

**PUNJAB RESILIENT AND INCLUSIVE AGRICULTURE TRANSFORMATION
(PRIAT) PROJECT**

TERMS OF REFERENCES (TORs)

OF

**PROJECT IMPLEMENTATION SUPERVISION AND THIRD PARTY VALIDATION
(PIS&TPV) CONSULTANTS**

A. INTRODUCTION

The agriculture sector has become more vulnerable to water shortages and climate change due to its geographic, climatic, and economic settings. Despite massive potential and significant contribution of irrigated agriculture, its performance remained below the achievable potential. An integrated approach based on upgrading the farm level community water conveyance infrastructure, equipping farmers with modern irrigation technologies, promotion of climate smart agriculture production practices, crop diversification, value addition, together with creating an enabling environment for sustained technology transfer at the grassroots level for optimal and efficient management of resources, is direly needed for sustainability of irrigated agriculture in the Punjab. Punjab Resilient and Inclusive Agriculture Transformation (PRIAT) aims at maximizing the productivity viz profitability of available resources (especially water) by minimizing losses at various levels to ensure its equity, adequacy, reliability, and sustainability at the farm level. Project Development Objective (PDO) of PRIAT is to enhance equitable access to water and productivity & profitability of farmers in project areas.

B. PROJECT COMPONENTS

The major activities to be carried out under the project would include, inter alia, the followings.

1) Component-1: Community-driven Improvement of Water Conveyance and Application

Sub-Component 1.1: Upgrading Community Water Conveyance Infrastructure

- a) Improvement of **1,000** unimproved watercourses
- b) Extension of lining on **2,000** partially improved watercourses (upto 50% optimal lining)
- c) Reconstruction and extension of lining on **1,000** outlived watercourses
- d) Development of **3,000** irrigation schemes outside canal commands and riverine areas

Sub-Component 1.2: Improving Community Water Management

- a) Improving Community Water Management (pilot test of water accounting & budgeting, promotion of climate practices, ICT based irrigation advisory, soil moisture meters, groundwater management/ monitoring, etc.)

2) Component-2: Promotion of Climate Smart High Value Production, Regenerative Agriculture, Crop Diversification, Agriculture Value Addition, and Inclusive Access to Markets

Sub-Component 2.1: Promotion of Regenerative Agriculture, Crop Diversification, Harvesting, Processing, Agriculture Value Addition, and Inclusive Access to Markets

Sub-Component 2.2: Promotion of Climate Smart High Value Production Practices & Technologies

- a) Installation of high efficiency irrigation systems (HEIS) on **40,000** acres
- b) Installation of solar systems for operating HEIS on **20,000** acres
- c) Provision of certified climate smart orchard plants and vegetable seeds/ seedlings on **5,000** acres
- d) Development of **1,000** on-farm water storage / rainwater harvesting ponds

3) Component-3: Project Management, Monitoring and Learning etc.

- a) Project implementation supervision & third-party validation consultants
- b) Project monitoring & evaluation consultants
- c) Awareness creation, capacity development, training, communication, strategic studies & research, buildings, technical assistance, machinery & equipment, etc.
- d) Project management and supervision (staff salaries, operational, etc.)

4) Component-4: Contingent Emergency Response Component to support preparedness and rapid response to disaster, emergency, and/or catastrophic events, as needed.

C. CONSULTING SERVICES

Project Implementation Supervision & Third Party Validation (PIS&TPV) Consultants will be hired to provide implementation supervision support and third-party validation of project activities. The objective of the assignment is to engage an engineering consultancy firm to provide support for the review and approval of designs & cost estimates, construction & installation supervision, quality assurance, quantity certification, technical assistance, and overall coordination of project execution. The consultants' team primarily works and reports to PD-PRIAT, PMU/ DGA(WM) Punjab, Lahore, but its major responsibilities will be in districts/ tehsils/ field areas. The Consultant will perform the role of 'The Engineers'. All records and sites are opened and available to the consultants to enable them to perform their functions.

The consultancy services for project implementation supervision are required to supervise and ensure that project activities are executed in an orderly manner with a high standard of workmanship and specified quality of materials within the envisaged implementation period and in conformity to best possible and latest technical (design, specification, and drawing), social and environmental standards. The tasks and activities include, but not limited, to the followings:

The scope of work of PIS&TPV Consultants would include but not limited to the following tasks.

- i) Provide overall project management support services to the DGA (WM) Punjab, Lahore/ PD-PRIAT/ PMU.

- ii) Prepare standards and specifications for works to be carried out and equipment/instruments to be provided under the project e.g., watercourses, HEIS equipment, solar systems, water storage ponds, regenerative agriculture, harvesting & processing equipment, market integration etc.
- iii) Draft technical documents/agreements/formats for SSCs including contract conditions, specifications for design, materials and installation of equipment, itemized list of typical items, etc.
- iv) Help in evaluation of the technical and financial proposals of SSCs and other service providers.
- v) Assist in mobilization and screening/ shortlisting of farmers against the eligibility criteria.
- vi) Facilitate in finalization of rates for various items, equipment, machinery, and services.
- vii) Inspect and advise on standards, specifications, and criteria for construction materials/equipment/ instruments etc.
- viii) Check surveys carried out by the OFWM staff for approval.
- ix) Review and approve plans, designs, and cost estimates of project interventions.
- x) Spot check for quality of works during construction of a minimum of one third by their number.
- xi) Certify quantities and quality of completed project works and delivered equipment as third party.
- xii) Provide resident supervision for manufacturing of precast concrete parabolic segments
- xiii) Verify financial resource transfer applications as per approved mechanism as third party validation
- xiv) Notify the DGA(WM) Punjab, Lahore/ PD-PRIAT of compliance / non-compliance of works with agreed criteria and standards.
- xv) Facilitate timely completion of works and recommend onsite design modifications.
- xvi) Provide technical support regarding training and research activities.
- xvii) Deliver technical assistance for development of ICT-based database/ reporting mechanism, development of RS technologies, and its management.
- xviii) Submit monthly, quarterly, and annual reports for proposed project activities besides other periodic reports as per requirements of project management.
- xix) Liaise with provincial, divisional, and district project management for smooth execution of field activities.
- xx) Submit reconciled physical and financial reports/ IUFRRs for its onward submission to the donor/ World Bank and government.
- xxi) Assist during project audits by internal and external auditors and provide support in preparation of audit responses and presentation in audit meetings.
- xxii) Extend technical support to maintain a website containing information on facilities and services, applications, procedures etc.

- xxiii) Provide support in the implementation of social & environmental management framework, communication strategy/plan, labour & gender management plans, annual work plans, etc.
- xxiv) Assist in expenditure planning and budgeting & financing forecast as required by the government and financing agency(s) as well as facilitate in developing procurement plans, contract management, and financial management.
- xxv) Work in close liaison with the Monitoring & Evaluation (M&E) Consultants for effective implementation of project activities and achievement of Project Development Objective.
- xxvi) Any other duty assigned by the project management and the World Bank/ donor.

D. SPECIFIC SCOPE OF SERVICES

a) Watercourse Improvement/ Lining

- i) Review the already developed standards & specifications and suggest improvements as per latest requirements to assure compliance with agreed criteria
- ii) Assist in mobilization of Water Users Associations (WUAs) and selection of watercourses as per approved criteria
- iii) Assist in developing rate assessment mechanism and facilitate in finalization of rates by DRC for construction/ lining materials
- iv) Check surveys and cost estimates carried out by the OFWM staff
- v) Review and approve plans, designs, and cost estimates for watercourses
- vi) Check quality of works during construction according to the agreed quality assurance plan, facilitate timely completion of civil works and recommend onsite design modifications
- vii) Recommend financial transactions/ funds transfer to WUA/SSCs as per approved criteria
- viii) Certify quality and quantity of completed civil works as third party
- ix) Provide resident supervision for manufacturing of precast concrete parabolic segments for watercourse lining
- x) Ensure completion of works as per standards & specifications

b) High Efficiency Irrigation Systems

- i) Assist in mobilization and screening of farmers for HEIS installation
- ii) Assist in preparation & review of design, standards & specification, and cost estimation of HEIS schemes
- iii) Prepare guidelines and technical documents/ agreement for SSCs including contract conditions, specifications for design, materials and installation of equipment, itemized list of typical items etc.
- iv) Assist in evaluation of technical and financial proposals of SSCs during prequalification

- v) Facilitate in finalization of rates for various items and services required for system installation
- vi) Review and approve plans, designs, and cost estimates prepared by the SSCs for HEIS
- vii) Check quality of material delivered at site by SSCs, conformity with specified standards and quantities based on an agreed quality assurance plan
- viii) Certify quantity and quality of all completed works as third party for payments of system cost to SSCs
- ix) Prepare completion certificates, measurements of works, and disbursement applications
- x) Provide technical support for training of OFWM staff and farmers in high efficiency irrigation systems
- xi) Review and advise on standards, specifications and criteria for high efficiency irrigation system best suited to local conditions
- xii) Facilitate timely completion of intended works and recommend onsite design modifications
- xiii) Check for quality of works during installation based on agreed quality assurance plan
- xiv) Verify financial resource transfer applications at various stages of works execution vis-à-vis installation
- xv) Prepare operation, maintenance, and management manuals for high efficiency irrigation systems

c) Solar Systems for Operating HEIS

- i) Assist in mobilization and screening of farmers for installation of solar systems for operating HEIS
- ii) Provide technical assistance in preparation of design, standards & specification, and cost estimation of the solar systems and suggest improvement/ modifications
- iii) Review designs of the Solar Systems for operating HEIS
- iv) Prepare guidelines and technical documents regarding design, installation of equipment, operation & maintenance, and monitoring mechanism, etc.
- v) Assist in evaluation of technical and financial proposals of solar SSCs for prequalification
- vi) Facilitate in finalization of rates for various items and services required for solar system installation
- vii) Review and approve plans, designs, cost estimates prepared by the SSCs
- viii) Check quality of material delivered at the site by SSCs, conformity with specified standards & quantities based on an agreed quality assurance plan
- ix) Certify quantity and quality of all completed works as third party
- x) Review and advise on standards, specifications, and criteria for solar-coupled high efficiency irrigation system best suited to local conditions
- xi) Verify financial resource transfer applications at various stages of works execution

- xii) Prepare operation, maintenance, and management manuals for solar operated HEIS

d) Construction of Water Storage Ponds

- i) Assist in mobilization and screening of farmers for water storage/ rainwater harvesting ponds
- ii) Assist in preparation of the standard design and cost estimation of the water storage pond
- iii) Review and approved designs of water storage pond for storing canal and rainwater
- iv) Certify quantities and quality of all completed works for payments of WSP cost to the beneficiary farmers as third party
- v) Facilitate timely completion of intended works and recommend onsite design modifications/ improvements
- vi) Spot-checking for quality of works during construction
- vii) Verify financial resource transfer applications at various stages of works execution as third party

e) Regenerative Agriculture, Harvesting, Value Addition, and Marketing Integration

- i) Assist in identification of potential growers, contractors, and service providers as well as mobilization of farmer entrepreneur groups, individual farmers, service providers, etc.
- ii) Provide support in identification of clusters vis-à-vis crops for processing & value addition
- iii) Assist in development of standards & specifications of regenerative agriculture machinery, harvesting, value chain & processing, etc. machinery/ equipment
- iv) Prepare guidelines, operational documents, and annual plan for implementation of this component
- v) Extend support for training & capacity building in operation, maintenance, and management of processing equipment/ machinery/ infrastructure for its sustainable functioning
- vi) Assist in the development of business plans and feasibility studies for regenerative agriculture machinery, harvesting, value chain & processing, etc. machinery/ equipment
- vii) Provide support for developing direct linkages with leading food processing industries and other potential buyers to market their processed and value-added products and vice versa
- viii) Assist in conducting a detailed value chain analysis of selected products and identify gaps / training needs for meeting SPS requirements and other quality parameters
- ix) In consultation with various stakeholders, develop and implement a comprehensive training plan for farmers of selected products and link with value added units
- x) Keeping in view the gaps identified at the farm level during analysis of selected products, develop a set of good agriculture practices to address the SPS and other

product quality issues for each commodity including Production Practices, Harvesting Practices, Post-Harvest Handling etc.

- xi) Develop training modules and manuals for selected products. The module should include the curricula covering Good Agriculture Practices (GAP) for production and postharvest management, lesson plans, training methods and evaluation procedures
- xii) Implement training programs for capacity building of the farmers on Good Agriculture Practices (GAP) for selected products for quality improvement and SPS compliance
- xiii) Design and implement a system for grants management at the farm level keeping in view the requirements of the farmers/ FEGs/ service providers and products. The system will include identification of beneficiaries, eligibility criteria for grants disbursement, keeping in view the specific requirement of individual beneficiary. The Consultants shall develop specifications of farm machinery, tools and equipment to be purchased under grant provisions
- xiv) Provide technical support to the beneficiaries of the grants at farm level in developing their business plans for bringing efficiency to the chain at farm level

f) Awareness Creation, Training, Capacity Building, Strategic Studies R&D, and Building Construction Activities, etc.

- i) Assist in developing overall framework of social mobilization, awareness creation, training, and capacity building
- ii) Provide support for construction of office buildings/ training centers
- iii) Assist in training and capacity building of farmers/ WUAs, with separate training of women farmers
- iv) Prepare Training Needs Assessment (TNA) reports as and when required
- v) Assist WMTI and WMRF in training, research, and capacity development activities

The consultants will work as “**the Engineer**” and undertake agreements in respect of community-driven development (CDD)/ community works, goods, equipment etc. to be procured under the project, and will be responsible for inspection of these works to ensure that works and goods & equipment supplied are in accordance with designs, specifications and terms & conditions of the relevant contracts and standards. The consultants shall ensure that procurement of goods, services, improvement works contracts are in accordance with the approved policies & guidelines, and contracts are signed, and managed properly including any changes or variation orders during implementation.

E. GESTATION PERIOD

The estimated duration of consultancy services is 60 months (to be decided at the time of contract negotiation covering the loan closing and grace period). However, contract period will be extendable as mutually agreed by both parties.

F. SELECTION METHOD

The consultants will be recruited in accordance with World Bank Procurement Regulations

for IPF Borrowers Nov 2020 for selection of consultants using the Quality & Cost Based Selection (QCBS) method.

G. TEAM COMPOSITION AND QUALIFICATION REQUIREMENTS FOR KEY EXPERTS

The consultants are encouraged to use the expertise available in Pakistan to the extent possible. However, international experience and experience with the World Bank financed projects are necessary to carry out the assignment. The consultants are free to propose a staffing plan and skill mix to ensure that necessary requisite objectives and scope of services are achieved. If all the required skills are not available within the consulting firms, they are encouraged to make joint ventures with other firms. Following is the indicative core team of experts and support staff alongwith minimum academic qualification, experience and time input required. However, the actual time input required, job descriptions, deliverables, etc. of these experts will be finalized at the time of contract negotiation.

Sr. No.	Name of Expert	Qualification and Experience	Input/ man-month
1	Team Leader/ Project Manager K-1	<ul style="list-style-type: none"> • Qualification: Post-graduate degree in Agricultural Engineering / Water Resources Engineering / Irrigation Engineering/ Water Engineering & Management/ Project Management with specialization in water resources or equivalent after graduation in Agricultural Engineering. • Experience: 15 years in implementation of multi-sectoral projects with 10 years of implementing foreign funded on farm water management projects. 	60 (1 position)
2	Design Engineer K-2	<ul style="list-style-type: none"> • Qualification: Post-graduate degree in Agricultural Engineering/ Irrigation Engineering/ Water Resources Engineering/ Water Engineering & Management or equivalent after graduation in Agricultural Engineering. • Experience: Seven (7) years in designing of water management technologies/ methods/ techniques including three (3) years' specific experiences of designing on farm water management interventions. 	60 (1 position)
3	Financial Management Specialist/ IFR Specialist K-3	<ul style="list-style-type: none"> • Qualification: Degree of Chartered Accountant or ACMA/ ACCA/ MBA or equivalent • Experience: Five (5) years in financial management in public/ private sector organizations preferably under a donor assisted project. 	60 (1 position)
4	Horticulture & Value Chain Monitoring Specialist K-4	<ul style="list-style-type: none"> • Qualification: Post-graduate degree in Horticulture / Agri Marketing/ Agri Business Development/ Agriculture Engineering/ Total Quality Management or equivalent 	60 (1 position)

		<ul style="list-style-type: none"> • Experience: Seven (7) years in horticulture, agriculture value chain and agriculture business development 	
5	Groundwater Management Specialist K-5	<ul style="list-style-type: none"> • Qualification: Post-graduate degree in Water Resources Management/ Groundwater Management/ Groundwater Hydrology/ Water Engineering & Management/ Agriculture Engineering or similar degree with specialization in Groundwater Management after graduation in Agricultural Engineering. Ph.D. qualification will be given preference. • Experience: 10 years in groundwater management including three (3) years in groundwater management under on farm water management/ agricultural development projects 	60 (1 position)
6	Energy/ Solar Expert K-6	<ul style="list-style-type: none"> • Qualification: Post-graduate degree in Renewable Energy/ Solar Energy/ Agricultural Engineering with specialization in Renewable Energy. • Experience: Seven (7) years in designing of solar systems for agriculture including three (3) years' specific experiences in designing of solar-coupled high efficiency irrigation systems. 	60 (1 position)
7	GIS and RS Expert	<ul style="list-style-type: none"> • Qualification: Post-graduate degree in Remote Sensing & GIS/ Post-graduate degree in Agri. Engineering/ Water Resources or equivalent with specialization in GIS/RS • Experience: Five (5) years of work experience in GIS & RS applications in public/ private sector organizations preferably in water resources/ agricultural development projects 	60 (1 position)
8	Field Engineer In-charge/ Field Coordinator K-8	<ul style="list-style-type: none"> • Qualification: Graduate/ Post-graduate degree in Agricultural Engineering/ Water Engineering & Management/ Civil Engineering/ Project Management/ equivalent • Experience: 10 years including five (5) years' experience in on farm water management/ irrigated agriculture development projects 	60 (1 position)
9	Field Engineer K-9 to K-43	<ul style="list-style-type: none"> • Qualification: Bachelor's degree in Agricultural Engineering. Post-graduate degree in relevant field will be given preference. • Experience: Three (3) years in water resources management including one (1) year in on farm water management projects 	2,160 (36 position)
	Total		2,640

	Non-key Experts/ Support Staff	Irrigation Agronomist, Soil Scientist, Social & Gender Expert, Environment Specialist, Agriculture Marketing Specialist, Trainers (Agriculture Value Addition), ICT Expert, Safeguard Specialist, Contract Management Specialist, Legal Expert, Agricultural Engineers/ Resident Engineers/ Sub-Engineers, office/ support/ managerial staff
--	---------------------------------------	--

1. Team Leader/ Project Manager

Qualifications: The Team Leader (TL)/ Project Manager (PM) will possess a post-graduate degree in Agricultural Engineering / Water Resources Engineering / Irrigation Engineering/ Water Engineering & Management/ Project Management with specialization in water resources or equivalent after graduation in Agricultural Engineering. The TL/ PM will have 15 years' experience in implementation of multi-sectoral projects with 10 years of implementing foreign funded on farm water management projects with demonstrated ability to work with government officials, technical field staff, private sector, and farmers. In addition, the TL/PM would be required to have familiarity with the principles and practices of participatory community development, irrigated agriculture, water management related issues, and knowledge of project management information systems besides having fluency in spoken and written English. Responsibilities of the TL/PM will be, but not limited, to the following:

- i) Assume the overall responsibility for supervision and management of Consultants' team
- ii) Work as the "the Engineer" as per Client's agreement with the Water Users Associations (WUAs)/ beneficiary farmers/ service providers to supervise construction/ lining/ installation/ equipment delivery etc. with the best professional and consulting standards to ensure that the schemes/ tasks are completed satisfactorily to the satisfaction of the client
- iii) Keep the Client informed of technical & managerial issues and the progress of all works both by direct contacts and through discussions or correspondence
- iv) Attend, at project level, all meetings as required and keep a record of all such meetings.
- v) Assist the Client in amicable solution of project implementation challenges/ issues
- vi) Ensure preparation of regular project reports/ project completion report (PCR) as per deliverables
- vii) Assist the Client in preparing responses to Audit observations as and when required
- viii) Assist the Client in preparing response to World Bank or other authority's queries, observations, requirements etc.
- ix) Provide technical input in smooth implementation of project activities
 - x) Ensure strategic guidance about overall operations of the project
 - xi) Coordinate with all related Client's organizations for project issues
- xii) Report to the Client/ DGA (WM) Punjab, Lahore/ PD (PRIAT) for project management

xiii) Any other task assigned by the project management

2. Design Engineer

Qualifications: The Design Engineer should possess a post-graduate degree in Agricultural Engineering/ Irrigation Engineering/ Water Resources Engineering/ Water Engineering & Management or equivalent after graduation in Agricultural Engineering with seven (7) years in designing of water management technologies/ methods/ techniques including three (3) years' specific experiences of designing on farm water management interventions. Work experience in related computer tools, good communication skills, fluency in English and proven satisfactory record of similar consultancies would be preferred. Responsibilities of the Design Engineer will be but not limited to the following:

- i) Act as Deputy Team Leader in the absence of TL/ PM
- ii) Supervise designs of all project interventions and provide technical assistance/ backstopping during implementation
- iii) Monitor the designing process to ensure socially acceptable, economically viable, technically feasible, and environmentally friendly designs in accordance with the prescribed standards, specifications, and parameters
- iv) Carry out continuous monitoring of designing process and maintain liaison with implementation staff/ other stakeholders
- v) Develop computer-based designs of all project interventions using international best practices
- vi) Coordinate for ensuring adoption of international/ national standards for designs
- vii) Guide the Field Engineers in preparation, review and approval of designs
- viii) Prepare/ update design manuals of all project interventions and submit to the Client
- ix) Perform other duties as assigned by the project management/ client

3. Financial Management Specialist

Qualifications: The Financial Management Specialist (FMS) should have a degree of Chartered Accountant or ACMA/ ACCA/ MBA or equivalent with five (5) years in financial management in public/ private sector organizations preferably under a donor assisted project. The FMS will be responsible for provision of technical guidance and expertise in the financial management activities under the project within the framework of prescribed policies and guidelines of the government and the World Bank. The FMS will provide comprehensive support to the DGA(WM) Punjab, Lahore/ PD(PRIAT) regarding establishment and maintenance of finance and accounting systems, processes, and procedures, and ensuring adherence to the donor guidelines/ government requirements. Major responsibilities of FMS will include, inter alia, the followings.

- i) Provide technical assistance to DGA (WM) Punjab, Lahore/ PD (PRIAT) for efficient financial management
- ii) Assist in managing all accounts, budget and audit matters
- iii) Provide support in preparing cash flows, their planning, and management
- iv) Support in dealing with the World Bank on financial management issues

- v) Monitor the financial resources and accounting to ensure accuracy and reliability of financial reports
- vi) Establish an efficient, accurate and updated reporting mechanism, preferably a real time transaction recording and reporting system including asset register management, receipt book and cash bookkeeping, invoice register management, contract register, contract ledger management etc.
- vii) Consolidate the periodic (monthly) financial progress reports and submission to the PD (PRIAT)/ DGA(WM) Punjab, Lahore for review/approval in accordance with the prescribed requirements
- viii) Assist in preparation of various financial reports as and when required by the Client
- ix) Organize cash management processes, risk assessment, timely accounting, and reconciliation of all transactions, etc.
- x) Carry out capacity building of the provincial, regional and district level finance & accounts teams
- xi) Undertake internal/ external audits timely to improve financial management and suggest corrective actions
- xii) Help in securing approvals of competent authority regarding budget allocations and release of funds
- xiii) Any other relevant duties assigned by the DGA (WM) Punjab, Lahore/ PD (PRIAT)/ project management

4. Horticulture & Value Chain Monitoring Specialist

Qualifications: The Horticulture & Value Chain Monitoring Specialist should have a Post-graduate degree in Horticulture / Agri Marketing/ Agri Business Development/ Agriculture Engineering/ Total Quality Management or equivalent with seven (7) years' experience in horticulture, agriculture value chain and agriculture business development. The Specialist will be responsible for provision of technical guidance and expertise for implementation of processing, value addition, market integration & regenerative agriculture component within the framework of prescribed policies and guidelines of the government and the World Bank. Major responsibilities of the Horticulture & Value Chain Monitoring Specialist will include, inter alia, the followings.

- i) Prepare annual plan for regenerative agriculture machinery, processing, value addition, market integration, etc. envisaging physical scope and financial implications for approval of the Client
- ii) Assist in identification of potential growers, contractors, and service providers as well as mobilization of farmer entrepreneur groups, individual farmers, service providers, etc.
- iii) Provide support in identification of clusters vis-à-vis crops for processing & value addition
- iv) Assist in development of standards & specifications of regenerative agriculture machinery, harvesting, value chain & processing, etc. machinery/ equipment

- v) Prepare guidelines, operational documents, and annual plan for implementation of this component
- vi) Extend support for training & capacity building in operation, maintenance, and management of processing equipment/ machinery/ infrastructure for its sustainable operation
- vii) Assist in the development of business plans and feasibility studies for regenerative agriculture machinery, harvesting, value chain & processing, etc. machinery/ equipment
- viii) Provide support for developing direct linkages with leading food processing industries and other potential buyers to market their processed and value-added products and vice versa
- ix) Any other relevant duties assigned by the DGA (WM) Punjab, Lahore/ PD (PRIAT)/ project management

5. Groundwater Management Specialist

Qualifications: The Groundwater Management Specialist (GMS) should possess a post-graduate degree in Water Resources Management/ Groundwater Management/ Groundwater Hydrology/ Water Engineering & Management/ Agriculture Engineering or similar degree with specialization in Groundwater Management after graduation in Agricultural Engineering. Ph.D. qualification will be given preference. The GMS will have 10 years' experience in groundwater management including three (3) years in groundwater management under on farm water management/ agricultural development projects. Work experience in related computer tools, good communication skills, fluency in English and proven satisfactory record of similar consultancies would be preferred. Major responsibilities of the GMS will include, inter alia, the followings.

- i) Develop guidelines and technical manuals about groundwater management strategies for OFWM staff/ professionals and farmers for successful crop production
- ii) Prepare and implement plans for devising sustainable groundwater management plans including planting, irrigation scheduling, treated/ conjunctive or cyclic use of groundwater, fertigation etc., under modern irrigation technologies
- iii) Design/ develop/ recommend ICT-based tools and gadgets for on-farm groundwater monitoring and management
- iv) Prepare most feasible groundwater management options in project areas based on water availability from canal, groundwater and rainfall
- v) Demonstrate and evaluate various groundwater management techniques
- vi) Develop a framework for monitoring groundwater before and after project interventions
- vii) Use computer models to analyze groundwater situation in project areas
- viii) Compile and analyze reports on groundwater monitoring and management aspects and water management for proposing recommendations
- ix) Carry out groundwater monitoring & management related studies as and when required
- x) Undertake field visits & provide necessary input for groundwater management

- xi) Prepare training curriculum and carryout capacity building programs for technical staff and farmers about groundwater management
- xii) Any other relevant duties assigned by the project management

6. Energy/ Solar Expert

Qualifications: The Energy/ Solar Expert should possess a post-graduate degree in Renewable Energy/ Solar Energy/ Agricultural Engineering with specialization in Renewable Energy. Seven (7) years experience in designing of solar systems for agriculture including three (3) years' specific experiences in designing of solar-coupled high efficiency irrigation systems. Work experience in related computer tools, good communication skills, fluency in English and proven satisfactory record of similar consultancies would be preferred. Major responsibilities of the Energy/ Solar Expert will include, inter alia, the followings.

- i) Assist the project team in implementation of solar coupled high efficiency irrigation systems
- ii) Carry out field visits to provide necessary input to management about solar solutions
- iii) Lead the design engineering team for solar solutions and supervise checking/verification of surveys, design of solar systems as well as other field activities
- iv) Ensure adoption of international/ national standards for design and installation of project activities
- v) Arrange verification of physical works and make recommendations for improvements in management modalities for smooth execution of solar solutions/ energy related activities, where required
- vi) Carry out continuous monitoring of designing process of solar coupled high efficiency irrigation systems
- vii) Develop and maintain liaison with project staff/ other stakeholders
- viii) Develop computer-based designs solutions for solar coupled high efficiency irrigation systems using international best practices
- ix) Assist the Field Engineers in preparation, review and approval of solar designs
- x) Prepare/ update design manual of solar coupled high efficiency irrigation systems and submit to the Client
- xi) Perform other duties as assigned by the project management/ client

7. GIS & RS Specialist

Qualifications: GIS and RS Specialist should possess post-graduate degree in Remote Sensing & GIS or Bachelor/ Post-graduate degree in Agri. Engineering/ Water Resources or equivalent with specialization in GIS/RS with five (5) years of work experience in GIS & RS applications in public/ private sector organizations preferably in water resources/ agricultural development projects. He would be responsible for provision of technical guidance and expertise in the development and management of GIS database of all project activities. He will provide comprehensive support to the client regarding database maintenance, data verification, updation of information, upgradation of

system for use of data for planning and monitoring activities. Major responsibilities of the consultant will include, inter alia, the followings.

- i) Provide technical assistance to DGA (WM) Punjab, Lahore/ PD (PRIAT) in developing GIS & RS maps of planned interventions
- ii) Develop GIS applications on different platforms (i.e. ESRI products/ ERDAS Imagine/ ER-Mapper / MapInfo etc.) for project activities
- iii) Develop shape files of all project interventions
- iv) Supervise image processing/ interpretation and analysis of project interventions
- v) Carryout data digitization and geo-tagging of all project interventions
- vi) Manage map production and printing
- vii) Administer spatial data analysis and management
- viii) Organize collection of necessary field data for completion, updating and up-gradation of GIS database
- ix) Build capacity of OFWM staff/IT team in operation, application and management of GIS database, use of GPS and latest GIS software i.e. ArcView, ArcGIS etc.
- x) Demonstrate ways to use OFWM GIS database as a management tool in an optimal manner for project planning & monitoring
- xi) Produce project maps as and when required by the DGA (WM) Punjab, Lahore/ PD (PRIAT)

8. Field Engineer In-charge/ Field Coordinator

Qualifications: The Field Engineer In-charge/ Field Coordinator should possess a graduate/ post-graduate degree in Agricultural Engineering/ Water Engineering & Management/ Civil Engineering/ Project Management/ equivalent with 10 years' experience including five (5) years' experience in on farm water management/ irrigated agriculture development projects. Work experience in related computer tools, coordination, good communication skills, fluency in English and proven satisfactory record of similar consultancies would be preferred. Responsibilities of the Field Engineer In-charge/ Field Coordinator will be but not limited to the following:

- i) Lead the Field Engineers team and coordinate project activities amongst various stakeholders
- ii) Assist the PM/TL in project implementation supervision and third party validation activities
- iii) Attend all meetings as required and keep a record of all such meetings
- iv) Supervise checking and approval of field survey, design and cost estimates
- v) Coordinate and monitor project activities undertaken in the field to ensure quality & quantity of envisaged works
- vi) Ensure resident supervision of precast concrete parabolic segments for watercourse improvement as per approved policy/ procedure

- vii) Prepare online/ web-based reporting formats of all project interventions acceptable to the Client
- viii) Develop close liaison with project stakeholders including project management, private sector service providers, farmers etc.
- ix) Undertake any other relevant duties assigned by the Client/ project management

9. Field Engineers

Qualifications: The Field Engineer should possess a Bachelor's degree in Agricultural Engineering. Post-graduate degree in relevant field will be given preference with three (3) years experience in water resources management including one (1) year in on farm water management projects. Work experience in related computer tools, good communication skills, fluency in English and proven satisfactory record of similar consultancies would be preferred. Responsibilities of the Field Engineer will be but not limited to the following:

- i) Coordinate and supervise construction/installation activities in the field
- ii) Ensure quality and quantity of works as per approved standards & specifications by spot-checking of envisaged interventions
- iii) Certify financial transactions/ funds for ongoing as well as completed works as per approved procedures
- iv) Assist in finalization of rates of construction material in DRC as and when required
- v) Bring any deficiency into the notice of the controlling officers of district and provincial governments
- vi) Certify quantity and quality of works as third party validation
- vii) Develop close liaison with project stakeholders including project management, SSCs and the farmers
- viii) Any other relevant duties assigned by the project management

H. REPORTING REQUIREMENT AND TIME SCHEDULE FOR DELIVERABLES

The Consultant will prepare the following reports in English/ Urdu and provide the copies as per deliverables and schedule alongwith respective soft copy.

- a) Inception Report – In this report, the Consultant will present their strategy, methodology, timeline, responsibility matrix, risk analysis, risk response methods etc. for successful delivery of consultancy services.
- b) Monthly Progress Reports
- c) Mid-term Report on the format acceptable to the Client
- d) Design Manuals of project activities
- e) GIS/ RS maps of command area on various project activities (before and after) on monthly basis
- f) Quality Assurance Plan - (QA/QC Manual)

- g) Monthly/ quarterly financial management/ IUFRR reports
- h) Revised Planning Commission Proforma-I (PC-I), if needed
- i) Assignment Completion Report (including digital database of all project interventions)
- j) Revised Planning Commission Proforma-IV (PC-IV)
- k) Any special reports as may be necessary from time to time for specific item / issue related to the project.

The schedule for various reports and documents that are likely to be generated by the Consultant has been prepared. Additional reports and presentations shall be prepared as required. The Consultants will supply the deliverables alongwith the respective soft copy thereof to the DGA(WM) Punjab Lahore/ PD (PRIAT) as per schedule given below.

Sr. No.	Document	Soft & Hard Copies	Due
1.	Draft Inception Report	2	3 weeks after the effectiveness of the services
2.	Final Inception Report	3	One week after the issuance of comments by the Client on draft Inception Report
3.	Monthly Progress Report (Physical & Financial)	1	10 th of the following month
4.	Quality Assurance Plan (QA/ QC Manual)	3	Within 45 days after commencement of services
5.	Quarterly Progress Report (Physical & Financial)	1	10 th of the first month of following quarter
6.	Annual Summary Progress Report (Physical & Financial)	1	10 th of the first month of following year
7.	Geo-tagged date of each site installed/ equipment delivered	1	10 th of each month
8.	ICT-based online progress reporting/ monitoring	1	3 months after the effectiveness of the services
9.	Annual Progress Report (Physical & Financial)	1	During first month of the following year
10.	Monthly/ Quarterly IFRs (Statement of Expenditure) reports	2	10 th of the following quarter
11.	Updated EIO, RFP, PQD, tripartite agreement, etc.	1	As and when required
12.	Quality Control / Assurance Report	5	After each year

13.	GIS/ RS maps	3	After 6 months, and as and when required
14.	Design Manuals of each activity	3	Within 3 months after commencement of services
15.	Revised Planning Commission Proforma-I (PC-I)	20	As and when required
16.	Draft Assignment Completion Report	2	At completion of physical works/ activities
17.	Final Assignment Completion Report	10	At completion of physical works and financial transactions
19.	Planning Commission Proforma IV (PC-IV)	50	At completion of the project
20.	Complete inventory of works/ activities in hard and digital form	5	At completion of the project
21.	Special Reports	5	As and when required

I. PROFESSIONAL LIABILITY OF THE CONSULTANT

The consultants would be responsible for professional liability as per World Bank guidelines for recruitment of consultants as well as may also cover the followings

- i) The consultants selected and awarded the contract will be liable for the consequence of errors and omissions on their part or on the part of their employees
- ii) The consultant shall be held liable for all losses or damages suffered by the procuring agency on account of any misconduct by the consultant in performing the consulting services
- iii) The extent of liability of the consultant shall form part of the contract and such liability shall be in accordance with the relevant World Bank guidelines.
- iv) The consultants would also be liable for the consequences as per provisions contained in bye-laws of Pakistan Engineering Council for “Conduct and Practice of Consulting Engineers”
- v) The consultants will provide insurance for liabilities on part of the consultant @ 10 percent of contract cost and necessary costs shall be borne by the consultants in this regard
- vi) The consultants will not engage any person, who is paid employee of another consulting firm, works part-time in its offices or performs any piece of work or work on contract, until they have not obtained permission in writing of the Consultants who are the employer of such person
- vii) The consultants shall not make any offer of employment to employees of their Client and if they are approached by employees of their Client regarding employment with

them, they shall make certain that they have their Client's consent before entering into any negotiations with such employees

- viii) In case of any dispute between the consultants and Client, the matter shall be referred to the competent authority for arbitration as per Rules. The decision of the arbitrator shall be final and non-appealable

J. CLIENT'S INPUT AND COUNTERPART PERSONNEL

- i) The Consultant shall work closely with the Director General Agriculture (Water Management) Punjab, Lahore/ Project Director (PRIAT), Lahore to whom they will be reporting on day-to-day basis. The Consultant will establish their offices in Lahore and project areas at suitable places. Most of the consultants' staff will be located in the field/ project areas.
- ii) Director General Agriculture (Water Management) Punjab, Lahore/ Project Director (PRIAT) will be representative of the Client who will also resolve various administrative issues relating to Consultants arising during the course of assignment. The Consultants' Team Leader/ Project Manager will be the principal contact and will be expected to be readily available during project implementation.
- iii) The Consultants shall be responsible for all aspects of performance of services as set forth in these TORs.
- iv) All records and sites will be made available to the Consultant to enable them to perform their functions. The Consultants will be required to ensure confidentiality of the record.
- v) All relevant documents regarding on farm water management activities are freely accessible at OFWM website (<http://ofwm.agripunjab.gov.pk>), which may be useful for interested consultants/ consulting firms.