Ministry of Food and Agriculture

Ghana Agricultural Sector Investment Programme

(GASIP)

DRAFT TERMS OF REFERENCE

FOR

Engagement of Consultants to design and supervise the construction of Water Harvesting Scheme

Enabling Public Infrastructure Sub -component

July 2016

TERMS OF REFERENCE

1. BACKGROUND

The Ghana Agricultural Sector Investment Programme (GASIP) is a Government of Ghana (GoG) programme designed to provide a framework for a long-term financing arrangement for private sector-led, pro-poor agricultural value chain development in Ghana. It's being financed by the International Fund for Agricultural Development (IFAD) and the Government of Ghana (GoG). The Ministry of Food and Agriculture (MOFA) is the implementing ministry.

The Programme has three components. **Component 1** (Value Chain Development) is central to ensuring strong business linkages among actors in the entire value chains of commodities to ensure they meet market or consumer and industry demands. It has three sub-components: (i) Agribusiness linkage development; (ii) Rural financial services and (iii) Climate Change Resilience—which is mainstreamed value chain interventions to reduce risks, enhance profitability and sustainable production systems. **Component 2** (Rural Value Chain Infrastructure) is aimed at providing the enabling infrastructure to catalyse value chain development. It has two sub-components: (i) Productive Infrastructure and Facilities—aimed at encouraging investments in commercial infrastructure and facilities for the selected value chains; and (ii) Enabling Public Infrastructure—aimed to finance enabling public infrastructure for the growth and viability of selected value chains. **Component 3** (Knowledge Management, Policy Support and Coordination) aimed at harnessing successful lessons for replication and providing an enabling environment for optimization of programme opportunities and benefits.

This TOR covers the Enabling Public Infrastructure Sub-component of the Programme under which water harvesting schemes shall constructed/rehabilited as indicated in the table below;

Table 1. Details of water harvesting schemes to be constructed or rehabilitated.

No.	Zone	Region	District	Sub- project Site	Description of Works
1	Southern	Volta, Greater Accra and Eastern			
2	Central	Ashanti, Western, Cenral and Brong Ahafo			
3	Northern	Upper West, Upper East and Northern			

2. OBJECTIVES OF ASSIGNMENT

The objective of the assignment is to provide Technical Assistance to GASIP to guarantee quality of works in accordance with the design standards of the Ghana Irrigation Development Authority (GIDA) towards sustainable irrigated agriculture.

3. SCOPE OF WORK

The Consultancy service shall cover list of sub projects contained in table 1 above (it is expected that the actual names of all the beneficiary communities shall be made available to the Consultant before the date of submission of proposals).

The Consultancy services shall be made up of two (2) main phases as follows;

Phase 1: Feasibility Studies and Detailed Designs

Phase 2: Construction Supervision

3.1 Feasibility Studies and Detailed Designs (Phase 1)

Feasibility studies and detailed designs shall be carried out for new irrigation schemes / rehabilitation / expansion of existing irrigation schemes. The feasibility studies and detailed designs shall, inter alia, cover:

a. Review of existing data and information on irrigation in the project area
b. Comprehensive surveys to determine the current status of demography, land use, soils etc as well as the social factors that characterize on-going activities within the area.
c. Analysis on alternative water sources (surface, groundwater) and prepare conceptual designs for the most appropriate option for discussions with GASIP and other relevant institutions.
d. Comprehensive feasibility report for the project.
e. Preparation of detailed designs, drawings, Bill of Quantities (BoQ) and cost estimate for the identified schemes. Design should be sufficiently detailed and provide basis for cost estimate.
f. Collaboration with beneficiary farmer groups in preparation of sub-project proposals. Such collaboration shall be gender responsive to ensure the opinion of women are also captured in the sub project design.
g. Establishment Water Users Associations (WUAs) for sustainable irrigation schemes.

The scope of the study shall entail but not necessarily be limited to the areas summarized below:

i) Socio-Economic Aspects

The survey shall evaluate the exposure of the communities to the project and how they perceive it as a means of bringing development to their area. It shall focus on land tenure factors paying attention to potential problems arising from the project construction. Socio-economic data to be collected would include the following:

a. Information on farm size, land tenure, existing cropping systems and farm practices as well as present levels of crop production and sales
b. Socio-economic profile of the project with respect to family size, age distribution and education, employment and community organization.
c. Wealth/poverty indicators i.e. ownership of livestock, material goods, housing condition and transport.

d. Present composition of household income, expenditure and savings, off-farm activities, cottage industries etc.
e. Provision of basis for assessing the potential impact on farm incomes as well as the incremental economic benefits of the project.
f. Gender Impact Assessment e.g. involvement of women in addressing issues such as labour, income generation, effects on women's domestic and social life.
g. Information of social amenities, including communication, housing and others.

ii) Meteorological Studies

a. Collection and processing of all rainfall and climatic data.
b. Investigation of medium and long-term fluctuations in rainfall and estimating Crop Water Requirements.
c. Computation of various frequencies of storm rainfall and possible maximum precipitation patterns relevant for the design of water harvesting structures and drainage works.
d. Estimation of precipitation effectiveness including onset, cessation length of rainy season, hydrologic ratio, water equivalent to avert drought, drought spells in the course of normal rainy season and seasonality index of rainfall.

iii) Hydrological Studies

a. Collection and processing of all existing hydrological data together with the review of all previous hydrological reports related to the project area.
b. Determine the adequacy of the source of water supply for irrigation
c. Assess water quantity and quality for crop production operations.
d. Provide physical, chemical and biological characteristics of water
e. Studies should include brief highlights on other sources of water and their uses in the project area and also in other areas in the country.
f. Planned future development and usage of such water sources by the Government should be indicated.

iv) Topographical Survey & Mapping

a. Carry out topographic survey and mapping at a scale of 1:2500 with contours at one (1) metre intervals with interpolation to 0.5M.
b. Production of maps for successful completion of the study if these maps are not available
c. Cadastral surveys shall be carried out to delineate the boundaries of landed properties and farmers likely to be affected by the development. The cadastral survey shall indicate houses, stream diversion, drains and other infrastructure, which may be similarly affected.
d. The cadastral surveys shall be carried out to delineate the land holdings of various land owners contributing to the scheme (s).

v) Soils and Land Suitability Assessment

A detailed soil survey shall be carried out to assess the suitability of the soils of the project area for cultivation, to demarcate areas which would be considered as unsuitable for development from suitable areas and to prepare soil and land suitability maps of the area at a scale of 1:5000. The study shall cover the following:

a. Interpretation of aerial photographs or satellite image covering the area using the 1967 soil classification report as baseline.
b. Auguring of special cut lines (traverses) and chisel-boring investigations at regular intervals of 100m to identify individual soil types within each soil association complex.
c. Digging of two (2) or more profile pits to describe soil types using FAO guidelines for soil profile description.
d. Physical and chemical analysis of soil samples to determine such soil parameters as coarse and fine fractions, pH, %N, % organic carbon and organic matter, calcium, magnesium, sodium, exchangeable aluminium, cation exchange capacity, base saturation, electrical conductivity and exchangeable sodium percentage.
e. Production of soil map showing individual soil types (soil series).
f. Assessment of soil depth, water losses by percolation and seepage for each soil type.

vi) Agriculture Development Plan

The most suitable agricultural development plan shall be determined, taking into account climatic, biotic, environmental, gender and economic factors. Alternative forms of agricultural development within the context of utilization of existing physical resources, current socio-economic settings, improved availability of credit, marketing and market accessibility and better agricultural management systems practices in the project area shall be determined. The study shall cover the assessment of crop varieties, their expected yields, agricultural production costs and returns.

Investigations would be made to gather the most up-to-date information on the following:

a. Recommended suitable agricultural and crop husbandry practices for the project.
b. Crop Water Requirements for optimum yield conditions and fertilizer response.
c. Recommended appropriate soil conservation measures.
d. Agro-processing and storage facilities for produce.
e. Availability of marketing infrastructure.
f. Agricultural support service facilities including credit, extension and input supply.
g. On-Farm trials for testing and updating crop husbandry practices.
h. Identification of market potential and pricing of produce in Ghana including definition of product recommended for production and quality required.

vii) Geotechnical Investigations

a. Determination of the physical and engineering characteristics of the sub-soil at the proposed headwork and assess its suitability for the project
b. Provision of suitable geotechnical data for all aspects of economic, safe and reliable design and construction of the headworks and other related sub-soil structures.
c. Assessment of problems and constraints associated with the construction works arising from soil /groundwater condition.
d. Identify potential sources of construction material.
e. Undertaking and obtaining the required field and laboratory results and performing the necessary engineering analysis**.** The field works shall involve the following:
    - Sinking of trial pits
    - Soil Sampling and performance of in-situ Dynamic Core Penetrometer Test (DCPT)
    - Laboratory testing of samples
    - Interpretation of samples.

viii) Engineering Structures Development

The study shall cover the following:

a. Specifications of alternative water conservation structures and their associated works.
b. Preparation of general layout plans showing the locations of principal features such as farm roads, drains, grass waterways, bunds and terraces.
c. Land development and on-farm development proposals.
d. Proposal for flood protection, land reclamation and drainage works required to ensure sustained economic operation of the project and determination of access requirements to and within the area.
e. Preparation of inventory of the heavy machinery, farm equipment, trucks etc. and determination of their serviceability, adequacy or otherwise to develop, operate and maintain the project

ix) Environmental Impact Assessment (EIA)

The EIA study would cover baseline information as well as Environmental Impact Statement (EIS) and would include the following:

a. Climate, geology, seismology, geomorphology and topography.
b. Soil and Land Use (including agriculture).
c. Flora and Fauna.
d. Water Resources (hydrology, aquatic biology and water quality).
e. Health (vector transmitted and water-borne diseases) and occupational hazards.
f. Socio-Economics, socio-cultural and archaeological resources.

The Environmental Impact Statement must cover the following:

a. Identification of impacts of project on the environment.
b. Quantification of the various impacts.
c. Assessment of the Impacts.
d. Amelioration/Mitigation measures to arrest the negative impacts.
e. Monitoring programme.
f. De-commissioning programme.

(x) Economic and Financial Analysis

The profitability for individual participating farmers and the projects viability would be assessed including the following:

a. Economic and financial benefits and returns, both direct and indirect, resulting from the project development.
b. The impact of the project on farmers' incomes, employment generation for people of various skills and on the national balance of payments.
c. Review, analysis and recommendation of feasible methods for cost recovery.
d. Determination of break-even points
e. Projections of annual operating costs.

The Consultant shall provide supporting detailed tables of cash flows and underlying assumptions of estimates of costs and benefits as well as undertake sensitivity and tests for financial and economic rates of return as part of economic and financial analysis.

xi) Organization and Management

The study shall identify potential institutions that may be involved in the project development. This shall include the following:

a. Organize meetings to explain project rules to farmers and in collaboration with the farmers review the existing situation and environmental concerns. The Consultant shall also assist the beneficiary farmer groups to form appropriate and gender-balanced Water Users Associations (WUAs).

b. Based on the farmers' preferences and willingness to pay for O&M, the Consultant shall assist the farmers to formulate a subproject proposal, including a preliminary engineering design and estimated cost of the proposed water facilities.

c. The Consultant shall work with the WUAs to analyze different management options for the irrigation system and in collaboration with the WUAs develop a draft Facility Management Plan (FMP), including the tariff structure, and define a development and training program.
d. Final Organization and Management structure shall seek to clarify the involvement of WUAs in Operation and Maintenance.

(xii) Detailed Design

The major activities to be undertaken by the Consultant include but are not limited to the following:

a. Conducting detailed topographic surveys to permit the preparation of irrigation and drainage network layouts at a scale of 1:2500.
b. Preparation of irrigation and drainage network layouts, detailing all headworks, supply canals, pipelines, turnouts, culverts and other appurtenant structures.
c. Detailed engineering design of all components of the irrigation and drainage systems and the preparation of design drawings of all components and structures.
d. Preparation of the Bill of Quantities of all components of the irrigation and drainage system.
e. Derivation of cost estimates based on current prices of goods and services of the designed system.
f. Preparation of a priced Bill of Quantities under confidential cover for GASIP.
g. Preparation of Draft Tender Documents with detailed specifications and Conditions of Contract acceptable to GASIP and IFAD.
h. Preparation of draft contract.
i. Any other activity that has a bearing on the design of the irrigation and drainage systems.

The design of the irrigation and drainage systems shall be carried out using the latest technical information and also taken into consideration irrigation water-use efficiency, profitability and resilience to climate change. All design assumptions made shall be carefully supported by current engineering practice, experience and theories and shall conform to Ghana Irrigation Development Authority (GIDA) Design Criteria for irrigation and drainage system design. The expected performance of the irrigation system shall be indicated in the design report to help beneficiaries /farmer groups to identify future remedial works.

3.2 *Construction Supervision (Phase 2)*

After the tender for the construction of the works have been launched the Consultant shall prepare the contract document for the construction of the works and present draft copies to GASIP for review.

After signing of the contract for construction of the works, GASIP shall arrange a start up meeting for all stakeholders. Discussion shall focus on the responsibility of the Consultant in particular and stakeholders in general. GASIP shall formally write to the Consultant to kick-start the construction supervision phase of the assignment.

The Consultant shall commence the construction supervision of the works from this point and shall report periodically as determined in this Terms of Reference, or as may be determined by GASIP. The Consultant shall act on behalf of GASIP on all matters related to the construction of the irrigation and drainage system and shall make decisions related to the implementation of the construction in consultations with GASIP especially when variations become necessary to improve the performance of the designed irrigation system.

Activities to be undertaken by the Consultant during the Construction Supervision Phase of the assignment include the following:

a. Preparation of Contract Agreements
b. Introduction of construction contractors to sites
c. Supervision of contractors during physical construction of the irrigation systems to ensure construction is done according to the design and specifications.
d. Quality assurance of all construction materials
e. Ensuring contractors compliance to technical specifications
f. Ensuring that construction is carried out according to the design drawings.
g. Carrying out any revision of designs when necessary.
h. Verify and approve claims submitted by contractor for payment.
i. Organise site meetings or monthly progress meetings.
j. Prepare reports periodically to inform GASIP of all matters affecting the works.
k. Facilitate the issuance of certificate of practical completion (as well as the interim completion certificate) to the contractor.
l. Preparation of O&M manual
m. Assist WUAs to finalize their Facility Management Plan (FMP).
n. Assist WUAs to make a final decision about the **management of their irrigation system** when completed.
o. Assist in creating awareness on best practices in environmental issues such as conservation of catchment area.
p. Assist WUAs raise awareness on the importance of **paying tariffs** among all farmers, and update the tariff structure once the irrigation system is operational.
q. Facilitate the discussion and finalization of a Performance Agreement between WUAs and MMDAs which shall later be signed between the two parties.
r. Assist farmers to develop their capacity and skills to implement and sustain their irrigation system through the WUAs. The WUAs shall be trained in financial management, administration and bookkeeping, accounting and tariff setting, operation and maintenance, environmental promotion and such other appropriate skill development that are aimed at achieving ownership and management by the farmers.
s. In conjunction with the Contractor train the WUAs to gain the appropriate insight into the operation and maintenance of all the components of the facility.
t. Final inspection and testing of the irrigation system

u. Supervise the operation of the systems by the WUAs during the Contractor's liability period
v. Preparation of "As-Built" drawings
w. Preparation of Final Report
x. Supervision of contractor's Defects Liability obligations

4. EXPERTISE REQUIRED FOR THE CONSULTANCY ASSIGNMENT

The Consultant shall be required to field a team of personnel with the following qualification and experience;

Civil Engineer (Team Leader)

The Civil Engineer must be a professional Civil Engineer with a minimum of MSc. in Civil Engineering or its equivalent with at least fifteen (15) years post qualification experience in design and implementation of smallholder irrigation schemes and at least 10 years of Project Management. Specific experience must be in engineering design and construction supervision of irrigation schemes for rural agricultural farmers and should be familiar with the concept and practice of WUAs. He/she shall be expected to deal directly with decentralized MOFA offices, MMDAs, GIDA and WUAs and should have demonstrated experience in similar institutional environment in a developing country context. Fluency in both written and spoken English is essential.

Irrigation Engineer

The Irrigation Engineer must be a professional Civil or Agricultural Engineer with a minimum qualification of BSc. or its equivalent with at least ten (10) years working experience in carrying out planning, feasibility studies, design, construction supervision of irrigation schemes and training of WUAs in Ghana and any other African country. Demonstrated experience in design of irrigation and drainage systems that are water-use efficient, profitable and resilient to climate change would be added advantage. Fluency in both written and spoken English is essential.

Geodetic Engineer

The Geodetic Engineer must be a professional surveyor with a minimum of ten (10) years post qualification experience in irrigation development setting out and provision of levels during construction. He shall have a minimum qualification of BSc. Geodetic/Geomantic Engineering and fluency in written and spoken English is essential.

Quantity Surveyor

The Quantity Surveyor must be a professional surveyor with a minimum of ten (10) years post qualification experience in preparation of Bill of Quantities and Cost estimates for agriculture infrastructure projects, including experience in similar geographic conditions. Fluency in written and spoken English is essential.

Agricultural Economist

He/she shall be a qualified graduate in economics or equivalent with at least ten (10) years post qualification experience in the design and analysis of public agricultural investment projects in developing countries. He/She must have served on similar position in at least three (3) investment studies of similar nature and magnitude within the past five (5) years. Proven fluency in both written and spoken English is essential.

Environmental Expert

The Environmental Expert must have an advanced degree in Environmental Planning or similar discipline and at least ten (10) years post qualification experience in environmental, health, safety and social issues, including experience in similar projects and geographic areas. He/She should demonstrate experience from at least three (3) projects of similar nature and complexity within the Sub-Saharan Africa. Fluency in written and spoken English is essential.

Institutional & Organisational Development Expert

He/She shall have a minimum qualification of first degree in any of the Social Sciences, Business Administration, Agriculture or Human Resources Management with at least ten (10) years post qualification experience in the formation, management and organisation of WUAs or community enterprises. He/She must demonstrate relevant experience in mobilization of farmers for rural irrigation schemes in developing countries, skills in the use of participatory planning techniques and must have demonstrated ability to assess local human resource capacity and develop strategies to attract and build the required manpower for the management of irrigation scheme. Fluency in written and spoken English is essential.

Soil Expert

He/She shall be a qualified Soil Scientist with a minimum academic qualification of BSc in Soil Science or Agriculture and a minimum of ten (10) years post qualification experience in soil surveys and mapping to determine soil sustainability for irrigation schemes. Fluency in written and spoken English is essential.

Agronomist

He shall have a minimum qualification of BSc. in Agriculture with a minimum experience of ten (10) years in irrigated agriculture. He/she must demonstrate proficient knowledge in cropping pattern, crop water requirements and the crop budget. Fluency in written and spoken English is essential.

Other fields of expertise Required

Financial Manager

Financial management or business professional with experience in tariff setting, fund mobilization, accounting, record keeping, management training with at least seven (7) years post-qualification experience in rural agricultural settings. Fluency in written and spoken English is essential.

Clerk of Works/Technician engineers

Clerk of works, one for each system with at least seven (7) years experience in irrigation schemes construction supervision. Fluency in written and spoken English is essential.

Other Experts inputs required as and when needed include:

- Hydrological issues
- Electro-Mechanical engineering for the designing of associated electro-mechanical works
- Structural engineering for designing of water retaining structures

The Consultant shall also be required to maintain site supervisors (clerk of works) at all construction sites. Site supervisors should have a minimum qualification of diploma in construction and should have a minimum of 7years relevant experience in civil works construction supervision related to irrigation schemes.

5. IMPLEMENTATION OF THE CONSULTANCY ASSIGNMENT

The Consultant shall be engaged to carry out the services described above by **GASIP** on behalf of MOFA.

The offices of MMDAs, decentralized MOFA offices and GIDA shall be involved in monitoring of the project while project shall be managed by GASIP Zonal Offices under the overall guidance of the Infrastructure Manager.

6. TIME FRAME

The estimated number of professional staff-months required for the assignment.

Phase 1: **Feasibility Studies and Detailed Designs**

The consultancy is expected to be awarded **by _____**, and take a maximum of **…..man-months;** however the Consultant is at liberty to propose a reasonable man-month input.

(The man-months proposed is for only key personnel and does not include other supporting staff such as draftsmen, secretariat, etc. and personnel whose input may require minimal duration)

Phase 2: **Construction Supervision**

The consultancy is expected to commence **by _____**, and take a maximum of **…… man-months;** however, the Consultant is at liberty to propose a reasonable man-month input.

(The man-months proposed is for only key personnel and does not include other supporting staff such as draftsmen, secretariat, etc. and personnel whose input may require minimal duration)

7. Reporting

The Consultant shall report to the **National Coordinator, of GASIP, the Contracting Authority**, or his representative for all activities and consultations. All reports and relevant data compiled or prepared in the course of the services shall be sole property of GASIP and shall not be shared without prior permission from GASIP.

a) Inception Report: (5 copies) – Inception report due 4 weeks after signing of contract for assignment. Report shall outline approach to assignment, issues for the attention of the client including initial constraints and proposals to address them. Consultant shall indicate his set-up, planned activities, reporting schedules and draw a comprehensive work plan /budget for the lifetime of the assignment.

b) Feasibility Report (5 copies) - The report shall be initially submitted in draft and later in final form. The draft feasibility report shall be prepared and submitted to GASIP

for review and comments. It shall include a main report describing the project and its essential features and components and associated costs. A volume of technical details and classified annexes incorporating all the information required as set in the Terms of Reference shall also be produced. After receiving comments and suggestions from GASIP, appropriate revision and modifications shall be effected by the Consultant and the final feasibility report shall be prepared and submitted to GASIP. The final main report shall contain sections on the project background, project area, objective, description, costs design, benefit and economic and financial analysis. The final feasibility report shall inter alia, recommend the optimum design of the area and assess the practicability of the development.

c) Detailed Design Report (5 copies) - The Consultant shall submit a Detailed Design Report of the irrigation and drainage system comprising irrigation and drainage network layout, detailed design calculations which form the basis of choices made in the design, details of headworks, conveyance structures and other appurtenant structures and assumptions made in the design of the facilities. The report shall also incorporate detailed Bill of Quantities. The cost estimate of the designed irrigation and drainage system shall be submitted under confidential cover to GASIP. Detailed design drawings comprising irrigation and drainage profiles for all conveyance structures shall also be submitted with the Design Report.

d) Monthly Progress Reports (5 copies) - Reports shall contain progress since last report, schedule and budget reviews, and constraints to progress, if any, and recommendations to overcome such constraints as well as minutes of site meetings.

e) Draft Final Report (5 copies) - On completion of the assignment, the Consultant shall present a detailed Draft Final Report covering (I) each of the sites, (ii) all activities in the scope of work, (iii) all procedures adopted with as built drawings, final capital costs, variations (if any).

f) Final Report (5 copies) - Following review and comments of the Draft Final Report by the Client and the IFAD, the Final Report shall be submitted within one month after receipt of all comments.

g) Special Reports

The Consultant shall issue, if the need arises, ad-hoc reports related to the performance of the Works contract. Dispute/litigation or even arbitration, acquisition of land, evaluation of claims, changes of the design, etc. are among the issues the Consultant is likely to be requested to advise on within the scope of the assignment.

All reports shall be submitted in English. The Draft Final and Final Reports shall contain an Executive Summary. All reports shall also be provided on CDs or pen drives.

8. Outputs

i) Phase 1: Feasibility Studies and Detailed Designs

The expected output during the Detailed Design Phase shall include the following:

a. Topographic maps of the irrigation sites drawn to a scale of 1:2500 or any other suitable scale as specified in the Topographic Survey and Mapping Criteria Manual of the GIDA.
b. Design Report of the irrigation and drainage system comprising irrigation and drainage network layout, detailed design calculations which form the basis of choices made in the design, details of headworks, conveyance structures and other appurtenant structures and assumptions made in the design of the facilities.
c. Detailed design drawings comprising irrigation and drainage profiles for all conveyance structures.
d. Detailed Bill of Quantities and the cost estimate of the designed irrigation and drainage system.
e. Tender Documents.
f. Evaluation report.
g. At least 75% - 80% of the small holder farmers are aware of the intended project and can explain the subproject to others.
h. A situation analysis of the existing farming situation and environmental concerns of irrigation scheme has been completed and is available in the WUAs folder.
i. A recognized gender balanced WUAs formed with developed by-laws following a transparent process.
j. WUAs constitution.
k. A sub-project proposal is prepared and submitted by smallholder farmers and that it truly reflects their choice and agreed steps on how the facility shall be sustained.
l. The draft Facility Management Plan is produced, including the proposed tariff structure and management options, and a list of farmers per irrigation units.
m. WUAs bank account book.
n. A training program for the WUAs and the beneficiaries has been determined for Phase 2, and included in the Subproject proposal.
o. A simple file or folder containing the following documents related to the subproject is available in each farmer groups/beneficiaries.
p. Copy of technology and service level options and costs each farmer groups/beneficiaries.
q. Evidence of access to undisputed land.
r. The maps of cadastral surveys carried out to delineate the land holdings of various land owners contributing to the scheme (s).
s. Record of all visits conducted by the Consultant with meeting minutes.

ii) Phase 2: Construction Supervision

Outputs expected during and after the construction supervision assignment for each irrigation and drainage system shall include the following:

a. Irrigation scheme constructed and operational
b. Copies of draft contract agreements (5 copies) for each system for review by GASIP.
c. Copies of final contract agreements (5 copies) for each system
d. Operation and maintenance manual for the irrigation system.
e. As-built drawings of the irrigation and drainage system in both hard and soft copy.
f. An end of construction supervision report detailing information on the irrigation system, major activities carried, the total cost of the completed irrigation and drainage system and lessons learnt.
g. WUAs have the capacity to manage their irrigation scheme.

h. Trained operators and book keepers are in place, an adequate tariff has been put into effect, and where necessary, agreements are made with the private sector to assist in irrigation system management.
i. Farmer groups have improved their knowledge on environmental issues;
j. The following documents related to the subproject have been updated and are available for each WUAs:
    - WUAs by-laws, meeting minutes, accounts ledger, operations manuals and other required documentation
    - Training materials used for WUAs (administration, operation and maintenance)
    - Facility management plan
    - WUAs bank account book
    - As-built drawings of irrigation scheme
    - Record of all visits conducted by the Consultant with meeting minutes

9. Other Services

i) Services and Facilities to be Provided by the Consultant

For the proper execution of the assignment, the Consultant shall be expected to set up office at locations deemed strategic enough to facilitate consultations and coordination at each level. The logistics to be provided by the Consultant shall include;

a. Computing capability as required;
b. Vehicles for the execution of the assignment
c. Facilities for day-to-day running, periodic maintenance services for these vehicles and
d. All office facilities, accommodation and subsistence necessary for the staff on the assignment.

ii) Services and Facilities to be Provided by GASIP

GASIP shall make available to the Consultant all existing reports related to the project and shall assist the Consultant to obtain:

a. Access to the site Entry and exit visas, etc. (if applicable)
b. Immunity from any legal action which might be instituted for any acts accomplished by them in the discharge of project-related activities;
c. Inviolability of secrecy and immunity from seizure of documents relating to the project; and
d. Taxes, duties, levies, consistent with the tax provisions of the GASIP.

iii) Correspondence and Consultation with GASIP

Liaison meetings shall be held with GASIP at monthly intervals. Meetings would be attended by members of the Supervision Staff as necessary and would have the objective of expanding on contents of the Progress Reports, discussing any problems and relevant matters.

GASIP shall see to it that correspondence exchanged in connection with the execution of the Project is dealt with promptly, by its offices, so as not to cause any delay.

The Consultant shall liaise closely with GASIP through the Zonal GASIP Offices during the course of the assignment.