Terms of Reference

Infrastructure Supply and Construct Lots 1 to 4

Revision: 0

Date of Update: 26/05/2023

Supply and Construction of Western Equatoria Infrastructure. The following Lots are included in this ToR:

Lot	Item	Location
1	1500MT Agriculture Warehouse 01	Ibba
	600MT Agriculture Warehouse 01	Ibba
2	1500MT Agriculture Warehouse 02	Maridi
	600MT Agriculture Warehouse 03	Maridi
	600MT Agriculture Warehouse 04	Maridi
3	600MT Agriculture Warehouse 02	Ibba
	Honey Processing Facility	Ibba
4	600MT Agriculture Warehouse 05	Maridi
	Fruit Processing Facility 01	Maridi

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List of Abbreviations

ASTM	American Society for Testing Materials
BoQ	Bill of Quantities
BS	British Standards
ESHS	Environment, Social (incl. issues of sexual exploitation and abuse and gender-based violence), Health and Safety (incl. of security for personnel)
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
EU	European Union
FIC	Field inspection Checklist
GTAI	Germany Trade and Investment GmbH ("GTAI"), the economic development agency of the Federal Republic of Germany which publishes diverse project and procurement related information on its website (www.gtai.de).
HSE	Health Safety Environment
IDP	Internally Displaced Person
IFC	International Finance Corporation
ILO	International Labour Organisation
ITP	Inspection & Test Plan
JHA	Job Hazard Analysis
KFW	German state-owned investment and development bank
MDR	Manufacturers Data Report (Handover report compiling Quality staged sign-offs, procurement certificates, and other details as agreed in the MDR Index)
MPS	Monthly Progress Summary
MTO	Material Take-off
OHS	Operational Health and Safety
PEA	Project Executing Agency - Entity in charge of implementing a Project, which directly or indirectly receives funds made available under the Funding Agreement. The PEA for this works is ACTED
PPE	Personal Protective Equipment
RAP	Resettlement Action Plan
ToR	Terms of Reference

Definitions

Engineer	PEA (ACTED) Engineer Representative
Contractor	Engaged Contractor for this ToR
Lots	Sometimes referred to as Separable Portions

List of Applicable Specifications and Reference Documentation

PEA and Donor Documents
KFW Procurement Guidelines 2021
ACTED Code of Conduct
ESMF – Environmental and Social Management Framework
Standards and Specifications
BS1377:1975 Methods of Testing Soils for Civil Engineering Purposes

BS 1881:1983 Methods of Testing Concrete
BS 5950-2000 Steelwork Design
British Standard BS6399-95 Loadings for Buildings (Wind Loadings)
UBC-97 Uniform Building Code Seismic Analysis
BS 4449 – Steel for the Reinforcement of Concrete
BS 5950 – Bolts and fasteners
BS 5950 – Steel welding
EN 933 Aggregate sieving (or equivalent international standard)
BS 7671: 2001 Wiring Regulations
IS:13947 - Indian Standard Low Voltage Switchgear and Controlgear
IEC 60947 – Indian Standard Low Voltage Switchgear and Controlgear
GOSS Laws and Regulations
Transitional Constitutional of 2011
The Environment Protection Bill, 2010
Forestry Commission Act, 2003
Traffic Act
The Water Act
Wildlife Conservation and National Parks Protection Act, 2003
Public Health Act 1975
Land Act, 2009
Labour Act
Child Act
World Bank Environmental and Social Standards
Assessment and Management of Environmental and Social Risks and Impacts. (ESS1)
Labour and Working Conditions (ESS2)
Resource Efficiency and Pollution Prevention and Management (ESS3)
Community Health and Safety (ESS4)
Land Acquisition, Restrictions on Land Use and Involuntary Resettlement (ESS5)
Biodiversity Conservation and Sustainable Management of Living Natural Resources (ESS 6)
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities (ESS7)
Cultural Heritage (ESS8)
Stakeholder Engagement and Information Disclosure (ESS 10)

1. PROJECT INFORMATION

1.1. Background

All works described in the following shall be performed in close coordination and cooperation with the Project Executing Agency (PEA). It is the Contractor's responsibility, in cooperation with and with the approval of PEA and the Donor (KfW), to verify critically the scope of services indicated and if deemed necessary, adapt their proposal accordingly according to their own professional judgement and the knowledge they will acquire during preparation of his proposal. In case the Contractor considers indispensably necessary to amend the scope of his works, he shall offer these services in his technical and financial proposal, further additional works may be offered as optional.

The PEA for the works is ACTED, a French humanitarian NGO, founded in 1993, which supports vulnerable populations, affected by humanitarian crises worldwide. ACTED provides continued support to vulnerable communities by ensuring the sustainability of post-crisis interventions and engaging solutions for long-term challenges facing our target populations, in order to break the poverty cycle, foster development and reduce vulnerability to disasters. Our interventions seek to cover the multiple aspects of humanitarian and development crises through a multidisciplinary approach.

ACTED with funding from KFW Germany Development Bank is implementing a five-year project (September 2020 to September 2025) in Western Equatoria State in the three counties of Maridi, Ibba and Yambio. This intervention aims at enhancing productive capacity and value chains by creating market linkages, infrastructure, and capacity building in urban centers and rural farming areas. The project will improve resilience of households, cooperatives and communities across the state. ACTED will adopt a value chain development approach to improve the return on the production of farmers.

According to the HNO 2022, South Sudan remains one of the poorest and least-developed countries in the world in 2022, ranking 185 out of 189 countries in the Human Development Index. Oil remains the major source of income for the country accounting for 70% of South Sudan's GDP and 90% of the public revenue.[1] Despite the country being rich in other resources such as arable and grazing land and water resources, those are underutilised. Farming still remains a source of subsistence with 80% of the population working in agriculture. However, climate change continues to impact negatively and more severely the agricultural sector by causing prolonged droughts and flooding. Throughout 2021, flooding in Unity, Lakes and Jonglei States led to the displacement of over 835,000 individuals.[2] Flooding affected 67,101 hectares of planted cereals and caused an estimated loss of 37,624 tons of grains from the damaged hectares [3] resulting in gross food shortage in the worst hit areas. 9.4 million people including refugees are expected to be in food insecurity at the peak of lean season (between May and July 2023).

Despite the impact of climate change and continued violence in some pockets of South Sudan, farming activities areas are being successfully practiced. This is particularly the case in Greater Equatorial States, Lakes State, Western Bhar el Gazal, Warrap and Renk in Unity State. In Western Equatoria a variety of food crops including cash crops, cereals, legumes, cassava, vegetables and coffee are cultivated. Farming has been possible in these areas in the past years due to relative stability after the signature of the Revitalized Peace Agreement that enabled people to access their farm lands.

1.2 PEA Project Location and Scope

ACTED's Project activities are spread over the three Counties of Yambio, Ibba and Maridi. Refer to Figure 1 for a schematic showing tentative locations of the major infrastructure items within Maridi and Ibba Counties.

Table 1 below shows a broad summary of outputs of the project. Essentially, the project is increasing output of the region along the Yambio to Maridi highway through training and sustainable practices and implementing business development. It provides development of facilities, systems and market linkages with the aim of

[1] Humanitarian Needs Overview 2022 & 2023

[2] Ibid.

[3] South Sudan Flood Report, December 2021 UNFAO

increasing access to other markets in South Sudan to provide long-term sustainable business development and stability to the region.

Table 1 shows the broad total PEA scope of construction activities. All items not in grey are covered in this Call for Tender.

Item	Unit	Yambio County	Ibba County	Maridi County	Tender to be Issued as Separate Lots
1500MT Agriculture Warehouse	ea		1	1	Refer to Lots section of ToR
600MT Agriculture Warehouse	ea		2	3 1	Refer to Lots section of ToR
Fruit Processing Facility	ea	1		1	Refer to Lots section of ToR
Honey Processing Facility	ea		1		Refer to Lots section of ToR
Market Grounds	ea		1	1	To be issued under separate tender document
Business Centre	ea	1		1	To be issued under separate tender document
Roading	km			30	To be issued under separate tender document

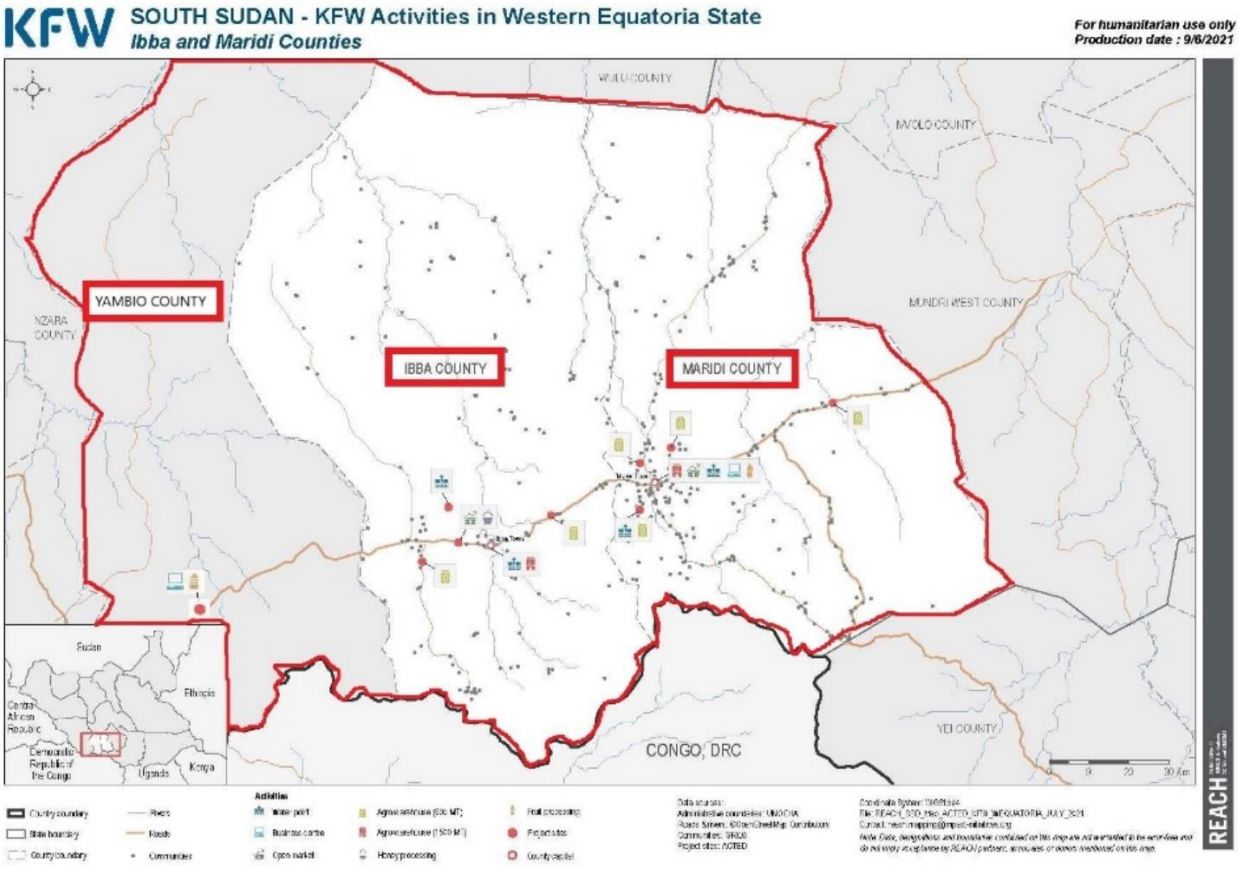

Figure 1: Schematic showing tentative locations of upcoming Infrastructure works as part of the project

2. SCOPE OF INFRASTRUCTURE CONSTRUCTION

2.1 Summary

The infrastructure works entails supply of all materials and construction of the infrastructure facilities as per this ToR, Drawings, referenced standards and specifications. The Scope of Work for the contractor is to include

all items to construct the facilities. In some cases the drawings may not provide all of the information or total materials to complete the construction. The Contractor is to price in any omissions from the drawing sets while seeking clarity from the PEA Engineer for items in question.

2.1 Lots

The Infrastructure works for the total project have been divided into different Lots. Bidders are requested to submit pricing for the Lots that they propose to complete. Should a bidder propose to perform works for multiple Lots, the bidder is to provide pricing for each independent Lot accompanied also by pricing for the multiple Lots that the Bidder proposes to complete. The Bid for multiple Lots shall show associated discount in overheads, materials and shared resources.

2.2 Responsibilities Matrix

The following matrix shows ancillary items that form part of the contract work with responsibility allocated for clarity. This matrix is not exhaustive of scope but is provided for clear responsibility on items which at times are overlooked.

Item	Responsibility PEA	Contrac-tor	Comment
Accommodation (Yambio / Maridi / Ibba)		X	
Communications devices and subscrip-tions		X	Site representatives to be readily contactable by PEA representatives.
Food, Water and various supplies		X	
Construction water (ie, for dust sup-pression and various works)		X	Refer ESMF. Bidder to confirm water sources. Sourcing of construction water is not to be in competition with community water sources or have detrimental effect on water sources.
Temporary Power		X	There is no reliable grid power at any of the worksites. Contractor to provide own generators, solar panels and battery banks.
Transport		X	
Fuel		X	Fuel storage to be bunding with spill kits.
Dust Control		X	
Noise Control		X	The noise should be kept to minimum possible level by using silent plants and equipment, plac-ing the plants on resilient base, constructing temporary sound barrier structures.
Flights		X	
Field Offices including all required re-sources		X	ACTED has small office spaces in each Maridi, Ibba and Yambio which will at times be used for Meetings between the PEA and Contractor
Waste disposal in low impact approved location. No waste to be burned		X	No burning due to Climate considerations and Danger of uncontrolled fires
Provision of shade for workforce breaks during dry season. Provision of shelters for workforce during any works done in wet months.		X	Works will not be subject to milestone delays due seasonal weather
Provision of any temporary materials for wet season construction should that form part of the timeline for the contractor		X	Works will not be subject to milestone delays due to seasonal weather
Personal Protective Equipment		X	
Demarcation and signage for worksites		X	
All other items required inline with Oc-cupational Safety and Health processes		X	Scaffolding, shoring, barricading, penetration or excavation coverings, etc
On site Security		X	Security is the responsibility of the Contractor. This can be assessed per site based on ac-ceptance within communities.

Security Assessments and Decisions		X	ACTED will provide any information through our team's contacts in the region as to any areas of risk or any information that arises that would be beneficial for the Contractor to know.
Location for Commencement Workshop	X		
Locations for Mid-term Workshop	X		
Introductions to key ACTED identified Government Officials	X		
Introductions to key ACTED identified Community Stakeholders	X		The contractor will be responsible for maintaining respectful relationships with the community an d stakeholders.
Surveying for setup locations, construction tolerances and all other		X	Contractor to set-up all required survey points. A PEA surveyor will be requested to verify some Contractor Survey Reports prior to Engineer sign-off
First aid trained workforce and First Aid Provisions		X	Trained First Aiders ratios to be advised by Contractor based on manning proposals. Refer to ESMF for further information. A minimum of 1 First Aid Trained workforce per 25 will be met with First Aid Equipment in a readily available access point on site for the duration of the contract.
Medical Clinic per XXX sites		X	Refer to ESMF for further clarification. The PEA shall be under no obligation to provide medical treatment or medical evacuation for the Contractor's personnel at any time and under any circumstances.
Testing of Contractor's Lifting Equipment		X	Every hoist, lift, sling, chain, rope, pulley block and any other lifting tackle used in constructing the works shall be thoroughly examined by a competent person before its first use in the works and once every 6 months, be test loaded to 150% of the safe working load and then tagged with the safe working load and date of successful testing, and/or comply with statutory regulations currently in force in the country, whichever is the more stringent. An up to date register of all such equipment and examinations shall be maintained and shall at all times be available for inspection by the engineer.
Insurances: - Plant and Equipment Insurance - Health and Medical Insurance of teams - Insurances of materials and structure prior to handover to PEA		X	The PEA takes not responsibility for materials or procured items or for partially complete construction until the structure is completed and handed over.
Any other items not mentioned here are the responsibility of the tenderer / Contractor		X	* Should the Bidder identify items not on this list that they wish to clarify as the responsibility of the PEA, the bidder is to notify the PEA through the Tender Clarification Process. Refer to Appendix 7 for the template to be used during submission.

2.3 Milestone Dates

Refer to the below table for milestone dates for work planning. Milestones have been provided for Contractor planning. Note that Milestones include any required time for quality sign-offs and submission of all subsequent associated documentation such as the Manufacturers Data Report and As-built Drawings by the Contractor.

Milestone dates have been selected to provide adequate construction durations with the majority aligned to the Western Equatoria Dry Season. The Bidder's attention is drawn to the timing of the normal seasonal rains in Western Equatoria and the importance of the milestone timelines in terms of completing works prior to the wet season arrival where possible. The Bidder needs to show within their submission, evidence of manning availability to be able to complete works within the specified timeline. The Bidder needs to have the capability to increase manning should progress during construction be forecast to be delayed.

Lot	Item	Location	Yambio	Ibba	Maridi	Commencement Date	Construction Duration	Completion Milestone Date	Notes
1	1500MT Agriculture Warehouse 01	Namarabia		1		22/09/2023	210	19/04/2024	
1	600MT Agriculture Warehouse 01	Manikakara		1		24/08/2023	180	20/02/2024	
2	1500MT Agriculture Warehouse 02	Maridi 2			1	25/07/2023	210	20/02/2024	
2	600MT Agriculture Warehouse 03	Nagbaka			1	22/10/2023	180	19/04/2024	
2	600MT Agriculture Warehouse 04	Barawel -Olo			1	22/11/2023	180	20/05/2024	
3	600MT Agriculture Warehouse 02	Babadi		1		22/11/2023	180	20/05/2024	
3	Honey Processing Facility	Madebe		1		22/10/2023	180	19/04/2024	Mechanical Fit-out to be issued as separate tender
4	600MT Agriculture Warehouse 05	Kwanga			1	22/11/2023	180	20/05/2024	
4	Fruit Processing Facility 01	Maridi			1	22/09/2023	180	20/03/2024	Mechanical Fit-out to be issued as separate tender
5	Fruit Processing Facility 02	Duduma	1						To be issued in subsequent Tender Processes
5	Business Centre	Duduma	1						
6	600MT Agriculture Warehouse 06	Mboroko			1				
6	Business Centre	Maridi			1				
7	Market Grounds	Maridi			1				
7	Market Grounds	Ibba		1					
TBA	Roading	Maridi			30km				

2.4 Conformity with Plans and Specifications

All work performed shall be in accordance with these specifications and in conformity with lines, levels, grades, cross sections and dimensions shown on plans and working drawings. All materials provided shall also be in conformity with the specifications and in the event the materials provided and/or work performed are not totally in conformity with the plans and specifications but work reasonably acceptable to the Engineer has been produced, a determination will be made by the Engineer, on whether the work will be accepted. An

appropriate financial adjustment in the contract price for such work or materials shall be made by the Engineer. In the event the work performed and/or the materials are not in conformity with the plans and specifications and have resulted in inferior or unsatisfactory product, such work or material shall be removed and replaced or otherwise corrected by and at the expense of the contractor.

Unless otherwise specified, the contractor shall set such initial construction stakes and bench marks that will serve as the field controls for the construction work and obtain the approval of the Engineer for the final locations. No work shall begin until such stakes and bench marks are certified as correct by the Engineer or his representative.

3. BREAKDOWN

The ToR is for Supply and Construct of all items shown in the Design Drawings, BoQs (BoQ quantities are indicative only – Contractor to perform own take-offs) and items required to complete construction. The Bidders through their submission are to highlight any items that they identify as missing from the drawings and ToRs that are required for the construction.

Any cost saving initiatives are to be proposed for consideration and will be looked upon favourably by the PEA in reviewing of the prospective bids. Bidders are to submit pricing in line with Pricing Schedules with Cost Saving proposals included in the applicable section of the pricing schedule. These will be outside of the summary bid pricing for assessment due to their non-conformance from the tender ToRs.

3.1 Locations and Site Access

The proposed locations for the Infrastructure items are shown below. It's expected that there will be some movement in the locations prior to award. The construction will be in an equally accessible location though with the designs not requiring notable modifications.

Access to the worksites is via in some cases basic trails for which Toyota Landcruisers easily pass. Bidders are encouraged to view the sites themselves as all required clearing and access requirements are included in the bidder's submission.

Separable Portion	Item	County	Location	Coordinates
1	1500MT Agriculture Warehouse 01	Ibba	Namarabia	4°47'24.2"N 29°08'12.8"E
1	600MT Agriculture Warehouse 01	Ibba	Manikakara	4°50'56.6"N 29°15'31.6"E
2	1500MT Agriculture Warehouse 02	Maridi	Maridi 2	4°55'50.0"N 29°27'33.5"E
2	600MT Agriculture Warehouse 03	Maridi	Nagbaka	4°52'13.3"N 29°26'14.0"E
2	600MT Agriculture Warehouse 04	Maridi	Olo - Barawel	5°05'07.5"N 29°50'09.8"E
3	600MT Agriculture Warehouse 02	Ibba	Babadi	4°44'27.0"N 28°59'23.3"E
3	Honey Processing Facility	Ibba	Madebe	4°47'55.0"N 28°59'08.4"E
4	600MT Agriculture Warehouse 05	Maridi	Kwanga	04º51'14.55" 29º28'49.42"
4	Fruit Processing Facility 01	Maridi	Maridi	4°55'06.3"N 29°28'06.4"E

4. GENERAL CONSTRUCTION REQUIREMENTS

Structures are to be constructed as per the drawings. Additional detail on the construction requirements for some of the bulk items follows. Where the drawings have further specification, the drawing specification is to take precedence over the following general Construction Requirements.

4.1 Clearing and Grubbing

This work shall consist of clearing, grubbing, removing and disposing of everything on the ground surface of the designated areas within the building and land area footprint shown in the drawings including trees and all other vegetation and debris, except for the following:

- All objects, trees and other vegetation that are designated to remain.

The work shall include the preservation from injury or defacement of all those objects, trees and other vegetation that are designated to remain.

The contractor shall establish the limits of clearing and grubbing and designate all trees, shrubs, plants and other objects that are to remain and obtain the Engineer's prior approval to progress to clearing and grubbing. This is subject to Field Inspection Checklist signed off.

In carrying out work, care shall be exercised to ensure that existing roadway and other facilities, utilities and services, trees and plants, designated for preservation and also the adjoining properties are protected from injury or damage which could result from the contractors operations.

4.2 Excavation

4.2.1 Foundations Excavation

1. The benchmark surface of the building shall be assigned before excavation, and then the excavation must be done according to that point. Due to significant wet season rainfall in Western Equatoria, it's critical that the building platform and surrounding finishing is to a level that rainwater will not gather in the area of the building platform or surrounding area.
2. The excavation should be levelled with the width around the foundation allowing adequate working space for the footing and stone masonry work to be constructed properly. On both sides of the stone for mark-out, masonry thread should be stretched.
3. If at any stage excavation depths exceed 1.4m deep then benching will be required to stop the collapse of soils and possible harm to people and works under construction.
4. During the excavation period if the land doesn't seem homogeneous and seems soft then it must be excavated until it reaches to the hard surface.
5. The building foundation is designed for bearing capacity with respect to the drawings. The Contractor is to complete compaction testing and reports showing adequate compaction. The Contractor is to show passing compaction test reports prior to sign-off by the PEA engineer for continuing to the next stage.
6. The excavation should be check by the PEA Engineer with accompanying Field Inspection Checklist signed off and if the excavation works haven't any problems then Contractor Company can start the foundation works.

4.2.2 Limits of Excavation

The contractor shall set out the limits of excavation and shall carry out excavation operations as specified herein in a manner approved by the Engineer. The excavation shall conform to the lines, levels, grades and side slopes shown on the drawings or as directed by the Engineer. However, if unsuitable material is encountered outside the specified limits of excavation such material shall be excavated over areas and to depths as directed by the Engineer. Any excess excavation of suitable materials, shall be made good with suitable material.

4.2.3 Removal of Top Soil

Top soil encountered during excavation shall be stockpiled at suitable locations for use in soiling the side slopes and the verges and any excess top soil shall be removed from the site to Disposal areas.

4.2.4 Re-use of Suitable Material

The contractor shall organize and carry out excavation work in a manner that the suitable materials are excavated separately for use in works without contamination by the unsuitable material. Any material that becomes unsuitable by contamination due to the negligence of the contractor shall be made good by the Contractor and the Contractor's own expense.

All suitable material that is excavated shall be used in the construction of the facilities except where such material is in excess. Such excess material shall be disposed of or otherwise removed with the approval of the Engineer.

4.2.5 Removal of Unsuitable Material

Unsuitable material that is excavated shall be removed from the site to disposal areas approved by the Engineer. All dumped material shall be spread as directed by the Engineer in a manner not to interfere with the drainage pattern of the area.

4.2.6 Finishing Operations

The surface resulting from the excavation shall be finished to the levels given in drawings or as directed by the Engineer. All slopes are to provide to controlled run off of rain and surface water to protect the new structures and also to prevent any detrimental effect on the surrounding environment and communities. All cut slopes shall be finished neatly to the specified slopes care shall be taken to remove all unstable boulders away from these slopes. This is subject to Field Inspection Checklist sign off.

4.2.7 Grassing of topsoiled areas

All areas with top soil finish shall have grass seeds, sprigs or sods planted:

a) Grassing Description

This work shall consist of providing cover by seeding, sprigging or sodding, including soil preparation, fertilizing, mulching and watering as required, on all areas shown in drawings or in areas to be identified by the engineer, in conformity with these specifications.

b) Grass Sprigs

Grass sprigs shall be healthy living stems, with attached roots of accepted turf forming grass specified in the contract and approved by the engineer, harvested without adhering soil and obtained from approved sources in the locality of work.

c) Grass Sods

Grass sods shall be of living vigorous growth, of the type of grass and thickness specified, having a dense root system, contained in suitable sods and free from weeds etc.

4.3 Concrete

Refer to Section 11.3 Quality for concrete testing requirements.

4.3.1 General Mixing

Concrete shall be mixed at the site of construction or, where allowed, shall be mixed at a central plant transported to the site. Concrete may also be mixed in truck mixers when in transit, from a central place to the site.

All site mixing or mixing at a central place, except where hand mixing is allowed, shall be carried out using a suitable mixer of an approved type and capacity. No mixer having a rated capacity of less than a bag-batch shall be used without the prior approval of the Engineer.

All concrete, irrespective of the method of mixing, shall be uniformly and thoroughly mixed to the required consistency prior to placing and there shall be no evidence of insufficient mixing. The mixing time of a batch of concrete, in any type of mixer, shall not be less than 60 seconds. Any concrete insufficiently mixed shall be rejected and shall be disposed of by the contractor at his own expense.

4.3.2 Batching of Constituents into Mixers

The constituent materials of concrete shall be batched by volume or by weight as specified.

In volume batching, as far as practicable, cement shall be measured by the bag and the aggregate shall be measured using standard measuring boxes. Water shall be measured using measuring devices approved by the Engineer.

For batching by weight of constituents the mixer shall be equipped with the necessary weighing devices specified in the contract or required by the Engineer. Preferably the batching plant shall have separate bins for cement, fine aggregate and coarse aggregate, a weighing hopper and a scale capable of determining accurately the weight of each component of the batch. A properly calibrated water measuring device shall be attached to the mixer.

4.3.3 Hand Mixing

Hand mixing where permitted, shall be carried out on a smooth water tight platform large enough to allow efficient turning over of the constituents of concrete before and after adding water. Mixing platform shall be so formed that no foreign material gets mixed up with the concrete and the mixing water does not flow out of the mixing area.

4.3.4 Mixing at central plant and/or in transit

Where concrete is mixed at a central plant and/or in transit, the method of mixing, transport, shall be as specified in special provisions or as established by the Engineer depending on the equipment used. However, such concrete shall be transported in suitable truck mixers or truck agitators within stipulated periods of time so as to ensure that the concrete is delivered to the site leaving sufficient time for placing and compaction. Also the interval between delivery of batches shall be less than 30 minutes so as to ensure that the concrete already in place has not started hardening before fresh concrete is placed on it.

4.3.5 Admixtures

No admixtures shall be added to concrete without the prior approval of the Engineer.

4.3.6 Aggregate for Cement Concrete

Aggregate for concrete shall consist of coarse aggregate (aggregate substantially retained on the 4.75mm sieve) and fine aggregate (aggregate substantially passing the 4.75mm sieve).

Unless otherwise specified the coarse aggregate shall be crushed rock from an approved quarry and the fine aggregate shall either be crusher fines or river sand.

The aggregate both coarse and fine shall be hard durable and clean and shall be free weathered, soft, laminated or elongated pieces, deleterious matter, dust and clay.

4.3.7 Placing and Compaction of Concrete

Blinding to be poured where specified in the drawings prior to the forming up of pedestals and specific foundations.

Prior to placing of concrete all formwork and reinforcements therein shall be cleaned of all extraneous material and dust and made free of any standing water. It shall be ensured that all formwork is made leak proof and that there is no loss of mixing water or grout from the concrete. No concreting shall be started without the prior approval of the Engineer.

All mixed concrete shall be placed and compacted in the formwork, using approved vibrators of the internal, external or screed types, or combinations thereof depending on the type of job. Where approved, steel rods may also be used for the purpose in addition to the vibrators. The adequacy of the compacting equipment or the suitability of the compacting method shall be determined by the Engineer depending on the requirements. Use of steel rods only for compaction shall be resorted to only in small jobs and in low strength concretes.

In all cases of continuous concreting, fresh concrete shall be placed before the already laid concrete is less than 30 minutes old and where this time gap is exceeded a construction joint shall normally be formed prior to continuing with the concreting.

All concrete shall be placed and compacted in horizontal layers normally not exceeding 300mm in depth except where internal vibrators are used when the depth may be increased up to a maximum of about 450mm.

No concrete shall be dropped from a height greater than about 1.5 meters except with the prior approval of the Engineer. Where chutes are used for placing of concrete they shall be kept clean and used in a manner to prevent segregation.

When concreting has to be resumed on a surface which has hardened, it shall be roughened, swept clean thoroughly wetted and covered with a thin layer of cement grout or cement mortar as approved. Semi - hardened surfaces shall be well brushed to remove all laitance, cleaned and covered with a thin layer of cement grout prior to overlaying with fresh concrete.

4.3.8 Curing of Concrete

Freshly laid concrete shall be kept undisturbed and protected from the effected of sun and rain and from drying out till it hardens. Once hardened, the concrete shall continuously be cured in a moist atmosphere for a minimum period of 7 days and for a further period if so specified or required by the Engineer.

4.4 Cement Grout

Cement grout for grouting of window frames, ducts and other purposes shall consist of Ordinary Cement and water mixed in the proportions necessary for the intended purpose. The grout shall be mixed until a uniform consistency is obtained and shall normally be used within 45 minutes of mixing.

Where cement grout is placed on concrete surfaces, the concrete surface will be scabbled (roughened) and brushed clean before being water soaked prior to application of the cement grout. The scabbling of the surface will be inspected by the Engineer prior to application of the grouting.

4.5 Cement Mortar

Cement mortar shall normally consist of Ordinary Cement, sand and water in the proportions specified. Lime shall be added only where specified.

Mortar shall be mixed thoroughly, either by hand or mechanically until its colour and consistency are uniform. It shall be mixed in small quantities only as an when required and shall normally be used within 45 minutes of mixing. Mortar which had been mixed for more than 1 hour and shows signs of hardening shall be discarded.

4.6 Steel Reinforcement for Concrete Structures

4.6.1 Materials

Steel reinforcements used shall meet the requirements of the following:

a) Hot rolled MS bars to BS 4449
b) Cold worked high yield steel bars to BS 4449
c) Steel fabric to BS 4449
d) Hot rolled high yield steel bars to BS 4449
e) Hard drawn steel wire and wire mesh, if used, shall be approved manufacture.

4.6.2 Protection and Storage

Reinforcement shall be clean and free from loose rust and mill scale, dirt, oil, grease and paint at the time of fixing in position and subsequent concreting. Reinforcement for structures shall be handled and stored in a manner that will prevent deformation.

4.6.3 Cutting and Bending

Bars shall be cut and bent cold by applying a slow, even pressure with equipment and methods approved by the Engineer to the dimensions given in the Bar Bending Schedules shown in the relevant drawings.

Bends and hooks shall conform to the requirements given in the drawings or established by the Engineer.

4.6.4 Placing and Fixing of Reinforcement

All reinforcing bars shall be placed in positions shown in the drawings and shall be firmly held in position with the specified spacing, prior to concreting operations using necessary wire ties at bar intersections, spacer bars, steel chairs of approved type or by other approved means. Wire ties shall be black annealed M.S of G.I. wire, not less than 1.0mm in diameter and shall be firmly tied and folded so that they do not project into concrete cover region. The adequacy of supports and ties to secure the reinforcement properly shall be subject to the approval of the Engineer. This is subject to Field Inspection Checklist sign off.

Layers of bars shall be separated by spacebars, pre-cast mortar blocks or other approved devices. All horizontal and vertical reinforcement shall be supported on mortar blocks, of approved shape conforming to cover requirements, with tie wires embedded in them, made out of 1:1 ½ or 1:2 cement sand mix. Supports which are in contact with the external face of the concrete shall all be mortar blocks. The use of small stones or wood blocks shall not be permitted. As far as possible, bars of full length shall be used. In case this is not possible splicing of bars shall be done as specified in the drawings or as directed by the Engineer. (All splices shall have a lap length at least equal to the anchorage length required to develop the stress in the smaller of the bars to be lapped.) Lap splicing shall be staggered for different bars and shall generally not be located at points, of maximum tensile stress.

Where welding is specified or approved by the Engineer, as an alternative, the reinforcement shall be butt welded by the metal arc process using covered electrodes, complying with standard specifications for such work. Where screwed joints by using screwed coupling boxes of approved type capable of developing a strength at least 10% more than that of the bar which is to be jointed, and the joint as a whole shall be capable of developing the same strength as the coupling. Before the Engineer approves the welding of reinforcement or screwed joints in reinforcement, the contractor shall submit such samples as the Engineer may require for testing.

Substitution with different size bars or with different type of steel will be permitted only with the prior approval of the Engineer.

No concreting shall commence until the reinforcements have been inspected and approved by the Engineer. This is subject to Field Inspection Checklist sign off.

Reinforcement after being placed in position shall be maintained in a clean condition until completely embedded in concrete. Special care shall be exercised to prevent any displacement of reinforcement in concrete already placed. All bars protruding from concrete and to which bars are to be spliced and which are likely to be exposed for a considerably long period shall be protected by a thick coat of neat cement grout.

4.7 Formwork for Structures

This work shall consist of providing all temporary or permanent forms and moulds required for casting concrete, together with all temporary construction required for their support which includes scaffolding and temporary piles where necessary.

4.7.1 Materials

All formwork shall be of timber, metal or any other material approved by the Engineer.

Timber for forms shall generally be of approved quality, well-seasoned and of uniform thickness, sound, free from warps, loose knots, twists, wavy edges, saps and shakes or other defects affecting the strength of formwork and appearance of the finished structure. Where so required the surfaces of the timber shall be suitable dressed.

Metal sheets for forms shall be free from rust and dents with no surface blemishes that will impair the concrete surface finish.

Supports and scaffolding shall be of metal, sawn timber, round timber or of any other material approved by the Engineer. Scaffolding to be adequate for works with design capacity provided by the Contractor to the PEA. Maximum weights allowable per scaffold bay are to be specified and monitored during implementation. Regular scaffold inspections are to be performed ensuring all connectors remaining tight or well lashed.

4.7.2 False work

Temporary staging shall be provided by the contractor to enable the constructional operations to be performed in the required sequences and in a safe manner.

The false work, shall be properly designed and constructed, to provide the necessary rigidity and to carry the loads which it will be required to support. Where necessary, it should also include safe walkways to enable the Engineer to inspect the form work, reinforcements and concreting. Complete details of the arrangements proposed shall be submitted to the Engineer for his approval.

4.7.3 Construction of formwork

All formwork shall be so constructed that shall be no loss of material from the fresh concrete. Forms shall be mortar tight and shall be made sufficiently rigid by the use of ties and bracings to prevent any displacement or sagging and shall be capable of withstanding all incidental loading during concreting.

Formwork shall be such that hardened concrete shall be in the position and of the shape, dimensions and surface finish described in the contract.

Where internal ties are permitted, they or their removable parts shall be extracted without damage to the concrete to a depth of at least 25mm from the finished concrete surface and the resulting holes filled with mortar. No permanently embedded metal nuts shall have less than 25mm cover to the finished concrete surface.

Formwork shall be constructed so that the side shutters of members can be removed without disturbing the soffit shutters, and if the contractor wishes to leave some of the props in place when the soffit shutters are removed. These props shall not be disturbed during the striking. When specified the detailed arrangements of the props shall be submitted in advance to the Engineer, for his prior approval.

4.7.4 Formed surfaces and finish

Surfaces shall be finished smooth or rough as specified. Normally, exposed surfaces shall be finished smooth. Where smooth finish is required, the forms shall be made of dressed timber with or without form liner approved by the Engineer or shall be of metal. Where metal forms are used, all bolts and rivets shall be counter sunk if necessary and well ground to provide a smooth, plane surface. For surfaces that are not designated to be finished smooth sawn timber without dressing (rough timber) may be used.

4.7.5 Re-use of formwork

Where formwork has to be re-used, the shape, strength, rigidity water tightness and surface smoothness of reused forms shall be maintained at all times. Any warped or bulged timber shall be resized before being reused. Formwork which is unsatisfactory in any respect shall not be reused.

4.7.6 Preparation of formwork before concreting

Immediately before concreting, the forms shall be thoroughly cleaned either by water jetting or by any other suitable method, temporary openings being provided for the purpose. The inside surfaces of the forms shall then, if necessary, be coated with an approved material such as mould oil to prevent adhesion of the concrete. This material must not come into contact with the reinforcement or pre- stressing tendons and anchorages.

4.7.7 Inspection by Engineer Prior to Placing Concrete

No concrete shall be placed until the Engineer has inspected and approved the formwork, false work and reinforcements. This is subject to Field Inspection Checklist sign off.

The minimum periods between concreting and the removal of forms shall be as follows:

- Sides of beams, walls, columns, wells and piles - 1 day
- Soffit of secondary slabs (props left in) - 4 days
- Soffit of main slabs (props left in) - 8 days
- Soffit of beams (props left in) - 8 days
- Removal of props - secondary slabs - 10 days

4.8 Stone work with cement and sand mortar

Stone works are to be done with the below incorporated into the construction process:

a) Stone used for foundation should be mountainous hard crashed stone (not river-rounded stone).
b) The stones should be cut and cleaned until it has 3 regular surfaces.
c) Don't use limestone for construction work.
d) The outer side of the super stone masonry stone should be cut properly so that its size should be (35x35)cm and 2.5cm thickness mortar on its top and 2.5cm on its bottom it gets 40cm and one complete stone should be used for this height.
e) For all stone, masonry works mortar of cement and sand must be used.
f) The sand should be washed, clean and without gravel and soil.
g) All around stone works should be filling with cement and sand mortar and no any empty place exist around the stone.
h) All stone works should be kept wet with water at least for 14 days

4.9 Brick masonry works with cement and sand mortar

Brick masonry works are to be done with the below incorporated into the construction process:

a) Crushing strength of burnt brick shouldn't be less than 140 kgf/cm2.
b) Don't use the bricks which have lime or stone lime in their content.
c) Bricks are to have the same form, same size, same color and be made from similar materials.
d) Burnt brick should be soaked in water at least for one hour before used.
e) The mortar of brick works is from sand and cement the sand should be cleaned and washed.
f) Don't use Saline brick for walls.
g) All brick masonry works, and concrete works should be kept wet for 2 weeks.
h) Room's internal heights, widths and lengths should be according the design and from start to end of works all brick masonry works must be checked with site Engineer to show there won't be problems in the future inclusive of no problem for size of bricks in the building internal installations.

4.10 Plastering

Plastering works are to be done with the below incorporated into the construction process:

a) Plastering mortar is from sand and cement.
b) The sand should be washed, cleaned and completely without dust.
c) The plastering should be smooth and without wave and undulations.
d) All corner and walls should be straight and vertical.
e) The surface of beams that have horizontal view should be regular and levelled.
f) All plastering should be kept wet at least for 14 days.
g) In the case that the contractor uses dirty sand or mixes the mortar poorly or doesn't water the plaster for curing then the contractor should remove the plaster to re-plaster it properly.
h) Pointing work of stone masonry should cleaned and outstanding

4.11 Carpentry works

Carpentry works are to be done with the below incorporated into the construction process:

a) Use wood with good quality from the regional market.
b) Windows frames are (9x9cm), and windows stile are (10x5) cm unless specified in the drawings.
c) All locks of windows must be good quality.
d) All windows screen must have net mesh to avoid the entrance of flies.
e) Glass keeper should be used for installation of glass, and connected holder shouldn't be used.
f) Before installation windows, it should be painted with one coat of Oil (Aster) and then covered with plastic to avoid the window from twisting.

4.12 Welding works

Storage facility doors should be made from steel according to attached design.

Welding preparation to be done to BS 5950 as per the drawings. The Engineer will perform welding inspections with non-conforming welds to be cut out and rewelded.

Locks are to be made of circular tube with 1.5 inch diameter and thickness 3mm. 3 Keys are to be supplied for each lock at handover.

4.13 Framing and roofing

Any site welding is to be done to be as per drawings. No butt welds are permitted without the express permission of the engineer.

Approved as per the drawing notes are to be tensioned under a method approved in BS 5950 and agreed with the Engineer.

4.14 Surface treatment

Inside and outside the building will be painted with 100% plastic painting, the doors and windows will be oil painted.

All metallic works should be painted with anti-corrosion paint and then two coat oil paint.

No painting shall be carried out in wet or damp weather and the surfaces to be painted shall be properly dry before paint is applied.

a) All internal and external painting is 100% plastic paint.
b) Before painting the plastering surface should be rubbed and polished properly.
c) Internal walls of the storage should be smoothened by one layer filler.
d) After filler layer, internal wall should be painted with two layers of 100% Bright to Plastic paint.
e) External walls after rubbing and polishing should be painted with white cement.
f) After painting with white cement, External walls must be painted with two layers of sun and water proof paint.
g) 10. All colours of paints should be selected with consultation of the PEA Engineer.

4.14.1 Painting of Steel Members

All structural steel members such as trusses, beams, built up girders supporting steel trestles and other steel items such as pilasters and handrails shall be subject to preventive maintenance as regards corrosion. They shall be de-rusted either by pneumatic or electrical scrapers or by other approved means to bare metal, cleaned either by air pressure or by other approved means and repaired as necessary prior to applications of any paint.

After attending to corrosion, all de-rusted parts shall first be painted with an approved metallic primer and thereafter with two coats of approved anticorrosive paint.

No painting shall be carried out in wet or damp weather and the surfaces to be painted shall be properly dry before paint is applied.

All activities in scraping, cleaning and painting shall be carried out by men experienced in the type of work.

4.15 Electrical works:

Electrical works are to be performed by a licensed electrician. All requirements for Electrical installations and Wiring Guidelines are to be as per BS 7671: 2001.

Additional references for cable sizes are to be as per IS:13947 and IEC 60947. Where additional clarification is needed the Contractor is to install as per the below points:

a) All the electric wiring is below plaster layer inside plastic pipe of size 1.5 inch.
b) Storage building has a main switch board in which an automatic 3 phase switch, three 63 Amp fuses and three voltage meter will be installed and grounding wire should be fixed in ground properly.
c) Cable of size 4x50mm2from main switch board to electricity source (column) is contractor's responsibility and it should be flexible copper cable.
d) Main switch board should be installed in a safe and accessible point which should be accessible in danger time and should be from standard iron box.
e) For lightening of outside, circular and water proof lights should be installed.
f) Lights of outside should be circular with 20 cm diameter, rain and water proof lights .
g) For lighting of inside of storage in each column a circular light with a steel mesh cover for its protection from any damage. and all lights should be controlled by one switch board.
h) Inside storage four number of normal socket and one special socket (socket for connecting generator electricity to the building) should be installed near the door on the wall
i) Connecting general switch of storage to electricity source with power cable of (4x50) mm2 is contractor's responsibility.
j) One medium 3 phase power changer with one special socket with all other required material will be installed in the storage.
k) Two fuse box with 6 fuses of 20 Amp with best quality will be installed.
l) The Engineering Drawings currently do not include a solar system to be installed. All circuits, wiring and lighting is to have continuity testing completed and signed-off by the Engineer prior to handover.

5. PROCUREMENT

Procurement is to follow the below principals:

a) Materials where possible are to be procured locally.
b) Procured items are to reduce where possible climate and pollution impact as per the ESMF outlines.
c) Tenderer's bids are to show sources of significant materials.
d) The Bidders Technical proposal is to show a plan for engaging local suppliers.
e) Procurement is to minimise single use plastics and promote a reuse and repurpose approach to materials.
f) Where materials are to be sourced from outside of the works Counties, the Contractor is to prioritise South Sudanese suppliers.

The Bidder is to include a list of the major suppliers that they propose to use for the works. The PEA may object and request the replacement of any supplier that does not follow in principle the Environmental, Health and Safety Framework. Procurement items are to include certificates of conformity with proof of quality. Certificates are to be included where required at quality sign-off steps in the construction process and also in the final project Quality Handover Documentation (MDR).

Special attention to the below items for supply certification:

- Nuts and bolts and washers to ISO STD respectively. Supply certificates are to be included.
- Steel certs for roofing framing, any bracing and concrete reinforcing.
- Electrical wiring, fuse boards and circuitry

- Cement batch certificates. Note that the cement is to be stored in a shaded and as far a practical, a cool place for use.
- Paint batch certificates

The PEA Engineer is to sign-off for conformity on locally supplied bulk materials:

- The supply of local materials such as aggregate, sand, timbers, clay fired bricks, marram, etc shall have samples approved by both the Contractors Engineering representative and the PEA representative prior to bulk deliveries.
- The contractor shall be responsible for their own Logistical Support.

6. DESIGN

Refer to Annex 03 for Infrastructure designs and supplementary information. The documents provided are:

- Architectural Working Drawings
- Structural Drawings
- Structural Frame Design Analysis
- Soil Investigation and Geotechnical Reports

Bidders are encouraged to view the sites themselves prior to submitting their tender pricing.

6.1 Bill of Quantities

Indicative Bills of Quantities are attached for tender. Bidders are to review and where necessary adjust. Refer to Annex 4 for detail. The provided BoQ's are for information only and are viewed as approximations of the materials required. Bidders are to perform their own Material Take-offs and verification of materials inclusive of any additional allowances or missed line items to enable successful construction.

7. SCHEDULE

Tender deliverable: Bidder to provide schedule of works in Excel or MS Project format. Schedule to include breakdown of works inclusive of:

- Kick-off Meeting to be held in first week of Award
- Deliverable documents referenced in the Deliverables Section 25. inclusive of review period for PEA
- Any engagement of workforce
- Notable procurement items
- Mobilisation period
- Work breakdown Structure representing the construction stages and various trades working in series or in parallel where applicable.
- Staged inspections by the PEA

Upon award, this schedule will be developed further by the Subcontractor for submission as per Section Deliverables 13.

Where the Bidder has elected to submit pricing for multiple Separable Portions, the Bidder will provide Schedules per Separable Portion and then a combined Schedule for the basis of the multiple Separable Portions.

8. CONSTRUCTION METHODOLOGY

The Bidder in their submission is to outline the process of the construction inclusive of quality assurance & control, recruitment, procurement, mobilisation, key equipment, safety processes including any site measures such as "take-5's", daily pre-start meetings, tool-box meetings that will be implemented. The Contractor will demonstrate which workforce will be responsible for site safety inspections, quality inspections and sign-off, environmental compliance inspections and action.

9. ENVIRONMENTAL AND SOCIAL

9.1 Health and Safety:

The Contractor is to show in tender submission incident reporting summaries from the previous 2 years.

During the construction process, incident reporting to be provided weekly although any notable incidents are to be notified to the PEA within 1 hour.

Refer to the ESMF in Annex 01 for further information.

The Contractor is to supply Personal Protective Equipment to workforce for the works.

9.2Workforce Recruitment

9.2.1 Manning Histogram

The Bidder is to submit a manning histogram in alignment with their schedule of works. Manning is to be represented per facility making up the Tender Lots.

Should the Bidder elect to submit pricing for multiple Lots, the Bidder will also submit a manning histogram showing the combined manning required with clear identification of the manning per facility and Lot

The Bidder needs to show within their submission, evidence of manning availability to be able to complete works within the specified timeline. The Bidder needs to have the capability to increase manning should progress during construction be forecast to be delayed.

9.2.2 White Collar (Management and Support Workforce)

The Contractor must demonstrate that he has suitably qualified and experienced experts among its key personnel, who have the appropriate level of academic and professional qualifications and expertise gained in similar projects and countries to recognize and to deliver with respect to the management requirements, both, the technical requirements and the Environment, Social, Health and Safety (ESHS) aspects.

All Workforce are to be hired under OSH procedures outlined in the ESMF in Annex 01.

Regular Project reporting will show number of work-force including Nationality, Local Engagement, Female workforce.

The Contractor shall include in his team amongst others at least the staff with qualified expertise/ experts as indicated in the table below. The Bidder must provide evidence of their qualifications and experience in CVs with the bid submission. The estimate of person-months *is not* binding for the Contractor, Bidders are free to allocate specific person-months for each position according to their individual staffing schedule and estimate.

Besides the key experts, the Contractor shall provide back stoppers for supervision, monitoring and quality assurance of the Contractor's services from the head office.

Position	Task/ Responsibility	Qualification Requirement / Expertise	Person-months
Project Manager	Project Management and focal point for all contractual items	Civil Engineering Degree or similar Qualification. 7 Years experience in similar project minimum. Fluent in English.	

Position	Task/ Responsibility	Qualification Requirement / Expertise	Person-months
Construction Manager	On site Construction Manager running day to day workforce and construction activities.	7 Years experience in similar project minimum.	
Quality Control Manager	Set-up Quality Control documentation for the works transitioning into Quality Control during the Construction Process and compilation and submission of the MDR	3 Years experience in similar project minimum. Fluent in English.	
Health, Environment and Safety Manager	Write and implement Health, Safety, Environmental and Social procedures	3 Years experience in similar project minimum. Fluent in English.	
Project Engineer	Complete detail methodologies and works packing for procurement and construction planning. To provide technical direction and control to the workforce	Degree in Civil Engineering. 6 Years plus experience in the Construction Industry with evidence of large scale works. Fluent in English.	
Back-up support positions in Head Office			

9.2.3 Blue Collar (Construction and Associated Workforce)

The Bidder's submission is to include Workforce recruitment steps to achieve the below:

- Target 60% Local Employment. This is needed for acceptance in the communities and to ensure local trades skills are maintained.
- Use local communities for cooking of lunches where possible. The project is to support local communities.
- The project requires a minimum of 80% South Sudanese Nationals in all workforce.

The Contractor will also report on status of Locally employed workforce. Information to be provided:

- Internally Displaced Person
- Host Community
- Refugee
- Returnee

The bidder is to show in their submission expected roles that will be filled by women. Bids showing increased female workforce will be viewed favourably.

Bids that show methods for supporting social cohesion in hiring of local workforce are viewed favourably. It's important to note that this region has a high proportion of Internally Displaced Persons. It's important that workforce selected incorporates any persons who have been displaced.

The PEA considers persons with special needs (disabilities) to have equal rights to work and gain a living. Therefore, the PEA therefore encourages at least 5% of the total Contractor employees (male and/or female) to be persons with special needs.

The Contractor is required to protect the right of all its employees (including women and people with special needs) and shall ensure a favourable working environment, which shall include equal opportunities, equal

remuneration for work of equal value, safe and healthy working conditions, protection from harassment and redress of grievances.

Labour disputes shall not be regarded as a force majeure. The Contractor(s) will remain fully responsible for performance of any task regardless of any labour disputes.

9.3 Social (Interactions with Works Areas & Workforce Support):

The Contractor will abide by the ACTED Code of Conduct. This includes any subcontractors. It's expected though that Contractors will have their own Code of Conduct that must meet at a minimum the standard of the ACTED Code of Conduct.

All personnel assigned to perform the Services must undergo due diligence and positive vetting before being assigned to the Contract. Personnel must have a clean record. Police reports attesting to this from the personnel's country of origin shall be made available to the PEA within 10 calendar days from the Effective Date.

Contractors shall maintain the highest standards of conduct. The Contractor shall maintain discipline and at all times take all necessary precautions to prevent any unlawful, riotous or disorderly conduct by or among those employed at the site. The Contractor shall maintain high standards of employee competency, conduct, cleanliness, appearance and integrity and shall be responsible for taking such action with respect to employees as may be necessary. Compliance with and the enforcement of ACTED Supplier Code of Conduct is mandatory for all categories of mission personnel, including Contractor's personnel. The PEA reserves the right at its sole discretion, to direct the Contractor to remove or replace any employee, at the Contractor's own costs, for failure to comply with the Code of Conduct

Refer to Appendix 02 for the ACTED Code of Conduct.

9.4 ESMF Considerations:

The Contractor shall include in his team amongst others, at least one person ESHS responsible with 3 years of professional experience in the field of environmental, social and/or health and safety issues.

Refer to Appendix 01 showing the detailed Environmental and Social Management Framework to be complied with.

9.5 Site Clearance and Remediation:

Sites require scrub and minimal tree clearance. Clearance is to be minimised in line with the ESMF in Annex 01. Remediation of any disturbed land is to be done to a high standard in line with the ESMF.

Note ESMF comments required temporary stockpiling of construction topsoil, minimisation of transport corridors and any collateral clearances for construction support processes.

10. SECURITY

The contractor is responsible for security of the construction site. It's expected that the employment of a portion of local labour and local procurement where possible will help to maintain good relations with communities and minimise security issues. The PEA will also do what it can to encourage good relations and security controls with local community leaders and stakeholders.

The PEA neither guarantees, nor accepts liability for Contractor personnel at any time, including within PEA controlled compounds. The PEA will not provide any security arrangement for the contractor's personnel and consultants. The contractor's personnel and consultants should be familiar with the security environment in the hosting country. The Contractor will also be expected to arrange for appropriate insurance for its employees, including malicious acts insurance.

11. QUALITY

11.1 Quality General

The Bidder is to provide detail on the proposed Quality Control mechanisms that will be utilised within their tender submission.

Quality documentation is to be submitted and approved prior to commencement of the works are per Section 25. Deliverables.

Quality documentation entailed:

Inspection and Test Plans: To be submitted to the Engineer for review and approval of documents prior to mobilisation.

Field Inspection Checklists: To be submitted to the Engineer for review and approval of documents prior to mobilisation.

Test Reports: To be submitted to the Engineer on an ongoing basis through the works.

Notification for normal inspections on site is to be 72 hours. This is for Field Inspection items, Inspection and Test Plan hold points or surveillance points. This can be achieved through clear inspection plan notification in weekly progress meetings between the contractor and the PEA representative. The Contractor shall use all reasonable care and diligence to see that all works are satisfactorily completed and all discrepancies and deficiencies pointed out by the PEA are completed corrected prior to inviting the PEA for Inspections.

11.2 Technical Query Process

Queries to the PEA Engineer are to be clarified through an official Technical Query Process on an agreed template. Technical Queries are to be updated in a maintained Technical Query Register showing status throughout the duration of the works. Refer to Appendix 6 for suggested templates for use.

Any changes to design are to be red lined by the Contractor with refences to Technical Queries showing PEA approval and will then form part of the MDR handover documentation deliverable due for completion of the contract works.

11.3 Testing of Concrete for Acceptance

11.3.1 General

Concrete shall be tested determining the crushing strength of 150 mm cubes at 28 days. Here so required an early assessment of the 28 days strength shall be made by carrying out tests at 7 days on the assumption that 65% of the 28 says strength is achieved in 7 days. Any other testing procedure to assess the 28 days compressive strength of concrete shall be subject to the prior approval of the Engineer.

11.3.2 Preliminary Strength Tests

In the design of mixes, preliminary tests shall be carried out by the contractor to ensure that the proposed mix attains the required target mean strengths. Testing is to be as per BS 1881:1983 Methods of Testing Concrete. For this purpose, three trial batches of the proposed mix shall be prepared at its specified workability. From each batch 3 random samples shall be taken and for each sample a cube shall be made, for testing at 28 days and where required 3 more cubes shall be made for testing at 7 days using three more random samples from the same batch.

The mix shall be accepted as suitable if the average strength of the 9 cubes tested after 28 days exceeds the target mean strength.

The workability or consistency of fresh concrete shall be such that the concrete is suitable for the conditions of handling and placing so that after compaction it surrounds and grips all reinforcements and completely fills the formwork.

11.3.3 Works Strength Tests

All concrete where strength requirements are specified shall be tested for compliance by carrying out works tests unless otherwise allowed by the Engineer.

The frequency of testing however, shall be determined by the engineer depending on the nature and the extent of work.

For works of a continuing nature such as casting of pre-stressed beams initially there shall be frequent testing, to conform the mix, which shall be suitably reduced to a general pattern of testing after the initial period is over.

As a general rule a specified volume of concrete referred to as a lot shall be sampled for testing and from each lot 3 samples shall be taken for each of which a cube shall be made for testing at 28 days. Where required 3 more samples shall be taken and 3 more cubes shall be made for testing at 7 days.

A lot of concrete shall mean any of the following as applicable:

a) 15 cubic meters of continuing process of concreting
b) A day's concreting
c) A defined item of work such as concreting a beam or a slab, which is carried out in less than a day.

Acceptance criteria shall be that the average 28 days compressive strength of the 3 cubes exceeds the characteristic strength of the concrete and that the differences between the greater and least strengths is not more than 20 percent of the average.

The 7-day test results shall generally be made use of as in indicator of the strength at 28 days and unless otherwise decided by the engineer, no decision regarding non-acceptance of the concrete shall be made using these results.

11.3.4 Casting, Curing & Testing of Cubes

Casting, curing and testing of concrete cubes shall be carried out as given in BS 1881 Part 108 of 1983 or as given below.

a) Casting

The 150mm cube moulds shall be filled in layers approximately 50mm deep and each layer shall be compacted either by hand or by vibration. After the top layer had been compacted the surface of the concrete shall be finished level with the top of the mould by means of a trowel.

When compacting by hand, the standard compacting bar made of steel weighing 1.8kg, 380mm long and having a ramming face 25mm square, shall be used and the strokes of the bar shall be distributed in a uniform manner over the cross section of the mould. The number of strokes for each layer shall depend on the type of concrete. However, each layer shall be subjected to a minimum of 35 blows.

When compacting by vibration each layer shall be vibrated using a suitable vibrating tool.

b) Curing

Immediately after they are made the test specimens shall be stored in a place free from vibration in a damp atmosphere and at a temperature of around 20°C, for the next 24 hours. At the end of this period, unless otherwise directed, the specimens shall be marked for later identification, removed from the moulds and immediately sub-merged in a water tank and kept there until taken out just before test. The specimens shall not be allowed to become dry at any time until they are tested where the specimens have to be transported to another place, say from the field to the laboratory, for testing, they shall be wrapped up in wet sacks or put inside suitable wet bags during transport. At no stage of transport the specimens shall be allowed to dry up.

c) Testing

The specimens shall be tested in a machine approved by the Engineer and at the time of testing the platens of the Machine shall be wiped clean and any loose grit or other material removed from the surfaces of the cube which are to be in contractor with the platens of the compression machine.

The test cube shall be placed in the machine in such a manner that the load shall be applied to two opposite sides of the cube other than the top and bottom as cast.

During loading, the load shall be applied without shock and increased continuously at a rate of approximately 15 MN/m² per minute until no greater load can be sustained.

d) Compressive Strength

The tests for the determination of compressive strength of cement shall be carried out in accordance with Appendix C or D of SLS 107" 1982 or BS 4550: Part 3 : Section 3.4: 1978 or ASTM designation C 109-77.

11.3.5 Slump Test

The slump test shall be carried out in accordance with BS 1881: Part 102: 1983 or ASTM test designation C 143-78.

12. REPORTING

12.1 Regular Meetings

A weekly minuted meeting chaired by the PEA representative shall be held regularly at a mutually agreeable time. The proposed time for this meeting is to be agreed during the Kick-off Meeting post award. Tentatively this is proposed for:

Tuesday's 09:00am. Location to be agreed.

12.2 Reporting

Weekly Report to include:

a) Procurement update
b) Manning inclusive of Local Engagement, South Sudanese engagement and Female Workforce engagement (further reporting categories are shown in Section 21.2 Workforce Recruitment
c) Incidents
d) Technical Query Register
e) Progress updates including photos
f) Progressed works schedule
g) Concerns including delay items
h) Commercial Correspondence Register
i) Invoicing Progress Payment status

13. DOCUMENTATION DELIVERABLES

The below table shows the deliverables to accompany the tender submission as specified in this ToR. The Bidder's attention is drawn to other deliverable items specified in the tender bid documentation in which this ToR document has been embedded. The bidder is to include all requested information so as to qualify for tender review as per the PEA's processes.

Throughout the Tender Process, should the bidder identify items that require clarification to enable firm Lump Sum Pricing, then the Bidder will submit tender clarification request to the PEA using the Tender Clarification Register included in Appendix 7. The PEA will regularly provide any clarification to queries or updates on scope to all bidders.

Bidder Deliverables – Tender Submission	Due
Construction Methodology	Tender Submission
Quality Management Plan	Tender Submission
Sample Inspection and Test Plan (QAQC construction controls)	Tender Submission
List of key suppliers	Tender Submission
Local Labour Engagement plan	Tender Submission
Local Procurement Plan	Tender Submission
ESMF Implementation description. To include environmentally friendly initiatives. To outline safety procedures highlighting specific risks and controls for this project. To include controls and best practices to be implemented to ensure workforce are well received by host communities.	Tender Submission
Plant and Equipment list to be engaged inclusive of condition photos	Tender Submission
Variation rates (Workforce and Plant & Equipment)	Tender Submission
Health, Safety & Environmental Incident reporting from the prior 24 months Works schedule in MS Project or MS Excel (includes key items following Contract Award and notable procurement items) Manning Histogram Key management workforce organisation structure Key Personnel inclusive of CVs showing evidence of Qualifications and Experience \Bidders to highlight in tender submission any items that they believe are missing from the ToR for completion of the works. Bidders to include annex showing Bill of Quantities compiled during their tendering process (from Material Take-offs and their construction competency) to complete the works.	Tender Submission Tender Submission Tender Submission Tender Submission Tender Submission Tender Submission Tender Submission

Upon award, the below deliverables will be contractual requirements. Mobilisation to commence works will not be approved until the below items are submitted and revised to adequate standard for use.

Contractor Deliverables	Due
MDR Index (Completion Report structure)	Award + 2 weeks
Inspection and Test Plan (ITP): Civil Works	Award + 3 weeks
Inspection and Test Plan (ITP): Structural	Award + 3 weeks
Inspection and Test Plan (ITP): Roofing	Award + 3 weeks
Inspection and Test Plan (ITP): Electrical	Award + 3 weeks
Inspection and Test Plan (ITP): Surface Treatment	Award + 3 weeks
Inspection and Test Plan (ITP): Water Supply	Award + 3 weeks
Inspection and Test Plan (ITP): Waste Water and Drainage	Award + 3 weeks
Inspection and Test Plan (ITP): Earthworks, access ways and landscape	Award + 3 weeks
Inspection and Test Plan (ITP): Fencing and Gates	Award + 3 weeks
Inspection and Test Plan (ITP): Others as Required	As required
ITP referenced Field Inspection Checklists	Award + 4 weeks
Detail works schedule	Award + 1 week
Confirmed team manning (PM, QA, Project Engineers)	Award + 1 week
Construction Methodology	Award + 2 weeks
Environmental Social Management Framework compliance plan	Award + 2 weeks

14. CONTRACT MECHANISMS

14.1 Variation and Extension of Time

The Bidder's Scope of Works includes the complete materials, tooling and all provisions to complete the construction to final sign off by the PEA. Any technical queries around design clarifying further detail will not result in a variation to the works contract. The contractor as a competent contractor is to clearly query any design discrepancy prior to incurring cost on related materials. Should the contractor identify during the construction process items outside of the initially agreed contract pricing, then the contractor will need to confirm the action to be taken through a Technical Query which can provide evidence should a cost and time claim arise.

Should variations arise through the modification in design that are directed in which accrue extra time and cost outside of what is considered the norm, then the contractor will demonstrate costs and time for approval by the PEA. Cost is to be compiled in clear variation claim against variation rates to be provided by the contractor. Upon review and acceptance of the variation, the extension of time and variation will be added to the contract value for claim and adjustment to completion milestones.

As the Contractor becomes aware of items that may cause delay to the project, the Contractor is obligated to notify the PEA in writing within 3 working days with proposed mitigation measures. Without notification of possible delays the PEA has no obligation to recognise the delay as qualifying for Extension of Time. This is in aid of allowing the PEA the opportunity to mitigate potential delay items as they arise.

Variation rates:

Variation Rates (all rates include overhead management ie Project Engineer and standard associated tooling and PPE)		
Position	**Unit**	**Rate**
Carpenter	Hour	
Bricklayer	Hour	
Plant Operator	Hour	
Electrician	Hour	
Plumber	Hour	
Skilled Labour	Hour	
Unskilled Labour	Hour	
Bidder to allocated any further likely positions		
Plant and Equipment (all rates include fuel, maintenance and other operational costs)		
Equipment	**Unit**	**Rate**
5kVa Generator		
45kVa Generator		
Flatbed truck		
Plate compactor		
Bidder to allocated any further likely equipment		

14.2 Liquidated Damages

The activities will be subject to penalties against delays through the Liquidated Damages mechanism against each facility. Penalties commence 7 days after each respective completion milestone as shown in the below table.

Separable Portion	Item	Location	Commencement Date	Construction Duration	Completion Milestone Date	Liquidated Damages accrued daily as a percentage of total Lump Sum Value to commence 7 days after completion milestone	Liquidated Damages commencement date	Liquidated Damages Cap against total Lump Sum Value
1	1500MT Agriculture Warehouse 01	Ibba	23/09/2023	210	20/04/2024	0.5%	26/04/2024	10%
1	600MT Agriculture Warehouse 01	Ibba	24/08/2023	180	20/02/2024	0.5%	27/02/2024	10%
2	1500MT Agriculture Warehouse 02	Maridi	25/07/2023	210	20/02/2024	0.5%	27/02/2024	10%
2	600MT Agriculture Warehouse 03	Maridi	23/10/2023	180	20/04/2024	0.5%	26/04/2024	10%
2	600MT Agriculture Warehouse 04	Maridi	22/11/2023	180	20/05/2024	0.5%	27/05/2024	10%
3	600MT Agriculture Warehouse 02	Ibba	22/11/2023	180	20/05/2024	0.5%	27/05/2024	10%
3	Honey Processing Facility	Ibba	23/10/2023	180	20/04/2024	0.5%	26/04/2024	10%
4	600MT Agriculture Warehouse 05	Maridi	22/11/2023	180	20/05/2024	0.5%	27/05/2024	10%
4	600MT Agriculture Warehouse 06	Maridi	21/09/2024	180	20/03/2025	0.5%	27/03/2025	10%
4	Fruit Processing Facility 01	Maridi	22/09/2023	180	20/03/2024	0.5%	27/03/2024	10%
4	Business Centre	Maridi	23/06/2024	180	20/12/2024	0.5%	27/12/2024	10%
5	Fruit Processing Facility 02	Yambio			TBA			
5	Business Centre	Yambio			TBA			
6	Market Grounds	Maridi			TBA			
6	Market Grounds	Ibba			TBA			
TBA	Roading	Maridi			TBA			

15. DEFECTS LIABILITY PERIOD

The Contractor will be responsible for the making good of any of the contracted works in the case of items showing evidence of non-conformance in supply or faulty workmanship outside of normal wear and tear for a duration of 365 days from the date of handover which is confirmed with approved completion certificate.

16. APPENDICES

Appendix 1: Environmental Social Management Framework

Document included in attached zip file:

Revised Final ESMF_ACTED_13012023.pdf

Appendix 2: ACTED Code of Conduct

Document included in attached zip file:

ACTED Code of Conduct_EN_2022.pdf

Appendix 3: Infrastructure Designs and Site Assessments

Documents included in attached zip file:

SOIL INVESTIGATION AND GEOTECHNICAL REPORT (YAMBIO COUNTY).pdf
SOIL INVESTIGATION AND GEOTECHNICAL REPORT (IBBA COUNTY).pdf
SOIL INVESTIGATION AND GEOTECHNICAL REPORT (MARIDI COUNTY).pdf
BABADI 600MT WAREHOUSE
ARCHITECTURAL WORKING DRAWING (BABADI, IBBA - 600 MT AGROWAREHOUSE).pdf
STRUCTURAL DETAILS BABADI, (IBBA - 600 MT AGROWAREHOUSE).pdf
STRUCTURAL FRAME DESIGN AND ANALYSIS (BABADI, IBBA - 600 MT AGROWAREHOUSE).pdf
KWANGE 600MT WAREHOUSE
ARCHITECTURAL WORKING DRAWING (KWANGE, MARIDI, 600 MT AGROWAREHOUSE).pdf
SOIL INVESTIGATION AND GEOTECHNICAL REPORT (MARIDI COUNTY).pdf
STRUCTURAL DETAILS (KWANGE, MARIDI, 600 MT AGROWAREHOUSE).pdf
STRUCTURAL FRAMES DESIGN AND ANALYSIS (KWANGE, MARIDI, 600 MT AGROWAREHOUSE).pdf
BARAWEL 600MT WAREHOUSE
ARCHITECTURAL WORKING DRAWING (BARAWEL, MARIDI, 600 MT AGROWAREHOUSE).pdf
STRUCTURAL DETAILS (BARAWEL, MARIDI, 600 MT AGROWAREHOUSE).pdf
STRUCTURAL FRAMES DESIGN AND ANALYSIS (BARAWEL, MARIDI, 600 MT AGROWAREHOUSE).pdf
MARIDI FRUIT PROCESSING.zip
ARCHITECTURAL WORKING DRAWING (SUK KHAMTIN, MARIDI-FRUIT PROCESSING UNIT).pdf
STRUCTURAL DETAILS FINAL (SUK KHAMTIN, MARIDI-FRUIT PROCESSING UNIT.pdf
STRUCTURAL FRAMES DESIGN AND ANALYSIS (SUK KHAMTIN, MARIDI-FRUIT PROCESSING UNIT).pdf
MANKIKARA 600 MT WAREHOUSE
ARCHITECTURAL WORKING DRAWING (MANKIKARA, IBBA - 600 MT AGRO-WAREHOUSE).pdf
STRUCTURAL DETAILS (MANKIKARA, IBBA - 600 MT AGRO-WAREHOUSE).pdf
STRUCTURAL FRAMES DESIGN AND ANALYSIS (MANKIKARA, IBBA - 600 MT AGRO-WAREHOUSE).pdf
NAGBAKA 600MT WAREHOUSE
ARCHITECTURAL WORKING DRAWING (NAGBAKA, MARIDI, 600 MT AGROWAREHOUSE).pdf
STRUCTURAL DESIGN AND ANALYSIS REPORT (NAGBAKA, MARIDI, 600 MT AGROWAREHOUSE).pdf
STRUCTURAL DETAILS (NAGBAKA, MARIDI, 600 MT AGROWAREHOUSE) (2).pdf
MARIDI 1500MT WAREHOUSE
ARCHITECTURAL WORKING DRAWING (MARIDI-2, MARIDI, 1500 MT AGROWAREHOUSE).pdf
STRUCTURAL DETILS (MARIDI-2, MARIDI, 1500 MT AGROWAREHOUSE).pdf
STRUCTURAL FRAMES DESIGN AND ANALYSIS (MARIDI-2, MARIDI, 1500 MT AGROWAREHOUSE).pdf
NAMRABIA 1500MT WAREHOUSE
ARCHITECTURAL WORKING DRAWING (NAMRABIA - IBBA 1500MT STORE).pdf
1-STRUCTURAL DESIGN AND ANLYSIS REPORT NAMRABIA -IBBA-1500MT STORE.pdf
STRUCTURAL DETAILING - NAMRABIA - 1500MT STORE.pdf
IBBA HONEY PROCESSING FACTORY
ARCHITECTURAL WORKING DRAWING (SANANGO, IBBA HONEY PROCESING UNIT).pdf
STRUCTURAL DETAILS (SANANGO, IBBA HONEY PROCESING UNIT).pdf

STRUCTURAL FRAMES DESIGN AND ANALYSIS (SANANGO, IBBA HONEY PROCESING UNIT).pdf

Appendix 4: Bill of Quantities – FOR INFORMATION ONLY

Documents included in attached zip file:

600MT IBBA-BABADI BOQ.xlsx
600MT IBBA-MANKIKARA BOQ.xlsx
600MT MARIDI-KWANGE BOQ.xlsx
600MT MARIDI-BARAWEL BOQ.xlsx
MARIDI FRUIT PROCESSING UNIT BOQ.xlsx
600MT MARIDI-NAGBAKA BOQ.xlsx
1500MT MARIDI BOQ.xlsx
1500MT NAMRABI-IBBA BOQ.xlsx
IBBA HONEY PROCESSING UNIT BOQ.xlsx

Appendix 5: Pricing Schedule

Documents included in attached zip file:

32EFU Infra Lots 1 - 4 Pricing Schedule.xlsx

Appendix 6: Technical Query Documentation

Documents included in attached zip file:

Technical Query - Template.docx
Technical Query Register - Template.xlsx

Appendix 7: Tender Clarifications Template

Documents included in attached zip file:

32EFU Infra Lots 1-4 Tender Clarification Register.xlsx