |
| 8.   |      | All doors to be set in concrete floor to be cast in concrete.                                     |         |
| 9.   |      | All doors to be set in concrete floor to be cast in concrete.                                     |         |
| 10.  |      | All internal plaster to be two coats and finished.                                                |         |
| 11.  |      | All internal walls to be finished with 100mm concrete.                                            |         |
| 12.  |      | 125 x 100 G.I. pipes with handrails, down stream.                                                 |         |
| 13.  |      | All walls to be 3 coats.                                                                          |         |
| 14.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 15.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 16.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 17.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 18.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 19.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
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| 85.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 86.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 87.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 88.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 89.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 90.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 91.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 92.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 93.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 94.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 95.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 96.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 97.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 98.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 99.  |      | Setback of 1000mm from the perimeter of building.                                                 |         |
| 100. |      | Setback of 1000mm from the perimeter of building.                                                 |         |

0. SITE LAYOUT PLAN  
SCALE 1:150

Structural Engineers  
Mechanical and Electrical Engineers

**Sanyu Consultants Inc.**

Working drawings (Draft)  
General layout

CONSULTANTS

Scale: 1:150  
Drawing No.:  
Checked:



## Appendix 14.-Design conditions

### Standard Conditions for Structure Analysis

#### (1) Concrete

Standard cylinder is allowed to determine the compressive strength. Minimum 28 days strength of reinforced concrete and plain concrete in Japanese code:

For plain concrete  $F_{c_{cyl.}} = 18 \text{ N/mm}^2$   
 For reinforced concrete  $F_{c_{cyl.}} = 21 \text{ N/mm}^2$   
 Note) cyl : Cylinder type

Table-1: Allowable stress of concrete

| Items               |                                                                                     | Category of 28 days strength of concrete |          |          | Remarks       |
|---------------------|-------------------------------------------------------------------------------------|------------------------------------------|----------|----------|---------------|
| Reinforced concrete | 1) 28 days strength : $\sigma_{ck}$ (N/mm <sup>2</sup> )                            | 18(cyl.)                                 | 21(cyl.) | 24(cyl.) | Japanese code |
|                     | 2) Allowable compressive stress due to bending : $\sigma_{ca}$ (N/mm <sup>2</sup> ) | 7                                        | 8        | 9        |               |
| Plain concrete      | 1) 28 days strength : $\sigma_{ck}$ (N/mm <sup>2</sup> )                            | 18(cyl.)                                 | 21(cyl.) | -        |               |
|                     | 2) Allowable compressive stress : $\sigma_{ca}$ (N/mm <sup>2</sup> )                | 4.5                                      | 5        | -        |               |

#### (2) Shearing stress of concrete

Table-2: Shearing stress of concrete

| Items                                                 |                                                                             | Category of 28 days strength of concrete |          |          | Remarks       |
|-------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------|----------|----------|---------------|
| 28 days strength : $\sigma_{ck}$ (N/mm <sup>2</sup> ) |                                                                             | 18(cyl.)                                 | 21(cyl.) | 24(cyl.) | Japanese code |
| Shearing stress                                       | 1) burden by concrete only<br>$q_c$ (N/mm <sup>2</sup> )                    | 0.4                                      | 0.42     | 0.45     |               |
|                                                       | 2) burden by concrete and diagonal tension bar : $q_2$ (N/mm <sup>2</sup> ) | 1.8                                      | 1.9      | 2.0      |               |

#### (3) Applied situation or structure of concrete

Table-3: Application Section of Cast in-situation for Concrete

| Strength of 28 days design and concrete type                            | Applied situation and structure                                                                                                                                                                                                               | Remarks       |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Plain concrete<br>【 $\sigma_{ck}=18 \text{ N/mm}^2(\text{cyl.})$ 】      | <ul style="list-style-type: none"> <li>• Bed concrete of structure foundation (leveling concrete)</li> <li>• Plain concrete structure, foundation concrete etc.</li> <li>• Situation of none moment on structure is usually acted.</li> </ul> | Japanese code |
| Reinforced concrete<br>【 $\sigma_{ck}=21 \text{ N/mm}^2(\text{cyl.})$ 】 | <ul style="list-style-type: none"> <li>• Main body of Regulator, Canal structure, flume, conduit, Siphon etc.</li> <li>• Situation of moment on structure is usually acted</li> </ul>                                                         |               |
| Reinforced concrete<br>【 $\sigma_{ck}=24 \text{ N/mm}^2(\text{cyl.})$ 】 | <ul style="list-style-type: none"> <li>• Very important structures or elements</li> </ul>                                                                                                                                                     |               |

#### (4) Reinforced steel bar

Table-4: Allowable stress intensity for reinforcing bar

| Items                          | Category of available steel bar (N/mm <sup>2</sup> ) | Remarks       |
|--------------------------------|------------------------------------------------------|---------------|
|                                | Steel 250                                            | Grandees code |
| Up to and including 16         | 200                                                  |               |
| Over 16 up to and including 20 | 185                                                  |               |
| Over 20 up to and including 25 | 170                                                  |               |
| Over 25 up to and including 32 | 160                                                  |               |
| Over 32 up to and including 40 | 150                                                  |               |

Note) Source : TABLE 6304/10 TEST STRESS RANGES FOR NOMINAL BAR SIZES

(5) Unit Weight

Table-5: Concrete Unit Weight (Unit: kN/m<sup>3</sup>)

| Material                           | Unit Weight | Japanese code |
|------------------------------------|-------------|---------------|
| Plain Concrete $\gamma_c$          | 23          |               |
| Reinforcement Concrete $\gamma'_c$ | 24.5        |               |
| Water $\gamma_w$                   | 9.8         |               |

Table-6: Unit Weight of Back-filling Material

| Back-filling Material             | Unit Weight or Density (Unit: kN/m <sup>3</sup> ) |                                  |                                  | Shear strength                  |                                       | Japanese code |
|-----------------------------------|---------------------------------------------------|----------------------------------|----------------------------------|---------------------------------|---------------------------------------|---------------|
|                                   | Wet Density $\gamma_t$                            | Saturated Density $\gamma_{sat}$ | Submerged Density $\gamma_{sub}$ | Cohesion c (KN/m <sup>2</sup> ) | Internal friction degree $\phi^\circ$ |               |
| General Material (Excavated soil) | 18                                                | 20                               | 10                               | 0                               | 30                                    |               |

(6) Load

Table-7: Wheel load

| Truck type | Total weight | Occupied area                | Load                                  | Remarks       |
|------------|--------------|------------------------------|---------------------------------------|---------------|
| TL-25      | 245kN        | 9m×2.75m=24.75m <sup>2</sup> | 245÷24.75= 9.90 ≒ 10kN/m <sup>2</sup> | Japanese code |
| TL-14      | 137kN        | 7m×2.75m=19.25m <sup>2</sup> | 137÷19.25= 7.11 ≒ 7kN/m <sup>2</sup>  |               |
| TL-10      | 98kN         | 7m×2.75m=19.25m <sup>2</sup> | 98÷19.25= 5.09 ≒ 5kN/m <sup>2</sup>   |               |

Table-8: Crowd Load

| type            | Load                 | Remarks       |
|-----------------|----------------------|---------------|
| Crowd Load type | 3 KN/ m <sup>2</sup> | Japanese code |

(7) Stability Condition

a) Overturning

Japanese code

B: Length of base (m)

Normal time: eccentric distance-----  $e \leq \frac{B}{6}$

Seismic time: eccentric distance-----  $e \leq \frac{B}{3}$  B, if any necessary (: reference)

b) Sliding

Japanese code

Fs: Safety factor

B: Base width of retaining wall (m)

Normal time: sliding safety factor-----  $F_s \geq 1.5$

Seismic time: sliding safety factor-----  $F_s \geq 1.2$  if any necessary (: reference)

(8) Arrangement of Reinforcement and Reinforcement Coefficient

a) Unit Length

Grandees code

In principal deformed steel bar is used and diameter of reinforcement is as following table. Unit length of reinforcement is decided as 12 m.

Table-9 : Steel –bar

| Cross sectional area (mm <sup>2</sup> ) | Mass per meter run (kg) | Cross sectional area (mm <sup>2</sup> ) |
|-----------------------------------------|-------------------------|-----------------------------------------|
| 8                                       | 0.395                   | 50.3                                    |
| 10                                      | 0.616                   | 78.5                                    |
| 12                                      | 0.888                   | 113.1                                   |
| 16                                      | 1.579                   | 201.1                                   |
| 20                                      | 2.466                   | 314.2                                   |
| 25                                      | 3.854                   | 490.9                                   |
| 32                                      | 6.313                   | 804.2                                   |

Note) Source : TABLE 6304/4 CROSS SECTIONAL AREA AND MASS OF CARBON STEEL BARS FOR THE REINFORCEMENT OF CONCRETE

(10) Cover over Reinforcement

Distance from center of main reinforcement to concrete surface is made as follow:

Table-10: Standard of Cover over Reinforcement

| Construction condition                                                                             | Diameter of main reinforcement | Cover distance | Japanese standard |
|----------------------------------------------------------------------------------------------------|--------------------------------|----------------|-------------------|
| Construction surface of form or leveling concrete                                                  |                                | 70mm           |                   |
| Down side of base concrete at casting directly under ground (Footing, flume, culvert, siphon etc.) |                                | 100mm          |                   |
| Over pile head (Case at penetration of pile head in base concrete greater or equal to 50 mm)       |                                | 50mm           |                   |

(11) Length of Anchorage for Reinforcement Bars

Length of anchorage for reinforcement bars are decided as 30φ according to the follows' mentions. Length of anchorage for reinforcement bars is greater or equal to the length which calculated with the following formula.

$$L = \frac{\phi \cdot \sigma_{sa}}{4 \tau_{oa}}$$

L : Length of anchorage reinforcement bars (mm)

Toa : Allowable bond stress of concrete (1.5 N/mm<sup>2</sup>)

σsa : Allowable tensile stress of reinforcement (196 N/mm<sup>2</sup>)

φ : Diameter of reinforcement (mm)

Therefore,  $L = 175 \sim 185 \times \phi / (4 \times 1.5) = 29.17 \sim 30.83 \phi \approx 30 \phi$

2. Seismic Coefficient

According to the ISI893(part I):2002, the targeted area is classified to Zone III, namely Z=0.16, and importance factor, I=1.5 (public building). As a result of assessment, the seismic coefficient should be less than 0.05. Therefore, the stress analysis in case of seismic load will not be impact on the critical analysis case, because the allowable capacity and safe factor of seismic conditions should be ease compared to the normal condition. Accordingly, the seismic conditions should not be included to the examination.

End

| No.                                      | Name of Materials                                                                                      | Publishing Organization/ Source | Form       | Type                |                              |                           |           | Categorization  | Remarks |
|------------------------------------------|--------------------------------------------------------------------------------------------------------|---------------------------------|------------|---------------------|------------------------------|---------------------------|-----------|-----------------|---------|
|                                          |                                                                                                        |                                 |            | Collected materials | Created materials by Experts | Created materials by JICA | Text book |                 |         |
| 1. Policy, National Strategy, Laws, etc. |                                                                                                        |                                 |            |                     |                              |                           |           |                 |         |
| 1-1                                      | The Constitution of the Republic of Uganda, 1995                                                       | Government of Uganda            | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-2                                      | The National Environment Act, 1995                                                                     | Government of Uganda            | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-3                                      | The Environmental Impact Assessment Regulation, 1998                                                   | Government of Uganda            | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-4                                      | The National Environment (Audit) Regulations, 2006                                                     | Government of Uganda            | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-5                                      | The National Environment (Conduct and Certification of Environmental Practitioners) Regulations, 2003. | Government of Uganda            | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-6                                      | The National Environment (Minimum Standards For Management Of Soil Quality) Regulations, 2001          | Government of Uganda            | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-7                                      | The National Environment (Noise Standards And Control) Regulations, 2003                               | Government of Uganda            | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-8                                      | The National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations, 1999 | Government of Uganda            | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-9                                      | The National Environment (Waste Management) Regulations. Arrangement of Regulations                    | Government of Uganda            | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-10                                     | The National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, 2000.         | Government of Uganda            | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-11                                     | The AGRICULTURAL Chemicals (Control) Act, 2006.                                                        | Government of Uganda            | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-12                                     | The Control of Agricultural Chemicals (Registration and Control) Regulations.                          | Government of Uganda            | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-13                                     | The Water Act, 1997                                                                                    | Government of Uganda            | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |

| No.                                        | Name of Materials                                                                                | Publishing Organization/ Source                                        | Form       | Type                |                              |                           |           | Categorization  | Remarks |
|--------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|------------|---------------------|------------------------------|---------------------------|-----------|-----------------|---------|
|                                            |                                                                                                  |                                                                        |            | Collected materials | Created materials by Experts | Created materials by JICA | Text book |                 |         |
| 1-14                                       | The Water (Waste Discharge) Regulations, 1998                                                    | Uganda Government of Uganda                                            | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-15                                       | The Water (Water Resources) Regulations                                                          | Government of Uganda                                                   | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-16                                       | The Land Act, 1998 (amended in 2010)                                                             | Government of Uganda                                                   | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-17                                       | The Land Acquisition Act, 1965                                                                   | Government of Uganda                                                   | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-18                                       | The National Development Plan (2015/16 - 2019/20)                                                | Government of Uganda                                                   | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-19                                       | The Agricultural Sector Strategic Plan (2015/16 - 2019/20)                                       | Government of Uganda                                                   | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-20                                       | National Agricultural Policy, 2013                                                               | MAAIF, Government of Uganda                                            | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-21                                       | National Water Policy, 1999                                                                      | Ministry of Water, Government of Uganda                                | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 1-22                                       | National Land Policy, 2013                                                                       | Ministry of Lands, Housing, and Uren Development, Government of Uganda | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 2. Design code or Drawings                 |                                                                                                  |                                                                        |            |                     |                              |                           |           |                 |         |
| 2-1                                        | General Specifications for Road and Bridge Works                                                 | Ministry of Works, Housing and Communications                          | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 3. Environmental and Social Considerations |                                                                                                  |                                                                        |            |                     |                              |                           |           |                 |         |
| 3-1                                        | World Bank's Safeguard Policies                                                                  | World Bank                                                             | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 3-2                                        | The WHO Recommended Classification of Pesticides by Hazard and Guidelines to Classification 2009 | WHO                                                                    | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 3-3                                        | Pest Management Plan                                                                             | Agricultural Cluster Development Project                               | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |
| 3-4                                        | National Assessment Report on Policy and Legislation of Chemicals Management (May, 2010)         | Strategic Approach to International Chemicals Management               | Electronic | 1                   | -                            | -                         | -         | JR • CR( ) • SC |         |

| No.  | Name of Materials                                                                                                                                                 | Publishing Organization/ Source                  | Form       | Type                |                              |                           |           | Categorization | Remarks         |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|------------|---------------------|------------------------------|---------------------------|-----------|----------------|-----------------|
|      |                                                                                                                                                                   |                                                  |            | Collected materials | Created materials by Experts | Created materials by JICA | Text book |                |                 |
| 3-5  | Rice Cultivation Handbook                                                                                                                                         | Promotion of Rice Development Project, JICA      | Electronic | -                   | -                            | 1                         | -         | -              | JR • CR( ) • SC |
| 3-6  | Register of Agricultural Chemicals Registered under Section 4 of the Agricultural Chemicals (Control) Act, 2006 as at 26 <sup>th</sup> June, 2018                 | MAAIF, Government of Uganda                      | Electronic | 1                   | -                            | -                         | -         | -              | JR • CR( ) • SC |
| 3-7  | Nationally Threatened Species for Uganda, 2016                                                                                                                    | WCS, etc.                                        | Electronic | 1                   | -                            | -                         | -         | -              | JR • CR( ) • SC |
| 3-8  | Important Bird Areas in Uganda, Status and Trends 2009                                                                                                            | Birdlife international, etc.                     | Electronic | 1                   | -                            | -                         | -         | -              | JR • CR( ) • SC |
| 3-9  | Ecological Baseline Surveys of Lake Bisina – Ometa Wetlands System, Lake Mburo – Nakivali Wetlands System, 2009                                                   | IUCN, Nature Uganda, etc.                        | Electronic | 1                   | -                            | -                         | -         | -              | JR • CR( ) • SC |
| 3-10 | Project Completion Report, 2016                                                                                                                                   | National Wetlands Management Project, JICA       | Electronic | -                   | -                            | 1                         | -         | -              | JR • CR( ) • SC |
| 3-11 | Managing risks to improve farmers' livelihoods (March, 2017)                                                                                                      | MAAIF, Government of Uganda                      | Electronic | 1                   | -                            | -                         | -         | -              | JR • CR( ) • SC |
| 3-12 | The state of Uganda's biodiversity 2017 (June, 2017)                                                                                                              | Makerere University                              | Electronic | 1                   | -                            | -                         | -         | -              | JR • CR( ) • SC |
| 3-13 | Environmental Impact Assessment (EIA) Survey for the Project on Irrigation Scheme Development in Central and Eastern Uganda (PISD) Atari Final Report (Sep, 2016) | Air Water Earth (AWE) LTD                        | Electronic | 1                   | -                            | -                         | -         | -              | JR • CR( ) • SC |
| 3-14 | Integrated p e s t management framework (January, 2014)                                                                                                           | Regional Pastoral Livelihoods Resilience Project | Electronic | 1                   | -                            | -                         | -         | -              | JR • CR( ) • SC |
| 3-15 | National biodiversity strategy and action plan II (2015-2015) (Oct, 2016)                                                                                         | NEMA                                             | Electronic | 1                   | -                            | -                         | -         | -              | JR • CR( ) • SC |