KHYBER PAKHTUNKHWA (KP)
Rural Infrastructure and Institutional Support Project (RIISP)

Terms of Reference for Consultants

For

"Comprehensive Master Plan for Integrated Irrigation Infra-structure development & Water Resource Management Plan in Merged Districts/Sub-Divisions with Feasibility Studies, Detailed Designs and Construction Supervision of high priority schemes"

1. BACKGROUND OF THE PROJECT

Khyber Pakhtunkhwa (KP), the third most populous province in Pakistan, has achieved significant strides in reducing poverty in recent years. Despite this progress, certain areas within the province continue to face vulnerabilities. The poverty rate in KP decreased from 73.8 percent in the fiscal year 2002 to 27 percent in the fiscal year 2014, marking the most substantial decline among all provinces in Pakistan. However, a considerable portion of KP's 30.5 million residents, as well as three-quarters of the five million inhabitants in the former Federally Administered Tribal Areas (FATA, now referred to as Merged Districts or MDs), still grapple with multidimensional poverty.

With over 30 percent of the population falling between the ages of 15 and 29, the youth face limited opportunities, and the unemployment rate stands at 11%. The majority of KP's population, approximately 85 percent, resides in rural areas where access to public services is not only inferior but also deteriorating. In rural areas, only two-thirds of the population have access to improved water sources, compared to 94 percent in urban areas. Additionally, the share of rural households with access to piped water sources has declined from 40 to 29 percent between 2005 and 2015 due to crumbling infrastructure.

The challenging conditions, compounded by malnutrition and inadequate access to clean water, sanitation, and hygiene, contribute to childhood stunting. This issue affects 40 to 49 percent of children under five in both KP and NMA. Gender disparities persist across various outcomes, including access to basic services.

1.1. The Merged Districts (MDs)

The integration of the former Federally Administered Tribal Areas (FATA) into Khyber Pakhtunkhwa in 2018 represents a significant development opportunity for both the province and the nation. The Merged Districts (MDs) encompass a vast area of 27,200 square kilometers, housing a population of approximately 4.8 million. This region consists of eight districts Bajaur, Mohmand, Khyber, Kurram, Orakzai, North Waziristan, and South Waziristan (Upper) and South Waziristan (Lower) that collectively constituted the erstwhile FATA. Additionally, six adjacent tribal areas,

previously known as the Frontier Regions (FR) and now termed Sub-Divisions, include Peshawar, Kohat, Bannu, Lakki, Marwat, Tank, and Dera Ismail Khan.

The MDs currently lags behind in various socioeconomic and developmental indicators. During the merger, historical factors, as well as institutional and administrative systems in these areas, contributed to low levels of basic service provision and development outcomes. At that time, these regions exhibited some of the lowest and least developed indicators in the country, as illustrated in Table 1.

Table 1: Selected Comparative Indicators for MD, KP and Pakistan (2018)

Indicator	MDs	KP (excluding MDs)	Pakistan averages
GNI (per capita) (2018)	US$ 2,509	US$ 4,328	US$ 5,190
Human Development Index	0.216	0.628	0.557
Percent of population below poverty line	52.0%	40.0%	24.3%
Net enrollment rate (primary)	52.1%	59.0%	73.8%
Maternal Mortality Rate (per 100,000)	395	275	140
Immunization of children (%)	33.9%	40.0%	60.6%
Population with access to improved drinking water	46.7%	91.3%	92.6%

1.2. Institutional development

A crucial factor contributing to the limited development outcomes in the Merged Districts is the enduring absence of significant state presence. Historically, the FATA region operated under a political, administrative, and judicial system designed during the colonial era, effectively isolating its residents from the prevailing systems in the rest of the country. This administrative and political framework persisted into the formation of Pakistan, where tribal areas adhered to Rewaj (customs), a tribal code governing dispute resolution through Jirga, collective responsibility imposition, and mutual restraint and revenge.

Remaining outside the jurisdiction of provincial administration systems, the tribal areas were overseen by a FATA Secretariat (established in 2006), responsible for planning, implementing, and monitoring development activities in the region. In 2018, the Merged Districts (MDs) were brought under the legal and governmental authority of the Government of Khyber Pakhtunkhwa (GoKP). Following this merger, residents of MDs expressed heightened expectations for improved service delivery, particularly in essential areas such as clean water, food security, education, and health.

The Tribal Decade Strategy (2020-2030) emphasizes the expansion of administrative and service delivery systems as a crucial prerequisite for enhancing development outcomes in regions grappling with some of the highest poverty rates in Pakistan.

1.3. The Project

The Government of Khyber Pakhtunkhwa (GoKP) has formally sought the assistance of the World Bank, requesting a US$300 million IDA Credit. This financial support will be provided in two successive phases over an eight-year duration. The primary goal is to enhance access to resilient and dependable basic services for households situated in the Merged Districts of Khyber Pakhtunkhwa. The Khyber Pakhtunkhwa Rural Infrastructure and Institutional Strengthening Project (KPRIISP), constituting the first phase of the program, aims to fortify state capabilities in delivering basic services and constructing climate-resilient infrastructure within the project areas, with a specific focus on aiding the poor and vulnerable populations. The initial phase involves a funding commitment of US$200 million spanning six years. This allocation addresses a crucial financing gap within the province's objectives, facilitating the effective management of the transition toward local governance and the enhancement of development outcomes in the recently merged districts.

1.3.1. Project Components

The project encompasses support for five key components:

Component A: Multisectoral Investments & Improved Service Delivery (US$90 million)

This component aims to finance multisectoral infrastructure investments in water supply, sanitation, rural roads, and agriculture sectors within the Merged Districts and frontier regions of the province. It involves the establishment, refurbishment, or expansion of service delivery centers and facilities at district and sub-divisional levels. This ensures the extension and presence of administrative and sectoral systems and services.

Component B: Institutional Development of Merged Districts (US$55 million)

Focused on bolstering state responsiveness to citizens, this component finances investments in lower tiers of government and service delivery. It includes institutional strengthening and capacity building of village councils and communities for participatory planning, budgeting, monitoring, social accountability systems strengthening, community development, and behavioral change outreach. Conditional grants are provided to village councils for local infrastructure priorities aligned with community preferences. Local public service delivery centers at the tehsil level facilitate access to services, particularly civil and vital records.

Component C: Emergency Flood Response (US$50 million)

This component supports the Government of Khyber Pakhtunkhwa (GoKP) in flood recovery and reconstruction efforts while enhancing climate resilience. Funding is allocated for the reconstruction and rehabilitation of public infrastructure damaged by floods, encompassing roads, bridges, public buildings (especially elementary schools and basic health units), and irrigation and flood protection infrastructure. Design principles prioritize improved standards and climate resilience to ensure building back better and increased protection from climate-related extreme weather events.

Component D: Project Management, M&E & Technical Assistance (US$5.0 million)

Dedicated to supporting the effective implementation of the Project, this component assists the GoKP in coordinating all project-related activities, monitoring, technical assistance, and training.

Component E: Contingent Emergency Response Component (US$0 million)

In the event of an eligible crisis or emergency, this component allows the Borrower to request the Bank to re-allocate project funds to support emergency response and reconstruction.

2. OBJECTIVES OF THE ASSIGNMENT

In the Merged Districts (MDs), there has not been a systematic assessment of the scope, potential, and availability of water resources. Additionally, the evaluation of the current and prospective water infrastructure, including rivers, irrigation channels, small dams, check/mini dams, tube-wells, dug-wells, and lift irrigation schemes (some powered by solar energy), has not been conducted comprehensively. Flood Management Measures (FMM) encompass structures like Flood Protection Works (FPW), retaining walls, dams, and embankments.

The potential for utilizing subsurface water from natural streams for irrigation purposes, whether through methods like infiltration galleries or underground weirs, and exploring opportunities for recharging ground aquifers remains unexplored. Similarly, numerous irrigation schemes are either non-functional or partially functional due to flood damages, and there is potential for their rehabilitation and improvement.

The primary aim of the consulting services is to support the Irrigation Department in several key tasks:

a) Evaluate water resources and formulate a comprehensive master plan for water resources development in each of the eight merged districts and six Tribal Sub-Divisions (TSDs).

b) Identify and prioritize schemes with a high level of urgency for implementation, with feasibility studies.

c) Prepare detailed designs and bidding documents for selected priority schemes for each Merged District, including the necessary social and environmental assessments and studies.

d) Oversee the construction of priority schemes through diligent supervision and management.

3. SCOPE OF WORK

The detailed scope of work will include, but is not limited to, the following tasks:

3.1. Task-A: Development of A Master Plan

The primary task for this project is the development of a comprehensive master plan for irrigation assets in the Merged Districts. The merged districts (MDs) face several pressing challenges related to irrigation, flood management, and water resource development. These challenges necessitate the creation of a strategic framework that addresses the following:

- Efficient water resource management to ensure sustainable agriculture and water availability for the population.
- Effective flood management to mitigate the impact of flood disasters, especially in the context of climate vulnerabilities.
- Infrastructure planning and development to support irrigation and flood control.
- Identification of priority schemes to allocate resources efficiently.

The selected consultant will be responsible for conducting an in-depth analysis and preparing a master plan that addresses the following key components:

- Comprehensive assessment of surface water availability in the main rivers and their major tributaries within the Merged Districts.
- Detailed assessment of flood discharges and flood limits to aid in flood management and mitigation.
- Identification of water sector projects and flood mitigation proposals in the main rivers and their major tributaries.
- Development of structural and non-structural interventions to manage water resources and mitigate floods.
- Compilation of an inventory of existing irrigation assets including flood protection works and other infrastructure in flood plains.
- Marking of flood limits to prevent encroachments in waterways.
- Assessment of surface water availability to support agriculture and other sectors in the Merged Districts.

3.1.1. Consultant Activities

The work and activities in this task would include, but not limited to the following:

i. Conduct a comprehensive water resources assessment within the Merged Districts, encompassing districts such as Bajaur, Mohmand, Khyber, Kurram, Orakzai, North Waziristan, South Waziristan Upper, and South Waziristan Lower & 06 Tribal Sub Divisions. This assessment will identify the location, extent, dependability, and quality of water resources.

ii. Gather recent and historical meteorological, hydrological, geological, geo-technical, and agricultural data pertinent to the target areas. This data includes information on precipitation, evaporation, river flow, surface storage, soil moisture, groundwater, and population use. Additionally, assess the projected population growth in the area.

iii. Determine the origin of water resources, particularly examining whether they originate or flow across international boundaries, thus categorizing them as international waterways. Evaluate any international treaties or agreements governing their use.

iv. Develop a water master plan for each of the Merged Districts, outlining a medium and long-term horizon of 10, 15, 20, and 25 years. This plan should reflect the overall availability of water resources and present a decade strategy for their development. The strategy should propose clear criteria for identifying priority investments and areas, along with a sequencing approach for the Merged Districts over the next ten to 25 years.

v. Provide rough cost estimates for the identified investments, specifying their implementation period. Offer an optimal investment strategy/plan that considers the available resources for investment.

vi. Identify, based on agreed criteria, investments that need to be undertaken in the short to medium term, including those that can be included in this Project.

vii. Conduct feasibility studies (technical, social, and environmental) for priority investments to be financed by the Project. These investments are derived from the priority list and should not adversely impact the flows of international waterways.

3.1.2. Expected Outputs and Deliverables

i. Taking into consideration the security situation and accessibility challenges in some of the merged districts, the consultant will formulate the master plan on a district-wise basis, with a preference for districts free from security or accessibility issues. The sequence for master planning will be Bajaur, Mohmand, Khyber, Orakzai, Kurram, North Waziristan, South Waziristan (Upper), and South Waziristan (Lower). The consultant will submit interim master planning reports for each district, emphasizing prioritized projects for subsequent design and construction supervision. The steering committee will review and approve the identified projects, which will then undergo detailed design by the consultant. Tender documents will be prepared and advertised for the contract award of construction. These district-wise reports will later be amalgamated to create the final master planning report encompassing the entire Merged Districts (MDs).

Table-2: Schedule of Deliverables Task-A

S. No.	Deliverable	Months from Contract Signing
1	Inception Report	01 Month
2	Master Plan for Bajaur	03 Month
3	Master Plan for Mohmand & TSD Peshawar	04 Month
4	Master Plan for Khyber	05 Month
5	Master Plan for Orakzai & TSD Kohat	06 Month
6	Master Plan for Kurram, NW & TSD Bannu & TSD Lakki Marwat	08 Month
7	Master Plan for SW (Upper & Lower) with TSD Tank & DI Khan	09 Month
8	Final Master Plan for Merged Districts	12 Month

3.2. Task B: Preparation of Detailed Designs and Bidding documents

The scope of work and activities under this Task would include, but is not limited to, the following:

i. Develop detailed designs for priority schemes, conducting comprehensive designs suitable for the bidding process, and prepare corresponding bidding documents for irrigation water schemes prioritized in the water resources assessment and the water master plan outlined by the consultants for the Merged Districts as detailed above. In cases where designs for priority schemes are already available, the Consultant will review and suggest any necessary modifications.

ii. The Consultant will conduct essential topographical surveys and other site investigations, including soil and water sampling where necessary, utilizing appropriate ground-based technology, satellite imagery, GIS, and other computerized systems. This data collection process is vital for engineering studies, as mentioned earlier, and for the preparation of detailed designs. The Consultant will employ the necessary studies, geological investigations, and adhere to acceptable standards for geometric and structural designs, ensuring the integration of climate resilience in the proposed designs.

iii. Identify and evaluate land needs, as well as potential requirements for land acquisition for the facilities outlined in each sub-project.

iv. Collaborate with the Irrigation departments to formulate typical designs for the facilities, ensuring they can be easily adapted to specific site conditions during the detailed design stage. Establish criteria based on the availability of local construction materials, functionality, accessibility, usage, topographic conditions, existing communication networks, centrality to the population to be served, demarcation of the target population, minimizing operation and maintenance (O&M) during operation, and considering possible changes throughout the life of the proposed facilities.

v. Generate estimates for construction quantities, materials, and equipment, and formulate detailed cost estimates based on the prevailing Market Rate Schedule. Present the estimates in a proper engineering format, incorporating suitable physical and price contingencies, and provide a breakdown by major work items.

vi. Develop a bill of quantities, specifications, and detailed engineering drawings illustrating any new construction and rehabilitation works required for existing facilities.

vii. Create cost estimates for the annual operation and maintenance (O&M) of facilities to be constructed under the project. Outline the budgetary requirements, as well as the necessary manpower and resources for effective O&M.

viii. Formulate and recommend the optimal approach to package the development of selected facilities. Propose a procurement strategy, method of procurement, and a timetable with specific timelines for the procurement and construction of each package, including completion and handover for regular use.

ix. Conduct environmental and social assessments, and develop social and environmental management plans for each cluster, package/sub-project, or facilities included in a group.

x. Prepare the Engineer's cost estimate for each contract package in a standardized manner, incorporating appropriate levels of contingencies, taxes, duties, etc.

xi. Undertake the preparation of detailed designs for all construction, equipment, plants, and facilities, covering various work activities, with due consideration to:

a. Consideration of site conditions, technical standards, usage, aesthetics, and ergonomics.

b. Exploration of technological innovations to meet requirements with cost-effective solutions, encompassing technology and construction methods.

c. Conduct geo-technical investigations and laboratory analyses to determine basic design parameters for structures, and identify suitable construction materials (and/or disposal areas as needed) for material and concrete aggregates. The consultants will specifically carry out technical, environmental, and social impact analyses of any materials generated during construction activities, along with preparing detailed designs for their safe disposal.

d. Establish criteria for detailed designs, including supporting computations for proposed office and administrative structures and/or other infrastructure works according to recognized international standards. Drawings will be prepared to the extent that allows for accurate cost estimates and facilitates contractors in preparing their bids and construction drawings.

e. Selection of appropriate materials, optimization of designs, and identification of cost-effective options meeting technical requirements. Estimate quantities of construction materials, etc., for the preparation of bidding documents.

f. Conduct hydrological studies to determine water requirements, availability, projected demand, proposed extraction levels, and the upstream and downstream impact of extractions.

g. Analyze water disposal, its impact on water quality and quantity in the disposal area, estimate treatment requirements for proper disposal, etc.

h. Assess the hydrology of the area, drainage, and flood management systems, ensuring facilities are protected from extreme floods, landslides, rock and boulder movements, earthquakes, fires, and other natural calamities and disasters.

i. Develop technical specifications, architecture, and engineering drawings necessary for tender documents, bill of quantities (BOQs), specifications, and bidding documents. The bidding documents will be prepared following the formats and standards defined in the World Bank Procurement Regulations for such works, utilizing World Bank Standard Procurement Documents for contracts to be procured.

j. Prepare engineer's cost estimates for works/contracts, along with requirements for construction supervision, including facilities, material testing labs, on or off-site as needed, equipment, staffing, or any other special requirements.

k. Compile a comprehensive design report, including an Environmental Management Plan, Social Management Plan, Resettlement Action Plan, and

any other site-specific plans aligned with the project's Environment and Social Management Framework.

l. Install a web-based electronic live monitoring system on the construction site with sufficient details to facilitate remote construction supervision. The requirements and installation of this system will be incorporated as a requirement in the BOQ as paid items for each contract implemented under the Project.

xii. Preparation of the bidding documents as per world bank approved procurement plan, documentation and procedures.

xiii. Provide assistance to the PIU in bids evaluations and preparation of the evaluation reports.

3.2.1. Operation and Maintenance (O&M)

The consultants are required to:

i. Estimate the operation and maintenance (O&M) requirements for both the sub-project and project facilities throughout the project's life.

ii. Propose effective institutional arrangements and establish water rates/charges to ensure the proper O&M of the irrigation systems within the project area.

iii. Clearly define the roles of users, their informal groups, and formal associates in the O&M of the project facilities. Identify training requirements and develop a corresponding training program.

iv. Identify the necessary equipment, office space, and other facilities required for the effective O&M of the project facilities.

3.2.2. Cost Recovery

Evaluate the existing system for recovering capital and operation and maintenance (O&M) costs. Suggest approaches to enhance user participation in implementation and recommend the most efficient method for cost sharing and recovery.

3.2.3. Project Cost Estimates, Benefits and Economic Analysis

i. Based on the detailed analysis of each subprojects determine the cost estimate for each subproject. These cost estimates would include cost of all components of the project (i) civil works systems in the whole project area; (ii) equipment, and machinery that are proposed to be provided under the project; (iii) monitoring and evaluation of the project implementation and project impact in the long run; and (iv) surveys and detailed design, construction supervision and contract management, field engineers, operation of the project offices etc.

ii. Provide estimates of project benefits. Under alternative scenarios (such as present, future-without-project and future-with-project) and in financial and economic prices, carry out the financial and economic analysis.

iii. Estimate cost & benefits and economic and financial Internal Rates of Returns for the sub-project/contract and the Project overall. Identify project risks and carry out sensitivity analysis and impact on the economic rate of return; and

iv. Propose optimal project design considering economic returns to varying level construction.

3.2.4. Environment and Social Impact Assessments, Occupational health and safety plans and preparation of Plans

Prior to commencing the detailed design of various contracts, the Consultants will undertake a comprehensive Environmental and Social Impact Assessment (ESIA). This process will involve identifying land requirements, ownership, and potential environmental and social issues associated with the construction of infrastructure, facilities, and the approach roads to be constructed. Initially, it is anticipated that the government will provide the necessary land for these facilities, and this will be confirmed during the environmental and social assessments. The required social management plan, as well as the land acquisition and detailed Resettlement Action Plan (RAP), will be prepared, if necessary, in accordance with World Bank Guidelines for works covering each contract. The ESIA will identify and provide a management plan for environmental and social issues (ESMP), developed in consultation with the project area, following World Bank guidelines and adhering to the procedures and guidelines of the KP Government. The project ESMPs and other documents would be prepared in line with the project Environment and Social Management Framework (ESMF), available on https://pndkp.gov.pk/2022/12/13/khyber-pakhtunkhwa-rural-investment-and-institutional-support-project/.

The Consultant will offer support in identifying alternative sites for resettling people and related assets and cultural properties. They will prepare plans for the development of these sites, including infrastructure planning, utilities, replacement housing, etc. The Consultants will assist in meeting architectural requirements for each location and obtaining construction permits to complete the works. Additionally, they will support the design of critical infrastructure for any settlement, including approach roads, connectivity, utilities, prepare bidding documents, and conduct construction supervision for development and housing as needed, upon instruction from the GoKP. The RAP will be updated and modified periodically but no less than once a year, reflecting the status of implementation changes on the ground during the implementation period.

3.2.5. Environmental Assessment, Environmental Management Plan, EIAs

The Consultants will prepare an Environmental Assessment and EMP for each package of work under the Project. This EA/EMP will be integrated into the design report, cleared by the World Bank and KP EPA, and updated during implementation according to the defined requirements and procedures. The Consultants will provide support in implementing EMP activities during project implementation, including document preparation, obtaining local permits, discussions with local authorities, resolution of issues, etc.

Conduct hydrological studies to determine the upstream and downstream impact of water extraction. Similarly, carry out an environmental impact assessment of water

disposal into the streams, including water quality impact and the required treatment of the water to be disposed of.

3.2.6. International Waterway Aspects

Assess whether a sub-project or a set of sub-projects is situated on an international waterway. The consultants should analyze the potential impact of the sub-project beyond national boundaries, if any, and endeavor to quantify such potential impacts in accordance with international procedures commonly employed for projects on international waterways. Develop a framework and support the government in engaging in dialogues with other riparian states about the project's impact, facilitating the attainment of a shared understanding of these impacts.

3.2.7. Occupational Health and Safety Plans (OHS) and Labor Management Plans (LMP)

The consultant would prepare OHS and LMP for each contract package.

Table-3: Schedule of Deliverables Task-B

S. No.	Deliverable	Months from Contract Signing
1	Draft engineering design of priority schemes approved by the Steering Committee in District Bajaur, Mohmand & Khyber with TSD Peshawar	7th Month
2	Final Detailed Design Report for S. No. 1	8th Month
3	PC1s & Bidding Documents (BOQs, Specifications and Tender Drawings) for S. No. 1	9th Month
4	Draft engineering design of priority schemes approved by Steering Committee in District Orakzai, Kurram, North, South (Upper & Lower) Waziristan with adjoining TSDs	10th Month
5	Final Detailed Design Report for S. No. 4	11th Month
6	PC1s & Bidding Documents (BOQs, Specifications and Tender Drawings) for S. No. 4	12th Month

3.3. Task-C: Integrated Irrigation Asset Management System for Merged Districts (IIAMS-MDs)

The consultant will spearhead the development of the "Integrated Irrigation Asset Management System for Merged Districts (IIAMS-MDs)," a comprehensive digital platform aimed at cataloging and managing both existing and new irrigation assets in the Merged Districts. This initiative not only focuses on efficient information management but also seeks to enhance the capacity of the Irrigation Department for improved planning and the prevention of duplication of efforts.

Key Tasks of the Consultant:

i. **Asset Inventory Assessment:**

a. Conduct a thorough assessment of existing irrigation assets, capturing essential details such as location, type, capacity, and condition.

b. Identify and document any new irrigation assets that have been or will be introduced in the Merged Districts.

ii. Data Standardization:

a. Develop a standardized framework for organizing and categorizing irrigation asset data.

b. Ensure consistency in data formats, nomenclature, and key attributes to facilitate seamless integration into the digital system.

iii. Digital Platform Development:

a. Design and create a user-friendly digital platform for storing and managing irrigation asset information.

b. Implement features for easy data input, retrieval, and update by authorized personnel.

iv. Geospatial Integration:

a. Integrate geospatial data to provide a visual representation of the irrigation assets on maps.

b. Utilize GIS technology to enhance the accuracy and effectiveness of asset location tracking.

v. Information Security:

a. Implement robust security measures to safeguard sensitive irrigation asset data.

b. Establish user access controls and authentication protocols to ensure data integrity and prevent unauthorized access.

vi. Compatibility and Scalability:

a. Ensure compatibility of the digital system with various devices and operating systems.

b. Design the system with scalability in mind, allowing for the seamless addition of new assets and functionalities in the future.

vii. Training and Capacity Building:

a. Provide training sessions to relevant stakeholders on how to use the digital system effectively.

b. Offer ongoing support and capacity-building initiatives to ensure the continued success of the system.

viii. Data Migration:

a. Develop a strategy for migrating existing data into the new digital system.

b. Execute a smooth transition process, minimizing disruptions to ongoing irrigation operations.

ix. Reporting and Analysis:

a. Implement reporting tools to generate insightful analytics and reports on irrigation asset performance, maintenance needs, and overall functionality.

b. Enable stakeholders to make informed decisions based on the data collected.

x. Monitoring and Evaluation:

a. Establish a monitoring and evaluation framework to assess the effectiveness of the digital system.

b. Gather feedback from users to identify areas for improvement and implement enhancements as needed.

Table-4: Schedule of Deliverables Task-C

S. No.	Deliverable	Months from Contract Signing
1	Prototype of the System	06 Months
2	Beta Version of the System	08 Months
3	Final Version of the System	10 Months
4	Training and Capacity Building of the Users	12 Months

3.4. Task D: Supervision of Construction and Administration of Contracts, Including the Role as "The Engineer and/or Project Manager".

The Consultants will oversee the construction of all the works mentioned under this component of the Project. In this capacity, the consultant will undertake the following activities:

a. Designated as the "Engineer" (and/or Project Manager) for civil works, goods, equipment supply, and installation contracts, as well as other goods contracts, the Consultants will assume responsibility for inspecting and supervising construction works. This includes overseeing equipment installation and testing construction materials to ensure that the implemented works and supplied construction goods adhere to the designs, specifications, and terms and conditions outlined in the relevant contracts and standards. The Consultants will ensure that the procurement of construction goods, services, and civil works contracts aligns with World Bank Policies and Regulations. Additionally, they will ensure that the contracts are signed and managed appropriately, incorporating any necessary changes or variation orders during implementation.

b. In the realm of contract management, the Consultant will undertake, but not be limited to, the following activities:

i. Administration and management of contracts as per the signed Contract(s).

ii. The Consultants will provide resident construction supervision and proactive contract management. This will also include support in planning, documentation, other associated services for the extension and up-gradation of the contract packages.

iii. Thorough supervision of construction activities, measurement of quantities, certification of contractor payments, and ensuring adherence to specifications.

iv. Testing of materials both on- and off-site, and, when necessary, conducting in-factory testing during manufacturing, along with the inspection of goods and materials.

v. Conducting soil testing for quality verification of pay items following standard testing procedures.

vi. Reviewing contractors' submissions, verifying progress, and certifying interim payment certificates.

vii. Assisting clients in identifying variances in work, when necessary, and making revisions to designs and costs accordingly based on the specific needs of ongoing contracts.

viii. Assisting the contractors with the preparation and finalizing the Contractor's Environmental and Social Management Plans (C-ESMP) for each site and ensuring that these documents are finalized/approved by the PIU and the World Bank before the commencement of the works.

ix. Approve and coordinate for revisions where necessary, the Contractor's work programs.

x. Determining final construction quantities.

xi. Preparing monthly progress reports, as well as quarterly, mid-term, and final reports.

xii. Maintaining records for all activities related to the assignment.

xiii. Acceptance of contracts/works or goods and closure of contracts, issuance of completion certificates in consultation with the client, and preparation of documents required for the acceptance of works/goods by the investor (GoKP).

xiv. Preparing operation, maintenance, and management manuals for the facilities constructed under the project.

xv. Ensuring proper demobilization and restoration of construction sites after completion, and overseeing operation and maintenance during the warranty period by the contractors.

xvi. In the event of contractual disputes that may lead to legal action, adjudication, or arbitration between the contractor and the Employer, and upon the instruction of the Employer, the Consultant will compile and prepare factual documentation describing the circumstances of the dispute, and if required, attend hearings.

xvii. Fulfilling all obligations provided for the Engineer/Project Manager in Civil Works Contracts in accordance with the signed Contracts.

c. The Consultants will ensure that all data collected through the platform complies with data privacy standards.

d. The Consultant will carry out Monitoring and Evaluation of the Integrated Irrigation Asset Management System for Merged Districts (IIAMS-MDs) created in Master Planning stage, for enhancement and Improvements based on feedbacks from users for identification of areas for improvement.

3.4.1. Project Management Support

i The Consultants will assist the employer in comprehensive project management throughout the project implementation stage. This involves activities such as formulating project implementation plans, annual expenditure planning, budgeting, and financing forecasts and plans. Monthly, quarterly, and annual reports or work programs and presentations, as required by the Irrigation Department for respective project components and financiers, will be prepared with their support. They will also contribute to the development of procurement plans, contract management, and financial management, creating a system that can be linked with the Project Management or field units responsible for overall financial management of the project. These plans will be regularly updated as needed by the employer.

ii The Consultants will support in obtaining necessary permits, including site permits and construction permits, and act on behalf of the Owner as designated. They will also assist the employer in the procurement of works and equipment under the project, preparing bidding documents for such procurement, supporting bid evaluation, preparing bid evaluation reports, managing contracts, and implementing Environmental Impact Assessments (EIAs), Environmental Management Plans (EMPs), Livelihood Management Plans (LMPs), Resettlement Action Plans (RAPs), and addressing day-to-day management issues.

iii The Consultants will support all procurement activities under the Project, including preparing documents for the pre/post qualification of contractors and establishing pre/post qualification criteria where required. They will assist the employer in any pre/post qualification processes, such as issuing invitations to pre-qualification, evaluating pre-qualification applications, preparing pre-qualification reports, and handling post-qualification procedures.

iv The Consultants will support the employer in drafting terms of reference for any additional work to be conducted under the project that requires additional services. They will identify and provide technical assistance and training to project staff, developing an overall training program for on-the-job training and possible study tours based on the assessment of training and technical assistance needs for the employer's implementation of the project and other programs. The training programs are likely to cover, but not be limited to: (a) on-the-job training for data systems and digital platforms management; (b) project management, project planning, expenditure planning, and budgeting; (c) preparation of detailed designs according to international standards, EIAs, RAPs; and (d) procurement and contract management following the World Bank Procurement Regulations and any other applicable local rules and guidelines. The Consultant will assist the employer in meeting all audit requirements.

Table-5: Schedule of Deliverables Task-D

S. No.	Deliverable	Months from Contract Signing
1	Monthly Progress Report	Monthly
2	Quarterly Progress Report	Quarterly

3	Mid Term Report of the project's status and performance	After Two year since commencement of Construction supervision phase
4	Monitoring and Evaluation of the Integrated Irrigation Asset Management System (IIAMS) for enhancement and Improvements	Annually till completion of the project
5	Any other report as desired by the Client	According to the agreed schedule
6	Final Report	On completion

4. FORMAT OF DELIVERABLES

All outputs are to be issued in electronic format along with paper copies to be submitted to Client/Employer. The EA/RAP summaries should also be prepared in local language for dissemination and disclosure in the Project area according to the World Bank guidelines.

5. INSTITUTIONAL ARRANGEMENTS

a. The Project Implementation Unit (PIU) established within the Irrigation Department, led by the Project Director, will oversee project monitoring. The PIU's responsibilities encompass project management, fostering communication and coordination with the donor (World Bank), engaging with the provincial government, conducting periodic reviews of both the physical and financial progress, ensuring the implementation of decisions made by the Project Steering Committee, and devising a transparent mechanism for monitoring project activities.

b. The Consultants will carry out project execution in collaboration with the Irrigation Department Merged Area, which includes the Chief Engineer (Merged Districts), Three Superintending Engineers (North & South), Director Ground Water, and seven Executive Engineers (Bajaur, Mohmand, Khyber, Kurram, Orakzai, North & South Waziristan).

c. Following the inception stage, the Consultants will develop a comprehensive schedule and task-flow diagram. This document will outline the specific tasks outlined in these Terms of Reference, elucidating the interdependencies between tasks. The schedule is designed to ensure the timely implementation of actions specified in the assignment, facilitating the prompt completion of works. It will also delineate coordination mechanisms with the client and other relevant entities. Regular updates to the schedule will be made throughout the project to provide current guidance on work activities and schedules.

6. DURATION OF THE ASSIGNMENT

The service duration spans **four (04) years**, with the master planning, feasibility, and detailed design work anticipated to conclude within the initial year of the assignment. Construction supervision of the schemes is scheduled to commence upon the conclusion of the design phase. The contract extends for the entire project duration, depending on satisfactory performance, and encompasses the warranty/defect

notification period for the works carried out under the Project. Following project closure, the Consultants will be accountable for addressing any technical queries that may arise intermittently, particularly during the initial year post-closure (during the defect notification/warranty period).

7. RESPONSIBILITIES OF CONSULTANTS

The Consultants are tasked with the comprehensive performance of services outlined in the preceding sections of this TOR. The Project Director of the Irrigation Department will assist by providing existing data and information, including all reports prepared thus far for the Project. Additionally, the GoKP will offer support in obtaining relevant clearances and permissions necessary for undertaking work in the Merged Districts (MDs).

The Consultant bears full responsibility for securing and maintaining the office space and accommodation essential for its Project-related activities. Furthermore, the Consultant is required to provide the necessary transport for its staff to carry out these activities. The anticipated setup involves the Consultant maintaining an office in Peshawar throughout the assignment's duration, along with field offices as per the implementation and supervision requirements for civil works and other contract packages. The equipment to be provided by the Consultant encompasses, but is not limited to:

- All desks, chairs, and storage facilities;
- Computers equipped with necessary software, including AUTOCAD, Autodesk Civil 3D and standard word-processing, data analysis, and spreadsheet software;
- Printers, copiers, plotters, and scanners for various-sized maps;
- Telephones;
- Projector for presentations;
- Surveying equipment and software; and
- All consumables (paper, stationary, ink, toner, etc.)

The consultancy cost and consultants' proposals are expected to cover all associated expenses, including surveys, investigations, technical studies, system development, environmental studies, social assessments, RAP, as well as transport costs and office facilities.

Note: All hardware or equipment purchased under this contract will remain the client's property upon completion of these services. The transportation should be based on rental vehicles.

8. QUALIFICATION OF FIRM AND EXPERTS

The consulting firm must have a minimum of 10 years of experience post registration in a related business (planning, designing, costing, project management, construction

supervision and contract management, quality assurance, occupational health and safety, and implementing environmental and social management plans).

Should be registered with the relevant authority/council/organization with a license to practice engineering services.

Successful completion of at least five projects of similar scale and complexity (Flood & Irrigation infrastructure projects) within the past ten (10) years. In the case of the Joint Ventures (JV), each member of the JV should be able to reasonably meet the shortlisting criteria (e.g core business and general experience of 8 years, experience with a minimum of 2 similar assignments, etc.). However, all members combined should meet the overall requirements.

Adequate logistic and technical resources to undertake the assignment. Firms should submit their relevant documents to establish their capacity regarding resources, establish offices etc.

Availability of necessary personnel to carry out the services and commitment to maintaining adequate staffing to complete the work within the stipulated time. (Key experts will not be evaluated at the EOI stage and CVs are not required at the EOI stage).

Interested firms to provide information indicating that they are qualified to perform the Services (description of similar assignments and **completion certificates/ contracts or any other documentary evidence to establish their mentioned projects**, experience in similar scale and complexity, conditions, availability of skills and other logistical requirements).

8.1. Staffing Requirements

The consultants are advised to leverage expertise available in Pakistan whenever feasible. Having experience with World Bank-financed projects or other multilateral development banks is desirable for successfully executing the assignment. In cases where essential skills and expertise are not internally available, the consultants are encouraged to form associations with other firms, either through Joint Venture or Sub-Consultant arrangements. The proposed team composition by the consultants should be comprehensive, outlining task assignments for each key staff member and ensuring adequate support staff to effectively fulfill the objectives and scope of services outlined in these Terms of Reference.

8.2. Indicative team structure

A tentative list of key professional staff/experts positions, is provided in the table below. The Consultant is required to propose suitable individuals for these key and non-key positions, considering the tentative minimum required number of person-months for each role to align with the scope of services. Alongside these key and non-key inputs, the Consultant should also suggest other experts and support professionals with sufficient experience in relevant fields. During the technical evaluation process, individual assessment of these non-key experts will not take place; instead, they will be

collectively considered, along with other support staff, if any, under the "Organization and Staffing" criteria of evaluation. Deployment of these professionals will be contingent upon client approval and satisfaction.

Table-6: Indicative List of Experts for Task A (Master Planning), Task B (Detailed Design) & Task C (Integrated Irrigation Asset Management System IIAMS).

Tentative minimum inputs of Key- Experts Tasks A, B and C:

S. No	Personnel Description	Number of Position	Person Months	Input type
1	Project Manager / Team Leader	01	12	Full time
2	Senior Hydrologist	01	6	Intermittent
3	Senior Structural Engineer	01	6	Intermittent
4	Senior Geotechnical Engineer	01	6	Intermittent
5	Procurement and Contracts Specialist	01	6	Intermittent
6	Environmental Specialist	01	6	Intermittent
7	Social and Resettlement Specialist	01	6	Intermittent
8	Senior Computer/ICT Specialist	01	12	Full time
9	GIS Specialist	01	12	Full time
	Sub Total		**72**	

Tentative minimum inputs of Non-Key- Experts Tasks A, B and C:

S. No	Personnel Description	Number of Position	Person Months	Input type
1	Junior Engineer (Civil)	3	36	Full time
2	Junior Geotech /Material Engineer	1	12	Full time
3	Quantity Estimation Engineer	2	24	Full time
4	Junior Social & Resettlement Specialist	1	12	Full time
5	Gender Specialist	1	12	Full time
6	Environmental Specialist	1	6	Intermittent
7	Junior Procurement and contract Manager	1	6	Intermittent
8	Geologist	1	9	Intermittent
	Sub Total		**117**	

Table-7: Indicative List of Experts for Task D (Construction Supervision)

Tentative minimum inputs of Key- Experts Tasks D:

S. No	Personnel Description	Number of Position	Person Months	Input type
1	Chief Resident Engineer (CRE) / Project Manager/Team Leader	1	36	Full time
2	Senior Hydrologist	1	3	Intermittent
3	Senior Structural Engineer	1	3	Intermittent
4	Senior Geotechnical Engineer	1	3	Intermittent
5	Procurement and Contracts Specialist	1	6	Intermittent
6	Environmental Specialist	1	6	Intermittent
7	Social and Resettlement Specialist	1	6	Intermittent
8	Senior Computer/ICT Specialist	1	3	Intermittent
9	GIS Specialist	1	3	Intermittent
10	Deputy Team Leader	1	36	Full time
11	Resident Engineers	2	72	Full time
	Sub Total		**177**	

Tentative minimum inputs of Non-Key- Experts Tasks D:

S. No	Personnel Description	Number of Position	Person Months	Input type
1	Assistant Resident Engineers	8	288	Full time
2	Junior Engineer (Civil)	1	36	Full time
3	Junior Geotech /Material Engineer	1	12	Intermittent
4	Quantity Estimation Engineer	2	72	Full time
5	Junior Social & Resettlement Specialist	1	6	Intermittent
6	Gender Specialist	1	6	Intermittent
7	Environmental Specialist	1	6	Intermittent
8	Junior Procurement and contract Manager	1	6	Intermittent
9	Health & Safety Inspectors	1	6	Intermittent
10	Geologist	1	6	Intermittent
	Sub Total		**444**	

Table-8: Key Experts Qualifications, Experience and Job descriptions:

Project Manager/ Team Leader (For task A, B &C)	Preferably 15 years of international experience as Water Resources Engineer and 10 years as Team Leader on major irrigation sector development projects. The candidate must have demonstrated ability to lead teams composed of international and national consultants and create a strong working relationship with the Client. Excellent communication (written and oral) skills in English and strong inter-personal skills will be considered an asset.
	Bachelor's degree in Civil Engineering (16 Years of Education). Preferably Masters (18 Years of Education) in Water Resources Engineering or related field.
	Will have overall responsibility for the organization, conduct and delivery of the Master Planning & Detailed Design phase of consultancy services and reporting to the Client. Team Leader will head the Consultants' Master Planning & Design team and will work directly to manage the project and will maintain liaison with the PIU. Responsibilities as a Team Leader will include, but is not limited to the following: • Lead the overall Master Planning & detailed design activities from start to the end. • Reports directly to the client and act as a firm's focal person. Overall responsible for the whole of assignment and will be a team lead of the consultant's staff. • Must have a proactive approach to the Master Planning & design phase and resolution of all issues at sites. • Develop the priority packages list in consultation with the PIU and complete those designs on priority wise in order to reach the bidding stage; • Assume full responsibility for the consulting team and performance of services under the consultancy contract; • Ensure that the consulting team undertakes the design activity in timely manner and comprehensive review of the designs and specifications; • Work as coordinator for managing the comprehensive design efforts that are based on best international practices, World Bank requirements, climate resilient and sustainable. • Ensure that all team specialists work together and share data and conclusions in a timely fashion; and submit all the required reports to World Bank and the PIU in scheduled time.
Senior Hydrologist	Preferably 10 years work experience in hydrological studies, modeling and estimating underground and surface flows. Will have demonstrated ability to work in a multidisciplinary team.
	Master degree (18 Years of Education) in Engineering/Hydrology/Water Resources engineering or related field.
	Under the supervision of the Project Team Leader, the expert will

	undertake the following tasks: • Carry out hydrological studies for subprojects and update the hydrological analysis and data for the purpose of determining water availability; • In close coordination with all the concerned experts and parties, facilitate and monitor institutional operations, managing on-site data collection and processing; • Assist in modernizing engineering operations, implementing relevant regulations; • Employing statistical and hydrological modeling techniques; • Working with specifically designed computer modeling packages to assess the most effective methods of managing available water in a particular area; and • Assist in designing of all irrigation infrastructure subprojects based on conducted investigation and confirmed data.
Senior Structural Engineer	Preferably 10 years work experience in structural engineering modelling and design of irrigation/canal structures. Will have demonstrated ability to work in a multidisciplinary team.
	Master degree (18 Years of Education) in Civil Engineering (Structural engineering) or related field.
	Under the supervision of the Project Team Leader, the expert will undertake the following tasks: • Investigate structural conditions of existing irrigation facilities, such as canals, concrete structures, etc. in the project area. • Assess durability, usability, and suitability of those facilities for future use and incorporate those results in designs. • In close coordination with all the concerned experts and parties, managing on-site data collection and processing; • Assist in designing of all irrigation infrastructure subprojects based on conducted investigation and confirmed data. • Carry out structural design for subprojects; • Working with specifically designed computer modeling software(s) for ensuring the stability and safety of irrigation structures; and
Senior Geotechnical Engineer	Preferably 10 years' experience in geotechnical design of irrigation canal structures / dams. Will have demonstrated ability to work in a multidisciplinary team. The consultant must have strong interpersonal and communication skills, be fluent in written and spoken English, and have proven ability in report writing for professional purposes.
	Preferably Master degree (18 Years of Education) in Geotechnical Engineering / Geosciences or related field.
	Under the supervision of the Project Team Leader, the expert will undertake the following tasks: • Carry out (organize and oversee) a comprehensive review of foundation conditions at all type of hydraulic structures; • Prepare geotechnical design criteria and recommend measures to ensure stability of canals/embankments and structures.

	• Guide and supervise geotechnical investigations, drilling, sampling and testing services to ensure compliance with best geotechnical practice; • Prepare relevant reports of quality standard to document findings as well as provide relevant contributions to representative project feasibility studies. • Proficient in geotechnical analysis and design software for assessing soil-structure interaction in irrigation projects. • Identify potential sources of construction material and suitable locations and means of disposal of soil.
Procurement and Contracts Specialist	Preferably 10 years of experience as a contract specialist on irrigation projects based on FIDIC form of contract. Knowledge of the government planning cycle, procurement procedures, financial management mechanisms, contract management, valuation of claims is essential. The specialist will have rich knowledge and understanding of World Bank Procurement guidelines on procurement. The specialist must have strong interpersonal and communication skills, be fluent in written and spoken English, and have proven ability in report writing for professional purposes.
	Preferably master's degree (18 Years of Education) in Business Administration, Procurement, Contract Management, Civil Engineering, Construction Management or related field & PMP Certification.
	Under the supervision of the Team Leader, the expert will undertake the following tasks: • Prepare a procurement manual and a procurement plan, including detailed procurement packages, costs, and the procurement method, and timeline for each contract. • Prepare all bidding documents with inputs from PIU and submit these to World Bank in a timely manner. • Support the PIU in procurement of the constructors as per World Bank Procurement Regulations. • Assist in the preparation, negotiation, and administration of contracts, ensuring compliance with Word Bank regulations and procedures. • Assist the CRE in issuance commencement letters, site possession certificate, completion certificate and performance certificates under the provisions of the contract(s); • Responsible for ensuring contract administration of the works, taking timely contractual actions related to cost, time and quality controls in accordance with the provisions of the contract agreement, closure of the contracts, evaluating claims, and in case of disputes, its referral to dispute resolution including Dispute Review Boards and/or arbitration. • Assist CRE in issuance contractual notice; and • Any other work assigned by the CRE and REs and client
Environmental Specialist	10 years of experience in environmental management, environmental safeguards of water resources development and Irrigation related projects. This shall include experience in environment impact

	assessment (EIA). He/she must have experience in the preparation of EIA reports. Familiarity with the World Bank environmental safeguard system is essential. Have knowledge of current best-practice EIA standards and techniques and have demonstrated ability to prepare international-standard, high-quality EIA reports, and which present a holistic framework for the environmental assessment, including the project design and safeguard measures. He/she must have excellent written and oral communications skills in the English language
	Master's degree in Environmental Science, Environmental Management, Environmental Engineering or related field..
	Under the supervision of the Project Team Leader, the expert will undertake the following tasks: • Visit project area, to be familiar with it and gain adequate understanding of the key environmental issues. • Finalize the EARF to be used as reference for preparation of subprojects under ESP and the Dry Land Development Project. • Review compliance of initial environment examination studies or environment impact assessments prepared under ESP with World Bank Safeguards Policies. • Assess the institutional capacity to implement the environmental management plan (EMP) and develop measures to strengthen the capacity. • Prepare necessary environment reports as per standard of World Bank projects. • Other tasks as may be required to support environmental safeguard activities under the project.
Social and Resettlement Specialist	10 years of professional experience in social safeguards, social impact assessment, and resettlement planning, with a focus on large-scale infrastructure projects, preferably in irrigation. Have proven track record in managing social and resettlement aspects of irrigation projects, including master planning, design, and construction phases.
	Master's degree in Applied / Social Sciences or related field.
	Under the supervision of the Project Team Leader, the expert will undertake the following tasks: • design, prepare and implement the social surveys, and ensure the surveys are relevant for the project design. • Conduct meaningful public consultations with affected households and establish grievance redress mechanism (GRM) in accordance with World Bank policies and good practices. • Review compliance of the resettlement plans prepared under ESP with World Bank guidelines. • Assess the institutional capacity to implement the resettlement plans and develop measures to strengthen the capacity.

	• Coordinate with the executing agency the preparation of annual work plans to ensure that budget will be allocated for LARP implementation and IPP implementation (if required). • Check the results of survey and ensure that data adequately recorded. • Identify consultations gap and suggest consultation plan and schedule for all social safeguard's documents. • Oversee the gender action plan preparation and tasks of the social development/gender specialist. • Prepare necessary social & resettlement reports. • Other tasks as may be required to support resettlement and indigenous people activities under the project, if required.
Senior Computer/ICT Specialist	10 years of professional experience in devising and executing ICT solutions, evaluating ICT preparedness, formulating strategies to address identified gaps particularly of irrigation department and developing management system.
	Master's degree in Information Technology or Computer Science or related field.
	Under the supervision of the Project Team Leader, the expert will undertake the following tasks: • Will develop Integrated Irrigation Asset Management System for Merged Districts (IIAMS-MDs) for cataloging and managing both existing and new irrigation assets in the Merged Districts. • Monitor and update the inventory of irrigation assets, ensuring accurate and timely updates to asset records on IIAMS to manage an efficient asset inventory. • carry out Monitoring and Evaluation of the Integrated Irrigation Asset Management System for enhancement and Improvements based on feedbacks from users for identification of areas for improvement. • Provide training sessions to relevant stakeholders on how to use the digital system effectively.
GIS Specialist	Preferably 10 years work experience as GIS / remote sensing expert with proven experience in preparing GIS maps for different development projects. Have ability to conduct hazard analysis, flood mapping, analysis and visualization of remote sensing / spatial data related to irrigation infrastructure.
	Preferably master degree (18 years of education) in GIS, geophysics, geography or related field..
	Under the supervision of the Project Team Leader, the expert will undertake the following tasks: • Collect all relevant datasets for water resources availability, water use, irrigation system performance based on remote sensing and satellite images, open access and globally available date sets; • Collect all relevant and available ground measurements from local organizations and perform validation of the water accountability and

	system performance results from remote sensing; • Develop geodatabase for the irrigation systems in NAR, including cropped area, crop water productivity, salinity level, irrigation system layout, location of water bodies and communities, institutional boundaries and other agreed features • Prepare maps (land uses, irrigation schemes and structures, administrative and hydraulic boundaries, crops, etc.) demonstrating the remote sensing results, and identify irrigation schemes that do not performing well • Provide technical assistance to PIU / Irrigation Department staff in spatial data handling and GIS application development for the target areas and subprojects for future use. • Map Preparation and Development of Final Layouts. • Undertake other tasks as deemed necessary by the team leader.
Chief Resident Engineer (CRE) (also work as TL, the Engineer / Project Manager for construction supervision task)	Preferably 15 years' experience as TL/CRE on major infrastructure projects of civil works, contract management, processing of claims and implementation for irrigation projects.
	Bachelor's degree (16 years of education) in Civil Engineering. Preferably Masters (18 years of education) in Construction Management / Project Management & Water Resources or related field..
	Will be acting as a Team Leader and responsible for construction management/ supervision and ensuring that the project is implemented in accordance with the agreed specifications and approved drawings. Will also be responsible for resolving all issues during the implementation of the project. Guide the Deputy Team Leader on overall managing the project and supervision activities. Responsibilities will include, but not limited to the following: • Responsible for ensuring that the consulting team carries out construction supervision and contract administration of all the civil works and goods for the Project assuming the role of "the Engineer" and undertake all tasks as defined under FIDIC General Conditions of Contract for Construction and act as "Project Manager" under construction contracts; • Issue commencement orders, site possession certificates and other contractual obligations for start of works / goods; • Responsible for overseeing the consultants' activities ensuring compliance to details provided in the construction drawings and strict adherence to the technical specifications; • Responsible for overseeing quality control methodology put in place, confirming its adequacy and ensuring that its employment is satisfactorily carried out; • Render necessary advice and assist the client in contract administration and issues/assignments/contractual claims; • Assist the PIU in resolving any contractual issues; • Determine extension of time for completion and other claims in accordance with the conditions of contract in consultation with the PIU; • Provide assistance to the Employer in dispute resolution as per

	provisions in the conditions of contract; • Keeping the Employer informed of contractual and claims issues by direct contacts and through discussions or correspondence; • Responsible for holding meetings with the Contractors/ suppliers on contract progress and other related issues; • Participate in the Dispute Board meetings to explain and discuss issues raised by the Contractor/Employer or dispute board; • Issue the completion certificates in coordination with the Employer of the completed subprojects and performance certificates upon completion of Defect liability period; • At the end of the construction activities, guide and ensure that the team prepares a comprehensive Construction Completion Report inclusive of 'as-built drawings" as appropriate; • Assist the Employer in preparing responses to audit objections and queries of the financiers or other Government Authorities; • Coordinate with all concerned Employer's organizations on project issues; • Responsible for preparing monthly, quarterly and annual reports and a comprehensive Project Completion Report (PCR) at the completion of the project. • Ensure that all team specialists work together and share data and conclusions in a timely fashion; and submit all the required reports to World Bank and the PIU in scheduled time. • Any other duty assigned by the client or World Bank related to the project
Deputy Team Leader	Preferably 10 years' experience in planning development and implementation of irrigation sector development projects. Have demonstrated ability to lead teams composed of international and national consultants and create a strong working relationship with the Client. Excellent communication (written and oral) skills in English and strong inter-personal skills will be considered an asset.
	Bachelor's degree or above in civil engineering. Preferably Masters (18 years of education) in Construction Management / Project Management or related field.
	Under the supervision of the Project Team Leader, the expert will undertake the following tasks: • Lead the construction activities from start to the end. • Must have a proactive approach to resolution of all issues at construction sites. • Ensure that the consulting team undertakes comprehensive construction supervision and contract administration of the on-going construction activities. • Oversee the consultants' activities ensuring compliance to details provided in the construction drawings and strict adherence to construction specifications. • Oversee and supervise construction of works in accordance with details provided in the construction drawings ensuring strict

	adherence to technical specifications. • Prepare the project implementation schedule and detailed implementation arrangements; • Ensure preparation of detailed and quantitative progress reports to support the contractor's requests for progress payments. • Keep the CRE / TL informed of technical issues and progress of all works and assist in project issues. • Ensure implementation of environment and social safeguards requirements.
Resident Engineers (02 No.)	Preferably 10 years' experience as Resident Engineer on Civil works of Irrigation projects.
	Bachelor's degree (16 years of education) in Civil Engineering. Preferably Masters (18 years of education) in Civil Engineering or related field.
	Under the supervision of the CRE the expert will undertake the following tasks: • Responsible for quality, cost, scope, time, safety, safeguard and environmental control of the subprojects; • Reviewing and assisting in approval of contractor's work program, method statements, material sources, preparing and issuing reports as defined subsequently, approving and/or issuing working drawings, approving the setting out of the works, and instructing the contractor; • Certifying work volume and recommending interim certificates for progress payments, maintaining consolidated project accounts, and preparation of financial statements, ensuring minimum disruption/damage to the environment by approval of contractors' work statement/ methodology; • Ensuring minimum disruption/damage to the environment by approval of contractors' work statement/methodology, including monitoring the impact of construction works on the environment and local settlements and providing information to PIU and World Bank on the monthly progress reports; • Approving and/or issuing working drawings, approving the setting out of the works, and instructing the contractor; • Taking measurements and keep measurement records; • Maintaining records, correspondence, and diaries; • Certifying work volume and recommending interim certificates for progress payments and maintaining consolidated project accounts, and preparing of financial statements and withdrawal applications for submission to the World Bank; • Certifying completion of part or all of the works; • Inspecting the works at appropriate intervals during the defects liability period and make recommendations for issuing the defects liability certificate; • Inspecting the works at appropriate intervals during the defects notification period and issuing the defects notification certificate; • Supervising the preparation and the implementation of

	commissioning tests; review the Operation and Maintenance (O&M) manuals and the commissioning tests reports; • Providing advice to the PIU on delivery of certificate of completions; • Reviewing reports of assistant resident engineers during the liability period, coordinate the instructions to Contractors for additional works, provide advice to the PIU for Taking over certificates and release of Performance warranty bonds; • Providing the CRE with complete records and reports, and approving the contractors' as - built drawings for the works for onward submission to the client; • Assisting the project manager in the preparation of an overall Project completion report and provide relevant inputs concerning needs for O&M; • Compiling a Project completion report providing details of Project implementation, problems encountered, and solutions adopted, and detailing and explaining any variation in Project costs and implementation schedules from the original estimates and time schedules; and • Any other duties as assigned by CRE or the client

Table-9: Indicative List of Non-Key Staff (Task A, Task B & C)

S. No.	Description
1	Junior Engineer (Civil)
2	Junior Geotech /Material Engineer
3	Quantity Estimation Engineer
4	Junior Social & Resettlement Specialist
5	Gender Specialist
6	Environmental Specialist
7	Junior Procurement and contract Manager
8	Geologist
9	Technical Support Staff (Surveyor, helper, CAD & computer operator, etc)
10	Non-Technical Office support staff (Office Manager, Document controller, office boys etc.)

Table-10: Indicative List of Non-Key Staff (Task C i.e. Construction Supervision)

S. No.	Description
1	Assistant Resident Engineers
2	Junior Engineer (Civil)

3	Junior Geotech /Material Engineer
4	Quantity Estimation Engineer
5	Junior Social & Resettlement Specialist
6	Gender Specialist
7	Environmental Specialist
8	Junior Procurement and contract Manager
9	Health & Safety Inspectors
10	Geologist
11	Technical Support Staff (Site supervisor, Surveyor, helper, CAD & computer operator, etc)
12	Non-Technical Office support staff (Office Manager, Document controller, office boys etc.)

Table-11: Non-Key Experts Qualifications, Experience and Job descriptions:

These experts will not be rated; however, the deployment will be subject to the client's approval.

S.No	Position	Qualification requirement	Experience requirement
1	Assistant Resident Engineers	BSc in Civil Engineering	5 years in construction supervision of Irrigation Projects
2	Junior Engineer (Civil)	BSc in Civil Engineering	5 years in planning/design of Irrigation Projects
3	Junior Geotech /Material Engineer	Bachelor's degree in Civil Engineering or Geology	5 years in Material Testing Procedures and Specifications, identify sources of materials, quarry sites and borrow areas, Undertake field and laboratory testing of the materials to determine their suitability for various components of the works and goods in accordance with approved drawings and specification
4	Quantity Estimation Engineer	Bachelors in Civil Engineering	5 years in quantity estimation of Irrigation Projects
5	Junior Social & Resettlement Specialist	Bachelors degree in Applied / Social Sciences	5 years relevant experience
6	Gender Specialist	Bachelors degree in	5 years relevant

		gender studies, social sciences, development studies.	experience
7	Environmental Specialist	Bachelor's Degree in Environmental science, Environmental Management, Geosciences	5 years relevant experience
8	Junior Procurement and contract Manager	Bachelor Degree in Business Administration, Procurement, Contract Management, Civil Engineering. Construction Management	5 years relevant experience
9	Health & Safety Inspectors	Bachelor's degree in environmental science	5 years relevant experience and familiarity with safeguard policies and environmental assessment tools.
10	Geologist	Bachelor's degree in Geology	5 years relevant experience

9. SELECTION METHOD

The Consultants will be selected following Quality and Cost Based Selection (QCBS) criteria under the World Bank Procurement Regulation for selection of consultants. The form of contract would be Lumpsum for Task A, B & C (Master Planning, Detailed Design & IIAMS-MDs) and Time Based for Task D (Construction Supervision).