POST-FLOOD 2022 RECONSTRUCTION PROGRAM: RESILIENCE ENHANCEMENT AND LIVELIHOOD DIVERSIFICATION IN BALOCHISTAN

TERMS OF REFERENCE for CONSULTANCY SERVICES

Phase-1: Preparation of Assessment study of selected sub-projects and Review Original Design and make improved Design including Procurement Assistance (06 Months)

Phase-2: Construction Supervision & Contract Administration of Works under BIWRMDP (42 Months)

i. Background:

Over the past two decades, Pakistan significantly reduced poverty, but human development outcomes have lagged, and severe economic challenges put past gains at risk. Pakistan made significant progress towards reducing poverty between 2001 and 2018 when the expansion of off-farm economic opportunities and increased inflow of remittances allowed over 47 million Pakistanis to rise out of poverty. However, this rapid poverty reduction has not fully translated into improved socio-economic conditions, as human capital outcomes have remained poor and stagnant, with high levels of stunting at 38 percent and learning poverty at 75 percent. The deterioration of economic conditions, in combination with non-economic shocks such as the COVID 19 pandemic and the devastating floods of 2022, are expected to reduce household incomes and increase their vulnerability to fall below the national poverty line.

Pakistan's economy is currently under severe stress with low foreign reserves, a depreciating currency, and high inflation. Reflecting a consumption-driven growth model, with limited productivity-enhancing investment and exports, strong economic growth has often come at a cost of economic imbalances and frequent macroeconomic crises. Long-term growth of real gross domestic product (GDP) per capita therefore has been low, averaging only around 2.2 percent annually over 2000-22. With high public consumption, economic growth increased substantively above potential in Fiscal-Year 2022 (FY22) that led to strong pressures on domestic prices, external and fiscal sectors, the exchange rate, and foreign reserves. These imbalances were exacerbated by the catastrophic flooding in 2022, surging world commodity prices, tightening global financing conditions, and domestic political uncertainty. Furthermore, distortive policy measures, including periods of informal exchange rate restrictions and import controls, delayed the International Monetary Fund (IMF) Extended Fund Facility (EFF) program, and contributed to creditworthiness downgrades, lower confidence, high yields and interest payments, and the loss of access to international capital markets.

The recent floods have had enormous human and economic impacts. Pakistan experienced heavy monsoon rains between June and September 2022, severely affecting millions of households, mainly in Sindh and Balochistan. Roughly 33 million people have been displaced, and more than 13,000 km of roads destroyed. The flooding has damaged 2.2 million houses, flooded around 9.4 million acres of crops, and killed an estimated 1.2 million livestock, adversely affecting rural livelihoods. Limited access to input and output markets and temporary disruptions to supply chains have driven up food prices and added to existing price pressures resulting from reduced agricultural yields and the global rise of food prices. Due to significant crop and livestock losses, food shortages have intensified in the fall and winter, with food price inflation increasing to more than 50 percent. With the destruction of infrastructure and disrupted access to schools, medical facilities, and sanitation systems, the floods have negatively impacted health and education outcomes especially for rural areas, potentially affecting long-term human capital accumulation. Preliminary estimates suggest that the national poverty rate may increase by up to 4 percentage points as a direct consequence of the floods, potentially pushing around 9 million people into poverty. The recently completed Post-Disaster Needs Assessment (PDNA)1 estimated that the need for rehabilitation and

[1] Government of Pakistan. 2022. *Pakistan Floods 2022 Post-Disaster Needs Assessment.* Ministry of Planning Development & Special Initiatives.

reconstruction is at US$16.3 billion, not including much-needed new investments to strengthen Pakistan's resilience to future shocks.

At a national level, the PDNA shows that housing, agriculture, water supply and sanitation, and irrigation sectors bear the brunt of the damage. The provinces of Sindh and Balochistan account for approximately 50 percent and 15 percent of recovery and reconstruction needs, respectively. Table 1 shows the damage, loss, and needs2 breakdown by region.

Table 1. Total Damage, Loss, and Needs in Pakistan[3]

	Damage		Loss		Needs	
Region	PKR billion	US$ million	PKR billion	US$ million	PKR billion	US$ million
Balochistan	349	1,625	541	2,516	491	2,286
Khyber Pakhtunkhwa	201	935	141	658	168	780
Punjab	111	515	122	566	160	746
Sindh	1,948	9,068	2,444	11,376	1,688	7,860
Cross-Provincial*	587	2,731	14	67	975	4,540
Special Regions**	7	32	11	49	10	48
Grand Total	3,202	14,906	3,272	15,233	3,493	16,261

Source: Government of Pakistan 2022.

* Cross-provincial includes assets that affect more than one province or are calculated at the national level (e.g. railways, roads, telecommunications, etc.). The classification is in line with the public budget.
** Special regions include districts outside of the four main provinces that have been affected by the floods and declared "calamity-hit."

The recently published Country Climate Development Report (CCDR)4 shows that Pakistan's high vulnerability to climate change is a risk multiplier, compounding its human and economic development challenges. The country consistently ranks among the top ten countries worldwide most affected by climate change.5 Extreme weather events have increased in frequency and intensity, impacting ecosystems, people, settlements, and infrastructure. Heatwaves, heavy precipitation events, droughts, and cyclones are prevalent risks. Attribution research on the 2022 floods has shown that the 5-day maximum average rainfall of Balochistan and neighboring Sindh was around 75 percent more intense than it would have had the climate not warmed by 1.2 degrees.6 Climate projections have been predicting such a shifting trend for years. Historical records show that heavy rainfall has significantly increased in the region alongside the increase in greenhouse gas emissions, strongly suggesting climate change played a central role in the event. The floods came on the heels of a severe heatwave and saw temperatures continuously above 45°C, resulting in crop losses, power outages, and forest fires. These changes in climate and extreme events are likely to

[2] **Damage** is defined as direct costs of destroyed or damaged physical assets. It is valued in monetary terms with costs estimated based on replacing or repairing physical assets and infrastructure, considering the replacement price prevailing before the crisis. **Loss** is defined as changes in economic flows resulting from the disaster and valued in monetary terms. Together, damage and loss constitute the effects of the crisis. Needs costing draws on the monetary value of damage and loss but is not equal to the sum of those estimates. Recovery and reconstruction needs are calculated in terms of replacement costs according to current prices and include a premium linked to building-back-better principles, and needs associated with the recovery of the sector. The reconstruction and recovery needs include short (up to 12 months) and intermediate to long-term (up to five years) activities.
[3] Government of Pakistan (2022). Pakistan Floods 2022 Post-Disaster Needs Assessment.
[4] World Bank Group (2022). Pakistan Country Climate Development Report.
[5] Germanwatch, Global Climate Risk Index 2021. https://www.germanwatch.org/en/19777
[6] World Weather Attribution, 2022. https://www.worldweatherattribution.org/wp-content/uploads/Pakistan-floods-scientific-report.pdf

disproportionately affect the most disadvantaged groups, among these low-income businesses, those engaged in manual labor jobs, poorer farmers, women, and children.

Pakistan is especially vulnerable to flooding—including riverine, flash, glacial lake outbursts, and coastal flooding—and the country regularly experiences large-scale flooding, most notably in 2010 and, more recently, in June 2022. Pakistan faces some of the highest disaster risk levels in the world, ranking 18 out of 191 countries according to the 2020 Inform Risk Index and eighth at risk of flooding. Despite a history of other disasters such as earthquakes7, heatwaves, and droughts, floods remain the dominant hazard. Most of the country's population lives along the Indus River, which is prone to severe flooding during the monsoon season. The catastrophic 2010 rainfall flooded one-fifth of the country, affecting 20 million people and claiming 2,000 lives. The World Bank estimates that Pakistan loses, on average, US$1 billion annually due to flooding8. This figure will rise due to climate change and the unprecedented losses experienced during the 2022 floods, which have exceeded the scale of the 2010 monsoon flooding (previously the worst flooding in the country's history). In addition, Pakistan's climate vulnerability and uncertainty surrounding annual glacial melt, average precipitation, and extreme temperature changes highlight the need for ex-ante disaster preparedness and resilience building.

The Ministry of Planning, Development and Special Initiatives (MoPDSI) has developed the Resilient Recovery, Rehabilitation and Reconstruction Framework (4RF) to guide the government's response to the 2022 floods based on the needs identified across the 17 sectors covered in the PDNA. The 4RF defines measures to ensure a resilient recovery and prevent multi-generational impacts that may manifest through reduced developmental gains. Through the 4RF, Government of Pakistan (GoP) recognizes the importance of long-term resilience in the aftermath of the unprecedented flooding and is committed to consolidating ongoing efforts and undertaking new measures toward improved resilience. The proposed operation responds to immediate emergency recovery needs in Balochistan province while contributing to building flood resilience.

The Government of Balochistan has obtained a credit (No. 7333-PAK) from the World Bank for implementation of the Integrated Flood Resilience and Adaptation Program (IFRAP) Project. The IFRAP Project is being implemented by the Government of Balochistan through the Balochistan Irrigation Department with support from other government departments and various consultants. Whereas, the Government of Pakistan with the financial Assistance of World Bank has approved PC-I of another project for "Post Flood 2022 Reconstruction Programme Resilience Enhancement and Livelihood Diversification in Balochistan".

As per advice of the Government of Pakistan/Government of Balochistan and contents of approved PC-I followed by project preparatory meetings held in Planning & Development Department (GoB), the BIWRMD project PMU has taken steps towards the assessment for renovation/rehabilitation of flood-affected infrastructure.

The IFRA Project PIU intends to conduct detailed assessment for reconstruction/rehabilitation of the damaged irrigation infrastructure caused by floods in 2022 (as reported in PDNA) in the reported districts of Balochistan through a consultancy agreement allocated share in Umbrella PC-1 for the project titled "Resilience, Enhancement, and Livelihood Diversification in Baluchistan through ranking on the basis of cost effectiveness. "The study assigned is for assessing flash flood damaged irrigation infrastructure, including dams, to evaluate the extent and severity of the damages, identify the underlying causes, and develop a plan for restoration and rehabilitation of the infrastructure with estimated cost, Restoration Plan,

[7] Balochistan particularly has a long history of earthquakes causing severe life and property damages. Since the year 1900 there has been one earthquake of a magnitude of more than 8, eight (8) of magnitude between 7 and 8, 32 of between 6 and 7 and 204 between magnitude of 5 and 6. In 2022 alone Balochistan faced 5 earthquakes of the magnitude 5 or above.

[8] World Bank Climate Change Knowledge Portal (dataset)

Risk Assessment reports, IEE/EIA, ESMP, bid preparation & tendering documents on World bank criteria. The Irrigation Department of Government of Balochistan, be the Implementation Agency of the Project and Project Implementation Unit (PIU) has already been established for BIWRMDP headed by a Project Director (Client's Representative).

The Consultant Assignment is divided into two phases lasting a total of 48 months for irrigation and Public Health Engineering department with the first phase take about 6 months and the second that would last up to 42 months based on the project's timeframe and circumstance.

The detailed activities for Phase-1(Detail Engineering Design) for Irrigation will be based on;

1. Comprehensive assessment level of study for irrigation schemes in Annexure-1

2. To carry out detail feasibility level study of irrigation schemes given in Annexure-1 with necessary technical engineering studies level and tender documents for implementation with detailed design and construction planning/supervision arrangement modality on the improved irrigation efficiency for optimal operation and utilization of water management in the given schemes command areas and Preparation of site-specific ESMPs where required that are fully compliant with the World Bank's safeguards requirements

for Public health Engineering for Phase-1(Detail Engineering Design)

3. Comprehensive assessment level study for identified PHE Water supply schemes given Annexure-2, to review original design and make improved design, to identify the underlying causes and develop a plan for restoration /rehabilitation of the damaged infrastructure with estimated cost.

4. To carry out detail feasibility level study of mentioned scheme in Annexure-2 with necessary technical engineering studies level and prepared tender documents for implementation with detailed improved design and construction planning/supervision arrangement modality.

5. Preparation of site-specific ESMPs where required that are fully compliant with the World Bank's safeguards requirements.

And the detailed activities for Phase-2 (supervision) for irrigation will be based on;

1. Construction supervision and contract administration, including post-construction activities.
2. Prior to the implementation of civil works contracts, existing engineering designs must be reviewed and updated in accordance with the specified parameters / standards and best international practices.
3. Ensuring that high-quality construction is completed on time and within budget, and that all works are completed in full compliance with the approved engineering designs, technical specifications, agreed-upon work schedule, and all other contract documents and sound engineering principles.
4. Ensure project safeguards management and the incorporation of environmental and social management plans into work contracts, as well as the preparation and implementation of site-specific ESMPs that are fully compliant with the Bank's safeguards requirements.
5. Monitor and evaluate the contractor's and Employer's implementation of environmental and social management plans, resettlement plans, and other social safeguard measures.

the detailed activities for Phase-2 (supervision) for Public Health Engineering Department will be based on;

6. Construction supervision and contract administration, including post-construction activities.
7. Ensuring that quality restoration work is in process and is completed on time and within budget, and that all works are completed in full compliance with the approved engineering designs, technical

specifications, agreed-upon work schedule, and all other contract documents and sound engineering principles.
8. Ensure project safeguards management and implementation of environmental and social management plans during implementation phase of the project.
9. Monitor and evaluate the contractor's and Employer's implementation of environmental and social management plans, resettlement plans, and other social safeguard measures.
10. Conduct quality test of all procured and supplied material before installation as per standard procedure.

It is pertinent to mentioned that the detailed technical engineering report will include all necessary aspects covering technical, institutional and economics, social/environmental assessments, procurement and financial management etc. required for approval by the Government and the international funding institution including the World Bank.

ii. Objective

The primary objective of the consulting services is to provide technical services in the form of detailed engineering services to rehabilitate/restored flood affected irrigation and PHE Water Supply scheme in 2022 floods through improved engineering design, as well as to provide the overall supervision and technical support during the construction phase in order to ensure the satisfactory completion of the flood-affected irrigation schemes listed in Annexure-1 and 392 Public Health Engineering schemes attached in Annexure - 2. The consultant's is to ensure solid support in the design study, as well as oversee the implementation phase to enhance the overall irrigation efficiency of the schemes.

To achieve this goal, the consultant may need to conduct a detailed survey of the sites, assess the damage caused by the floods, and develop a comprehensive plan for rehabilitation and improvement that considers environmental and safety standards. The consultant should also collaborate with relevant stakeholders to ensure that the design and implementation phases align with project goals, budgets, and timelines. Ultimately, the consulting services should result in a sustainable and efficient irrigation system that improves crop yields and benefits local communities.

Commencement
The Consultant shall commence the Services immediately after signing of the Contract Agreement or such other time as the Parties may agree in writing.

Time Period
The Services specified in the TOR shall be completed and all relevant reports submitted to the Client in the form and format acceptable to the Client, within agreed period from the Date of Commencement.

iii. Scope Of Services

The scope of services, grouped in two phases, consist of the following major tasks:

3.1 Phase-1: Assessment Study For Improved Detailed Engineering Design

The following are the main responsibilities of a consultant in improved engineering design for Irrigation component:

i. Comprehensive assessment level of study for irrigation infrastructure in Annexure 1
ii. Detail feasibility level study with necessary feasibility level design and tender documents for implementation with detailed design and construction planning/supervision arrangement modality on the improved irrigation efficiency for optimal operation and utilization of water management in the given schemes command areas.
iii. Analysis of the existing design and suggest Improvements.

iv. Development of a detailed supervision and implementation work plan for the construction phase of irrigation schemes.
v. Evaluate safety risks associated with the damaged irrigation infrastructure, including risks to floods (property damage, displacement of people, and loss of life etc), water pollution (water with chemicals, fertilizers, and other harmful substances), soil erosion (soil fertility, affect crop yields) to downstream communities, wildlife habitats, and the environment.
vi. Development of a restoration plan on the assessment of the damages and underlying causes for the rehabilitation of the damaged irrigation infrastructure. This will include extent of estimates for repairing the dam structure and allied components and requirement of maintenance of the infrastructure to reduce the risk of damage from the flash floods in future.
vii. Development of a socio economic profile and number of effected people where require.

The following are the main responsibilities of a consultant in improved engineering design for Public Health Engineering Water supply infrastructure component:

The main study components of flood-damaged water supply and Sanitation infrastructure restoration will depend on site requirement and will include:

iv. Comprehensive assessment level of study for 392 Water supply scheme in Annexure 2
v. Damage assessment: This involves assessing the extent and severity of damage to water supply and Sanitation infrastructure, including pipes, pumps, treatment plants, and storage facilities. The damage assessment will provide a baseline for identifying priority areas for repair and replacement.
vi. Water quality assessment: After a flood, water quality may be compromised due to contamination from sewage and other pollutants. A water quality assessment is necessary to identify the extent of contamination and determine if additional treatment is needed.
vii. Planning for restoration: Based on the damage and water quality assessments, a plan should be developed for the restoration of the water supply and Sanitation infrastructure. The plan should include timelines, cost estimates, and priorities for repair and replacement.
viii. Implementation: The implementation of the restoration plan involves repairing or replacing damaged infrastructure, installing new equipment, and restoring water supply and Sanitation services. The implementation process should prioritize the most critical areas first.
ix. Monitoring and evaluation: After the restoration work is completed, it is important to monitor the performance of the restored infrastructure to ensure that it is functioning properly and that the water quality is safe. Evaluation is also needed to determine the effectiveness of the restoration efforts and identify areas for improvement.
x. Capacity building and community participation: It is important to involve the affected communities in the restoration process to ensure that their needs and concerns are addressed. Capacity building activities may also be needed to train community members in water and Sanitation n management and maintenance.
xi. Overall, the main study components of flood-damaged water supply and Sanitation infrastructure restoration should include assessments, planning, implementation, monitoring and evaluation, and community participation to ensure a successful restoration process.

The mentioned tasks will cover the following actions, which are necessary prerequisites for the reports.
Site Assessment: Conduct a comprehensive assessment of the site that has been affected by flash floods. This involves examining the current state of the irrigation component and understanding the extent of the damage subjected to cost benefit ratio and life of the structure.

Risk Analysis: Evaluate the potential risks and vulnerabilities associated with the irrigation system and water supply in the context of flash floods. Identify areas where the system is most susceptible to damage and suggest strategies for risk mitigation.

Design Review: Review the existing engineering design of the irrigation and Water Supply System component and assess its adequacy in withstanding flash floods. Identify weaknesses and areas for improvement.

Design Modification: Recommend and design modifications to the existing engineering plans to enhance the system's resilience and ability to withstand flash floods. This may include changes to structures, materials, and drainage systems.

Hydrological Analysis: Analyze historical and projected flood data to determine the frequency and intensity of flash floods in the region. This information is critical for designing a system that can cope with the expected conditions.

Environmental Impact Assessment: Consider the environmental impact of the proposed modifications and ensure that the design complies with relevant environmental regulations and standards.

Cost Estimation: Provide cost estimates for the proposed design modifications, including materials, labor, and any necessary equipment or technology.

Regulatory Compliance: Ensure that the new design complies with all relevant local, state, and national regulations and standards for irrigation systems and flood control.

Stakeholder Engagement: Collaborate with relevant stakeholders, such as government agencies, local communities, and environmental organizations, to gather input and ensure that their concerns and needs are addressed.

Resilience and **Sustainability**: Focus on making the irrigation and water supply system not only flood-resistant but also environmentally sustainable, ensuring long-term resilience and minimal negative impact on the ecosystem.

Monitoring and Evaluation: develop a monitoring and evaluation mechanisms to assess the performance of the modified irrigation system under flood conditions. Make adjustments as needed to improve performance.

Documentation and Reporting: Maintain detailed records of the assessment, design modifications, and project progress. Prepare reports and documentation for clients, regulatory authorities, and other stakeholders.

Quality Control: develop specified quality standards that should be in line with the provided design that covers the construction and installation basic requirements.

a. Detail Description of scope of work for Phase-1 is given below

The PDNA report would be used as a primary document for the assessment of irrigation schemes and their detail engineering design in accordance with international standards. The comprehensive and detailed analysis with a detailed study will cover the design of major works and tender documents to be implemented under the project.

The consultants with the assigned task would be responsible for carrying out detailed engineering design of the Projects and services, which would include, along with other things, the following responsibilities.

i. Collection of Data

Consultant shall collect available primary and secondary source data related to the study, as well as documents and recommendations of previous studies carried out for the ten irrigation schemes listed in Annexure-1, as well as discussions with Irrigation department, covering the concept and options of the tasks, if necessary, and criteria for future operation. For PHE the Consultant shall collect primary available primary and secondary source data related to the study, as well as documents and recommendations of previous studies carried out for the mentioned schemes The Consultant shall collect available primary and secondary source data related to the study, as well as documents and recommendations from previous studies conducted for the PHE, Local government, WASA, UNICEF infrastructures and Water supply and Sanitation n in the targeted project area and other structures, as well as through discussions with relevant stakeholders, such as Public Health Engineering, Local government department, WASA, District Administrations, Water Supply & Sanitation Schemes , geological survey of Pakistan, UNICEF and other organizations, covering the concept and options of the tasks, if necessary, and criteria for future projects. The consultant will evidently reassess the recorded data, as well as the financial cost of each area under study, and will expound on the primary causes of inadequate facilities. The data should be based on an actual survey with pictorial evidences and coordinates through GIS demarcation in detail drawings, aerial maps in details.

ii. Review of Data

Consultant shall review all the data collected through previous feasibility studies and PC-1s such as rainfall and stream flow data, climatic and weather data, topographic data, demographic data or any other data deemed necessary for the feasibility study. Examine and study all of the major structures in the irrigation schemes for Irrigation and relevant infrastructures and 376 Water supply schemes for PHE that are associated with them. Collect data and information for each major irrigation scheme on water availability, command area, cropping patterns, cropping intensity, water logging, salinity and alkalinity, type of soil texture and structure. It should also give insight on the effectiveness of existing perennial and flood irrigation systems, agricultural outputs, and farmer income and relevant data for water supply schemes.

iii. Additional Data Collection

The Consultants shall collect all additional data where required for the assessment of the limitations of the existing perennial and flood irrigation systems, as well as potential irrigation system enhancement measures including metrological data, groundwater data, agricultural data, soil quality data, water quality data, and so on, all of which are required for conducting feasibility studies and designing project components.

iv. Collection of Baseline Data for Future Performance

Collection of baseline data will be collected from relevant sources where required that must be agriculture, social, environmental and groundwater, soil quality, water logging & salinity and drainage for future monitoring of the impact of Schemes.

v. Investigations, Surveys and Analysis

The consultant must address below investigations where required to the following both for irrigation and water supply schemes

- Topographic Surveys, Geo-technical Investigations, Base Line Environmental and Monitoring Survey, Hydrology Studies and other studies of each proposed site for detail designing of a safe, technically reliable, and economically viable structure.
- Determination of foundation characteristics for design of hydraulic structures. This will be carried out through drilling and geophysical survey.

- Identification of the borrow areas for construction of associated structures and other characteristics of the soil.
- Evaluation of strength parameters by visual observation and testing in laboratory of foundation and construction material; soil profile survey of the culturable command area for carrying out land classification survey in the command and ascertaining soil suitability for different crops. Soil samples at the rate of 1 samples per square kilometer will be sufficient.
- Prepare a Baseline Report pertaining to Environmental and Social conditions in the before-Project status of the project-affected areas if required. The baseline should include quantifiable indicators that allow to monitor environmental and social effects during project's implementation and during project's operation if necessary.
- Impact on Socio-Economic life of communities located at scheme sites, command areas and lower riparian.
- Detailed command area development, agriculture and soil studies to forecast the proposed cropping patterns based on water availability and crop water requirements.

vi. Detailed Engineering Design of Proposed Schemes.

The Consultant shall furnish copies of all engineering drawings, specifications and bidding documents including geo-technical investigations, material reports and Bill of Quantities based on prevailing market rates to PIU for review and approval Based on all reviews, data collection reports, technical investigations and analysis the consultant shall carryout the detailed feasibility study of proposed schemes with below mandatory information:

- Preparation of detailed feasibility studies for the proposed project interventions would include technical/engineering studies, hydrological study, soil study, hydro-agronomical study and structural analysis, institutional and economic/financial analysis, and comprehensive environmental and social impact assessments including preparation of a Resettlement Action Plan if needed;
- Feasibility level designs of all works proposed to be undertaken under the project considering least cost options for works that could perform effectively for a long time with low and robust operation and maintenance (O&M) suitable for the local condition; assistance to PIU in establishment of computerized database and periodical updating, project preparation and processing including Government requirements, preparation of the project's institutional arrangement and implementation plan, procurement plan, financial management system, specifications and contract management, and construction supervision plans;
- Preparation of monitoring and evaluation framework along with establishment of baseline for monitoring indicators as well as intermediate indicators for project implementation and assessment methodology to measure impacts;
- Preparation of a Plan for Agriculture improvement and development in the basin including analysis of soil;
- Preparation of a plan for implementation arrangements.
- Preparation of institutional capacity building program; and
- Preparation of feasibility level designs and bidding documents of all the projects given above. Technical assistance and training will also be part of the assignment.

vii. Environment and Social Safeguards Management (condition to requirement)

Under this item of work, the consultant shall be required to prepare Environmental and Social Safeguards Assessment aligned with the Project's Environment and Social Management Framework (ESMF).

- Conduct environmental and socio-economic surveys where required.
- Preparation of environmental and Social Assessments including preparation of a Resettlement Action Plan if needed; The consultations for the RAP would have been carried out in the Project area and all procedure would be followed according to the existing GOB and World Bank guidelines.
- Identify and assess impacts of the proposed intervention on the environmental and social receptors, and propose relevant mitigation measures according to the mitigation hierarchy.
- Prepare ESMP/ IEE / ESIA / EMMP of each site in accordance with the ESMF of the project if required , and in line with Government of Pakistan/ Government of Balochistan regulations and laws, and World Bank guidelines, and will get approval for each document and package from Balochistan Environment Protection Agency and Balochistan Forest & Wildlife Department.

viii. Operational and Maintenance (O&M) Plan

The Consultants are required to submit the O&M plan. The contents of O&M plan shall include:

- Details of the project Operation instructions pertaining to dry and flood periods, including flood forecasting.
- Maintenance program for the civil works, access roads, and wells; planned maintenance schedule.
- Surveillance program including visual surveillance, piezometer monitoring, and expert inspections.
- Long term asset management including sediment surveys and sedimentation management measures.
- Emergency preparedness in case of sudden release of water from the weir.

ix. Financial and Economic Analysis

As first step for financial and economic analysis, all benefits and costs of the project shall be assessed. Irrigation benefits shall be calculated as difference between 'with project' and 'without project' situations. Benefits shall be calculated in financial and economic terms. After the preparation of cost estimates, the concerned expert shall compose cost and benefit streams over the project life, and compute the economic internal rate of return and the net present worth of the project. Sensitivity of results shall be tested for changes in major parameters such as engineering cost estimates, expected years of service, projected yields, product prices and discount rates. The analysis shall establish whether the project is economically viable or not.

x. Final Report

Based on the preceding activities Consultant shall prepare a detailed engineering report with the above mentioned requirements. The report shall include detail designs, cost estimation, drawings and all other above information with construction implementation plan for all irrigation schemes with proposed mitigations for potential environmental and social impacts and its indicative budget.

3.2 Phase 2: ToR for Construction Supervision

The following are the main responsibilities of a consultant during construction supervision works

a) The consultant will be responsible to conduct site assessments to determine the suitability of the site for technical, social & financial aspects of the proposed irrigation and water supply project with respect to the topography, soil conditions, hydrology, climate and other physical factors that could impact the design of the irrigation system.
b) The consultant will provide technical support throughout the design process to ensure that the design is appropriate and practical. This includes reviewing and approving contractor's design submissions and providing input during construction.
c) The consultant will be responsible for ensuring that the construction work is carried out to the required standards and specifications. This includes conducting regular quality control inspections, checking the quality of materials, and ensuring that the construction work is in accordance with the design drawings.
d) The consultant will develop design specifications based on the technical feasibility studies and site assessments. This includes preparing technical drawings, design calculations, and cost estimates to ensure that the irrigation system is designed to meet the required standards and is cost-effective.
e) The supervisory consultant will liaise with stakeholders, including local communities, government agencies, and other relevant parties, to ensure that the irrigation system design meets the needs of all stakeholders and is compatible with local conditions.
f) The consultants will be responsible for preparing the Bidding-Documents for award of the subprojects.
g) The Consultant will be responsible for the Preparation of final technical documents (design specifications using suitable design tools, and BOQ bill of quantities).
h) The consultant will be responsible in the Preparation of a tender dossier with clear technical specifications and other guidelines for contractors.
i) The consultant will to assist the project management in procurement process and contract management.
j) The consultant will be responsible in the management & supervision of the schemes during its implementation stage with in the perspective to build back better.

Detail Description of scope of work for the above ToR is given below

General Duties and Responsibilities of the Consultants are:

i. The Consultants will carry out a critical review (if required) of the detailed engineering design prior to the commencement of works to identify anomalies or omissions that constitutes inconsistency in the design and completeness of works. On completion of the review, the Consultant will prepare a report, setting out all findings and recommendations for correcting any deficiency or omissions identified. Notwithstanding these, the Consultant will immediately inform the employer of any deficiency or omission that may have a substantial impact on the Project at the time the defect or omission is uncovered.
ii. The consultant will administer the civil work's contracts, make engineering decisions, be responsible for quality assurance, provide general guidance and furnish timely responses to the contractors in all matters relating to the civil works, and ensure that all clauses of the contract agreement between the civil works contractors and PIU are adhered to and respected.
iii. The consultants will advise PIU on all matters relating to the efficient and successful execution of the civil works contracts, and will act at all times to protect the interests of the project and will take all reasonable steps to keep the construction costs to a minimum, consistent with sound economic and engineering practices; and prior to execution work, will prepare a "Contract Administration and Construction Supervision Manual" outlining routines and standard operating procedures to be

applied in contract administration and construction supervision, based on sound internationally recognized practice, civil work contract of the project.

A- Pre-Execution

a. Manual, Documents & Procedures

- Prepare Construction Supervision Manual and get its approval from the Client 15 days prior to execution of work.
- Prepare Contract Administration Manual and get its approval from the Client 15 days prior to execution of work.
- Prepare Self-Evaluation System in accordance with ISO 9001: 2015.
- Prepare Standard Operating Procedures ("SOPs") for Pre-Requisite to Payment Certificate.

b. Design Review / Cognizance

- Consultant will leave no fault or discrepancy, which may cause for delay of project during its execution.
- The consultant is responsible to check survey data provided.
- To verify the data used in design process by the design consultant.
- Consultant shall perform the design review / cognizance prior to mobilization of the contractors.

c. Quality Assurance

- Prepare Project Quality Plan (PQP), Inspection, and Test Plan linked with the specifications.
- Prepare Mock-up Programme and its implementation report.
- Update online Running Distance ("RD") wise Check request management system, wherein upload check request / test results with evidence of photographs and video clips, if non-conformance, repeat check request.

d. Management

- Prepare the Pre-Construction meeting agenda, and conduct the Pre-construction meeting, record, and distribute the minutes.
- Appoint various members of the Engineer's construction supervision team as the Engineer's Assistants (Resident Engineers, Material Engineers, Inspectors, etc.) and notify the Contractor and the Employer, and approve the Contractor's Representative.
- Verify whether the Performance Security complies with the form provided in the Contract, whether it is in the correct amount and currencies, and notify the Employer accordingly.
- Verify whether the bank guarantee for advance payment is in the form specified under the Contract and in the amount and currencies stated in the Particular Conditions of the Contract.

e. Survey

- Consult will review the survey work prior to commencement of construction activities.
- The consultant is responsible for joint survey prior to execution of earthwork with the contractor representative and employer representative
- Inform the employer promptly regarding any variation from the basic survey data received from the design consultant.
- All levels and references will be referred to permanent benchmarks.
- Establish a system for validation of data both levels and RD's through Real Time Kinematic Positioning ("RTK") Rover and DGPS, by employer or 3rd party.

B- During Execution

a. Contract Administration

- The Engineer will make sure that all conditions of Contract are fulfilled.
- Issue instruction to the Contractor to commence the works and record as per the contract agreement.
- Verify whether the bank guarantee for advance payment conforms to the Contract requirements and that the guarantee is valid until the entire advance payment is recovered from the Contractor's payment certificates.
- Interpret the specific provisions of the Contract related to the Employer's obligation to give possession of the Site, and the Contractor's Work Program, assess the contractual consequences of any specific land acquisition issue and advise the Employer on the appropriate mitigation measures.
- If required, determine the Contractor's entitlements to time extensions on the basis of the Contractor's Work Program.
- Determine Delay Damages on the basis of the Work Program and advise the Employer of the relevant contractual remedies if the Contractor's progress is behind schedule.
- Verify the sources of indices or prices for price adjustment determine a provisional value of an index/reference price until it is published, but, if the index is not published in certain period(s), apply the last available published value.
- Initiate and process variations promptly when it is necessary for the additional construction of the works.
- Request the Contractor's technical and cost proposal, prior to its determination, as required, consult both parties in all matters in connection to variation work.
- Value variations obtain the Employer's approval of any variation, issue variations under the Contract, keep record of all variations issued under the Contract and report the summary of the variations in the Consultant's Monthly Progress Reports.
- Assess objectively the Contractor's claims and give professional and objective advice to the Employer, consult both parties before determining an extension of time.
- Extension of Time (EOT) – Determine Contractor's claims of EOT on the basis of the Contractor's approved Work Program, the impact of the delay(s) event on the Critical Path and the particulars submitted by the Contractor, and not to act as the Contractor's advisor in this matter.
- Maintain an Events Log since the beginning of Contract.
- Assist the parties establish Dispute Board (DB), provide all necessary information to DB members, and attempt to facilitate amicable settlement of the dispute between the Employer and the Contractor.

b. The Engineer Duties

- The Engineer has no authority to alter or amend the contract.
- Carry out any subsequent design changes, variation orders and day work orders.
- Obtain the Employer's specific approval before taking any action for determination of extension of time, additional costs and the Contractor's claims for additional time or costs, for all events for which the Employer's express approval is required under the Conditions of Contract.
- Review and approval of the work program
- Review the contractor work program with respect to the resources' efficiency such as equipment's efficiency, manpower efficiency and material supply chain and thereafter advise the contractor accordingly.
- Reviews the Contractor's Work Program and notify the Contractor if the program does not comply with the Contract and advising the contractor to co-opt with the contractual timelines accordingly.
- Monitor the progress against the Work Program and the cash flow estimate and request revisions, if required.

- Conduct regular weekly site meetings and monthly progress review meetings, record and distribute the minutes.
- Assess minimum construction equipment, plant and machinery requirements, by type and specification, and monitor, keep and regularly update a list of the Contractors' equipment, plant and machinery in order to keep a check on the Contractors' mobilization. Inspect and evaluate the Contractor's establishments including in particular the laboratory facilities to ensure compliance with the terms and conditions of the Contract.
- Keep and maintain daily records of labor, equipment and weather conditions on the site along with records of activity, progress and other events happening on the site having relevance to the works.

c. Payment

- Issue regular notices to the Contractors of intended field measurements, measure the Works, compute the quantities for payment, and determine the amounts due to the Contractor within the period specified in the Contract.
- Establish and maintain throughout the works contracts a structured system of measurement records, supporting documents and calculations for the payment of all BOQs items that is transparent for auditing purposes.
- Issue the interim certificates to PIU for payment to the Contractors having regard to any contractual provisions for advance payment, variation of price, and exchange rate fluctuation etc. Certify the completion of the Activities/Works or parts thereof and process final payments to the Contractors.
- Prepare and maintain the Estimates of Cost of Works to Completion continuously, update the Estimates after each Variation instruction or a Variation Order issue and after each Interim Payment Certificate (IPC), and present the latest Estimate in the Consultant's Monthly Progress Reports.

d. Quality Assurance and Quality Control (QA/QC)

- Discharge fully the Engineer's obligations with respect to approval of materials and workmanship, approval and auditing of the Contractor's Quality Assurance System and the QA Personnel and the compliance testing by the Engineer.
- Inspect quarries and borrow pits, and crushing plants, and order tests of materials and ensure adherence to specifications and approve the sources of materials.
- Carry out independent testing in the field and/or in the laboratory of the "Engineer/Project Manager" and approve or disapprove and certify the works that conform with the specifications and maintain permanent records of results of all the tests made along with all Check Requests.
- Give notice to Contractors of any defects and deficiencies, and issue instructions for the removal and substitution of the improper works, where provided under the contract. If required, order suspension of the work(s) and/or recommend to PIU other recourse available under the Contract.

e. Insurance

- Verify whether the form and substance of the evidence of the Contractor's insurances is satisfactory, whether insurance premiums have been paid and the required insurances are effective on the dates required by the Contract.
- Verify that the terms of the Contractor's insurance policies fully comply with the requirements of the Contract including:
    - whether both the Employer and the Contractor are adequately covered as insured Principals.
    - amounts insured and currencies of payment, validity of the insurance policies, special conditions.

- limits of insurance per event and in aggregate, deductibles, excess, conditions related to locations; and
- Whether and which subcontractors are covered by the insurances, and whether additional insurances will be required if the Contractor engages new subcontractors.

➢ Monitor whether the Contractor maintains adequate insurance in the course of performance of the Contract, particularly if the Contractor provides insurances for a fixed period which is shorter than the period required under the Contract.

➢ Advise the Employer on the appropriate action and contractual remedies in case the Contractor does not perform its insurance obligations in accordance with Contract.

f. Reporting

➢ Submit monthly, quarterly and semi-annual reports during construction and annual reports thereafter with separate environmental and social Safeguards Monitoring Reports to the Bank and disclose relevant information from such reports to affected people promptly upon submission.

➢ Report any actual or potential breach of compliance with the measures and requirements set forth in the Environmental and Social Management Plan ("ESMP"), the Site Specific Environmental and Social Management Plan ("SSEMP") or the Land Acquisition and Resettlement Plan ("LARP") promptly after becoming aware of the breach.

➢ Report in the Consultant's Monthly Report the work progress against the Contractor's Work Program and the cash flow estimate.

➢ Regularly monitor and report on the results indicators during the construction period following the schedule of Project reports

g. Environment, Social, Health and Safety (ESHS)

➢ Without relieving the Contractors of their obligations under the Contract, review and approve the traffic management and safety plan, and ensure compliance such that the Works are carried out at all times in a safe and secure manner and damage or injury to persons or property is avoided.

➢ If any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that were not considered in the EIA, the CEIA, the ESMP, the SSEMP or the LARP, promptly inform the Bank of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan.

➢ Carry out the following duties related to environmental management with particular reference to the technical requirements of sound environmental standards on the basis of the Environmental Assessment and Review Framework (EARF), the Initial Environmental Examinations (IEEs), and the Environmental Management Plans during construction: (i) review and endorse site specific Environmental and social Management Plans (ESMPs) for the projects sections, prepared by the Contractors; (ii) ensure that all the environmental mitigation measures required to be implemented are incorporated into the contract documents; (iii) ensure that the Contractors comply with the measures and requirements relevant to the contractors set forth in each IEE and ESMP, and any corrective or preventative actions set out in Environment Monitoring Reports; (iv) conduct environmental monitoring and ensure that the day-to-day construction activities are carried out in an environmentally sound and sustainable manner; (v) prepare and submit semi-annual environmental monitoring reports on the implementation of the 'Environmental and social Management Plan (ESMP) to PIU within 14 days after a completion of the monitoring period; (vi) Prepare additional environmental impact assessments, if required, compliant with World Bank's Environment and Social Safeguards policies;

- With respect to the prevention of COVID-19, HIV/AIDs and Human Trafficking, monitor that the contractors comply and carry out required actions as provided in the respective contract documents, such as awareness and education of laborers and workers.
- Ensure that the contractor(s) provide a safe workplace for their workforce, supervisory personnel and for members of the public requiring access through the sites in full conformity with Health and Safety regulations.
- Ensure that the contractor(s) comply fully with contractual obligations relating to care of the environment (both specified and legislated) and provide all reports and obtain all permits and permissions required in relation to spoil areas, borrow areas quarries and the like.
- Provide any other specialist services requested by PIU under conditions to be mutually agreed ensure that the construction methods as proposed by the contractor for carrying out the works are satisfactory, inspection of contractor's construction equipment; and safety of the works, property, personnel, and general public; the schedule of mitigation measures for adverse environmental impacts.
- Review the Site-Specific Health and Safety Management Plan (SSHSMP) for the Project that is prepared and submitted by the Contractor. Then, make recommendation to the Employer in relation to the approval of the SSHSMP. Communicate the approved SSHSMP to all consultants and contractors throughout all project stages. Should any unforeseen events occur, review the updated SSHSMP and make recommendation to the Employer in relation to the approval of the SSHSMP.
- Prepare the Project Execution Plan, which inter alia, includes how management of SSHSMP is to be addressed throughout all stages of the Project.

h. Records

- Establish and maintain an effective documents management system in the Engineer's office, which provides for separate filing of incoming and outgoing correspondence and documents, as well as the filing by subject matter.
- Ensure the receipt of and maintain as permanent records of all warranties required under terms and conditions of the Contract for materials including their source and equipment accepted and incorporated in the project.

i. Capacity Building

- Develop training programs for supervisory staff and develop on the job training on innovative construction methods, project management and value engineering.

j. Audit

- Provide all necessary assistance to the Employer and external auditors for conducting regular quarterly audits of the measurement records, supporting documents and calculations for the payment of all BOQ items.

k. Completion of Work

- When the works are completed in accordance with the Contract, issue a Taking over Certificate to the contractor(s).

C- Post Execution *(Defect Notification Period)*

- Carry out detailed inspections of the works after notice to engineer for final inspection and performance certificate.
- Prepare detailed recommendation reports / Punch List and improvement since last inspection, for the Employer after each inspection.
- Issue performance certificate and process final statement and final payment certificate thereafter.
- Regularly monitor and report on the results indicators during the DNP following the schedule of Project reports

D- Project Closure

- The consultant is responsible to prepare all reports to satisfy the requirements of the Bank as well as Government of Balochistan.

E- General Responsibility

a. The Consultants will assist the PIU with holding stakeholder outreach meetings in the project area to update local communities with project progress. Specific communications materials will be provided to community members in Urdu and English and other languages as appropriate, describing the project, relevant governing the Bank policies and procedures, benefit entitlements, grievance redress mechanism, HIV/AIDs, COVID-19, safe working conditions, etc. A basic tracking system will be maintained to record consultation activities, the provision of project information, to register concerns and/or complaints received, and to track follow-up action.

6. Deliverables for Phase-1

The consultant will deliver the following documents with satisfactory quality that are required at Client's and World Bank's end for approval.

(i) Inception Report

Inception report for irrigation and water supply infrastructure should provide a comprehensive and detailed plan for the design, construction, and management of the irrigation and water supply infrastructure project, including a clear understanding of the project's objectives, scope, and expected outcomes with below breakup of pre-requisites.

- Project Overview: This section provides a brief overview of the project, including its objectives, scope, and expected outcomes.
- Site Assessment: This section provides a detailed assessment of the site, including GIS maps, Geodic coordinates, detail topography, Inventory for structures , soil characteristics, climate, and water availability. It also includes an analysis of any potential environmental and social impacts of the project.
- Irrigation Structure Design and water supply design: This section outlines the proposed irrigation system design and water supply system , including the selection of appropriate equipment, materials, and technologies, as well as the design of hydraulic structures, water distribution systems and water supply system.
- Project Management: This section outlines the project management plan, including timelines, budgets, procurement processes, and quality control measures.
- Stakeholder Engagement and Consultation: This section outlines the engagement and consultation process with stakeholders, including local communities, government agencies, and other interested parties.
- Financial Analysis: This section provides a detailed analysis of the project's financial viability, including a cost-benefit analysis, financing options, and revenue streams.
- Risk Assessment and Management: This section outlines the risks associated with the project, including technical, financial, environmental, and social risks, as well as measures to manage and mitigate these risks.

- Monitoring and Evaluation: This section outlines the monitoring and evaluation plan for the project, including the indicators, methods, and frequency of monitoring and evaluation activities.

(ii) Assessment Study Report and Detailed Engineering Design.

The consultant will review the previous design and will modify the design of irrigation structures and water supply system where required. The detail engineering design phase of irrigation infrastructure studies and water supply system should provide a comprehensive and detailed plan for the design and construction of the irrigation system & water supply system, taking into account all site-specific factors and requirements. The design should be technically sound, cost-effective, and sustainable, while minimizing any potential negative environmental and social impacts.

The main requirements for detail engineering design in for each irrigation schemes and water supply system should be equipped with below information:

A detailed site assessment should be conducted to determine the soil characteristics, topography, hydraulic and hydrologic study, climate, and water availability at the site

The irrigation structure and water supply system design should be based on the site assessment and should take into account factors such as drinking water need , irrigation method, and water source. The design should also include detailed plans for hydraulic structures and hydrologic requirements, water distribution systems, and drainage systems for irrigation and other requirement as per site specific for water supply system.

The selection of appropriate equipment, materials, and technologies for the irrigation and water supply schemes should be based on the site assessment and the irrigation infrastructure and water supply design. The materials should be durable, cost-effective, and suitable for the specific site conditions.

Detailed tender drawings and detailing construction specifications should be prepared for all aspects of the irrigation and water supply schemes design, including hydraulic structures, water distribution systems, and drainage systems. The drawings and specifications should be clear and detailed to ensure accurate implementation of the design.

Quality control measures should be implemented throughout the detail engineering design phase to ensure that the design meets the required standards and specifications. This may include regular site inspections, testing of materials and equipment, and monitoring of construction activities.

A detailed cost estimation, Bidding documents, BOQ, Engineer's Estimate etc should be prepared for the irrigation and water supply schemes design, including all materials, equipment, labor, and other costs associated with the project. The cost estimation should be based on accurate and up-to-date information to ensure that the project is financially viable.

The detail engineering design should take into account the potential environmental and social impacts of the irrigation and water supply schemes, and appropriate measures should be taken to mitigate any negative impacts.

The consultant will also demonstrate the results of assessment study in this report. The report will show all relevant engineering, social and environmental considerations given in the studies including but not limited to the following:

- Assess the viability of existing design and its improvement by keeping in view the climate change impacts.
- Measures to minimize environmental and social impacts.
- Economic analysis and assessing the viability of the sub-projects.

Qualification of Consultants:

Firms should be registered with Pakistan Engineering Council (PEC) 0r Securities and Exchange Commission of Pakistan (SECP).

The selection criteria and requirements are:

1. Corporate capacity for offering similar services (Core business) for Ten (10) years and specific experience of at least five (5) years in the same business,
2. at least five (5) similar assignments completed in the last five years indicating the nature and scope of these assignments in areas of design, supervision, procurement, contract administration, quality assurance, environment, management planning, implementation of resettlement action plan,
3. The firm should provide details including documentary evidences regarding contract awards, reference letters, completion certificates from the clients along with postal address and client contact numbers, stating the scope of services and deliverables of all projects completed in the last five (5) years,
4. In the case of a Joint Venture (JV), the details of such projects will be provided separately for the primary or associated consultant,
5. Details of the logistic capacity of the firm including general availability of technically qualified staff.

Selection Process:

A consulting firm will be selected in accordance with Quality and Cost Based Selection (QCBS) method set out in the World Bank's Guidelines: Selection and Employment of Consultants by World Bank Borrowers January 2011 revised (Nov 2020) www.worldbank.org/procure.

4.1.1 **Schedule of reports for Phase-1**

Table-1 Key deliverables and delivery schedule for Phase-1

#	Document	Copies	Due
1	Inception Report	05	07 days after the effectiveness of the Consulting Services Agreement
2	Preliminary Site Assessment Report - Flood Risk Analysis Report	05	30 days after the effectiveness of the Consulting Services Agreement
3	Hydrological Analysis Report- Historical Flood Data Analysis	05	60 days after the effectiveness of the Consulting Services Agreement

#	Document	Copies	Due
	Initial Design Proposal Initial Drawings and Specifications		
4	Final Design Modifications Report Detailed Design Drawings for 27 Irrigation scheme and 152 PHE Schemes Final Cost Estimation Bidding Documents	05	90 days after the effectiveness of the Consulting Services Agreement
5	IEE/EIA and ESMP Report Quality Control Report Monitoring and Evaluation Plan Project Management Plan:	05	120 days after the effectiveness of the Consulting Services Agreement
6	Final Design Modifications Report for the remaining 28 Irrigation scheme and 153 PHE Schemes Detailed Design Drawings for the remaining 28 Irrigation scheme and 153 PHE Schemes Final Cost Estimation for the remaining 28 Irrigation scheme and 153 PHE Schemes Bidding Documents Preparation for the remaining 28 Irrigation scheme and 153 PHE Schemes	05	180 days after the effectiveness of the Consulting Services Agreement
7	Final Detail Design Engineering with bidding documents	05	At the last week of 5th month
8	Regulatory Compliance Report NOC on Environment Impact Assessment (EIA) and Initial Environment Impact Assessment of the project from Balochistan Environment Protection Agency (SEPA) and Balochistan Forest and Wildlife Department	05	150 days after the effectiveness of the Consulting Services Agreement

Note

* The consultant is required to deliver the detailed design and tender documentation for 27 irrigation schemes and 152 schemes for Public Health Engineering (PHE) within 90 days of signing the contract. The remaining 28 irrigation schemes and 153 PHE projects must be completed within 180 days.

4.2 Deliverables for Phase -2 - Construction Supervision

Inception Report: The Construction Supervision Inception Report for Irrigation and water supply Infrastructure restoration should be a comprehensive document that provides a detailed roadmap for the construction process, including planning, execution, monitoring, and reporting, to ensure the successful completion of the project.

Inception Report should include the following basic requirements:

Project Description: The report should provide a detailed description of the irrigation and water supply infrastructure project, including the project's objectives, scope, and purpose.

Project Organization: The report should outline the organizational structure of the project, including the roles and responsibilities of the project owner, the construction supervisor, and the contractor.

Construction Management Plan: The report should include a construction management plan that outlines how the construction process will be managed, including quality control, safety measures, and risk management.

Schedule: The report should include a detailed schedule that outlines the timeline for each phase of the construction process, including start and end dates.

Budget: The report should include a detailed budget that outlines the costs associated with the construction process, including materials, labor, and equipment.

Resource Allocation: The report should include a plan for resource allocation, including the necessary equipment, materials, and labor required to complete the project.

Stakeholder Communication Plan: The report should outline a communication plan for all stakeholders involved in the project, including how information will be shared and disseminated.

Environmental and Social Safeguards: The report should include an environmental and social safeguards plan that outlines measures to mitigate any potential negative impacts on the environment and local communities.

Reporting and Monitoring: The report should include a reporting and monitoring plan that outlines how progress will be tracked, monitored, and reported throughout the construction process.

Risk Assessment: The report should include a risk assessment plan that outlines how risks associated with the construction process will be identified, assessed, and managed throughout the project.

Monthly Progress Report:

Monthly Progress Report shall provide to PMU with a clear and transparent update on the project's progress, challenges, and achievements during the reporting period.

Monthly Progress Report should include the following information:

Project Overview: The report should provide a brief overview of the project, including its objectives, scope, and purpose.

Project Status: The report should include an update on the project's current status, including progress made during the reporting period.

Milestones: The report should list any milestones achieved during the reporting period and any upcoming milestones.

Schedule: The report should include a status update on the project's schedule, including any delays, changes, or adjustments made during the reporting period.

Budget: The report should provide an update on the project's budget, including any changes or adjustments made during the reporting period.

Resources: The report should provide an update on the resources allocated to the project, including equipment, materials, and labor.

Quality Control: The report should provide an update on the project's quality control measures, including any issues or concerns that arose during the reporting period.

Safety: The report should include an update on the project's safety measures, including any incidents, accidents, or near-misses that occurred during the reporting period.

Environmental and Social Safeguards: The report should provide an update on the project's environmental and social safeguards, including any measures taken to mitigate negative impacts on the environment or local communities.

Stakeholder Communication: The report should provide an update on stakeholder communication and engagement during the reporting period, including any issues or concerns raised by stakeholders.

Risks and Issues: The report should identify any risks or issues that arose during the reporting period and outline any measures taken to address them.

Recommendations: The report should include any recommendations or suggestions for improving the project's progress, schedule, budget, or quality.

Quality Assurance Plan (QA/QC Manual):

The consultant must provide the Quality Assurance Plan (QA/QC Manual) in a comprehensive manner that outlines the consultant's quality control and quality assurance procedures, to meet the consultant's work standards and regulations, and that the project is completed successfully, It must include the following:

Introduction: The QA/QC Manual should begin with an introduction that explains the purpose of the document, the scope of the consultant's services, and the standards and regulations that the consultant will adhere to.

Organizational Structure: The QA/QC Manual should describe the organizational structure of the consultant's team, including the roles and responsibilities of each team member.

Quality Control Procedures: The QA/QC Manual should outline the consultant's quality control procedures, including how the consultant will ensure that all work meets the required standards and regulations. This should include procedures for design review, documentation review, and testing.

Quality Assurance Procedures: The QA/QC Manual should describe the consultant's quality assurance procedures, including how the consultant will monitor and evaluate the quality of the work being performed. This should include procedures for audits, inspections, and reviews.

Document Control Procedures: The QA/QC Manual should outline the consultant's document control procedures, including how the consultant will manage and store all project-related documents, such as drawings, specifications, and reports.

Training and Development: The QA/QC Manual should describe the consultant's training and development procedures, including how the consultant will ensure that all team members are properly trained and qualified to perform their duties.

Subcontractor Management: The QA/QC Manual should outline the consultant's procedures for managing subcontractors, including how the consultant will ensure that all subcontractors meet the required standards and regulations.

Health and Safety: The QA/QC Manual should describe the consultant's health and safety procedures, including how the consultant will ensure that all work is performed safely and in compliance with applicable regulations.

Non-Conformance Reporting: The QA/QC Manual should include procedures for reporting and addressing any non-conformances or deficiencies that are identified during the project.

Performance Monitoring and Reporting: The QA/QC Manual should outline how the consultant will monitor and report on the performance of the quality control and quality assurance procedures.

Quarterly Progress Report (Physical & Financial):

Consultant should include the below information in the Quarterly Progress Report (Physical & Financial):

Introduction: The report should begin with an introduction that explains the purpose of the document, the scope of the consultant's services, and the standards and regulations that the consultant is adhering to.

Project Overview: The report should provide a brief overview of the project, including its objectives, scope, and purpose.

Physical Progress: The report should include an update on the physical progress of the project, including the status of construction work, any delays or obstacles encountered, and any changes or adjustments made to the project schedule.

Financial Progress: The report should provide an update on the financial progress of the project, including the budget status, any expenditures made during the reporting period, and any changes or adjustments made to the project budget.

Milestones: The report should list any milestones achieved during the reporting period and any upcoming milestones.

Resources: The report should provide an update on the resources allocated to the project, including equipment, materials, and labor.

Quality Control: The report should provide an update on the project's quality control measures, including any issues or concerns that arose during the reporting period.

Safety: The report should include an update on the project's safety measures, including any incidents, accidents, or near-misses that occurred during the reporting period.

Environmental and Social Safeguards: The report should provide an update on the project's environmental and social safeguards, including any measures taken to mitigate negative impacts on the environment or local communities.

Stakeholder Communication: The report should provide an update on stakeholder communication and engagement during the reporting period, including any issues or concerns raised by stakeholders.

Risks and Issues: The report should identify any risks or issues that arose during the reporting period and outline any measures taken to address them.

Recommendations: The report should include any recommendations or suggestions for improving the project's progress, schedule, budget, or quality.

Conclusion: The report should conclude with a summary of the project's progress during the reporting period and an overview of any upcoming activities or milestones.

Annual Progress Report (Physical & Financial):

The Annual Progress Report (Physical & Financial) should include the following information:

Introduction: The report should begin with an introduction that explains the purpose of the document, the scope of the project, and the standards and regulations that the project is adhering to.

Project Overview: The report should provide an overview of the project, including its objectives, scope, and purpose.

Physical Progress: The report should include an update on the physical progress of the project, including the status of construction work, any delays or obstacles encountered, and any changes or adjustments made to the project schedule.

Financial Progress: The report should provide an update on the financial progress of the project, including the budget status, any expenditures made during the reporting period, and any changes or adjustments made to the project budget.

Milestones: The report should list any milestones achieved during the reporting period and any upcoming milestones.

Resources: The report should provide an update on the resources allocated to the project, including equipment, materials, and labor.

Quality Control: The report should provide an update on the project's quality control measures, including any issues or concerns that arose during the reporting period.

Safety: The report should include an update on the project's safety measures, including any incidents, accidents, or near-misses that occurred during the reporting period.

Environmental and Social Safeguards: The report should provide an update on the project's environmental and social safeguards, including any measures taken to mitigate negative impacts on the environment or local communities.

Stakeholder Communication: The report should provide an update on stakeholder communication and engagement during the reporting period, including any issues or concerns raised by stakeholders.

Risks and Issues: The report should identify any risks or issues that arose during the reporting period and outline any measures taken to address them.

Lessons Learned: The report should include a section that outlines any lessons learned during the reporting period, including any improvements that can be made to the project's progress, schedule, budget, or quality.

Recommendations: The report should include any recommendations or suggestions for improving the project's progress, schedule, budget, or quality.

Conclusion: The report should conclude with a summary of the project's progress during the reporting period and an overview of any upcoming activities or milestones.

Table 2. Key deliverables and delivery schedule for Phase-2 Assignment

#	Document	Copies	Due
1	Inception Report	5	15 days after the effectiveness of the Consulting Services Agreement
2	Monthly Progress Report (Physical & Financial)	10	10th of the each month
3	Quality' Assurance Plan (QA/QC Manual)	10	Before starting the physical activities
4	Quarterly Progress Report (Physical & Financial)	10	10thof the first month of following quarter
5	Annual Progress Report (Physical & Financial)	10	10th of the first month of following year
6	Quality Control / Assurance Report	10	After Every 3 months
7	Revised PC-I	10	As and when required based on the inter component adjustment
8	Final Assignment Completion Report	10	At completion of works as well as financial transactions
9	Planning Commission Proforma-IV (PC-IV)	25	At completion of each sub - project
10	Complete inventory of works/activities completed	1	At completion of each sub- project
11	Special Reports including Bidding Documents, Screening Reports, Design Reports, Working Drawings. Variation Orders, Bid Evaluation Reports, Various Forms.	10	As and when required

Delivery of Documents

The consultant must provide below documents during supervision of work.

Table-3 Delivery of Documents

Documents	No of Sets
Tender Drawings	03 Sets
Construction Drawings	03 Sets
Bill of Quantities	03 Sets
Technical Specifications for each payable item Comprising of: - Description - Material Requirement - Construction Requirement/Method of Working (Techniques) - Equipment to be used - Testing and quality control - Method of measurement & payment	03 Sets
Tender/ Contract Documents Comprising of: - Invitation for Bid - Instruction to Bidder - Form of Contract - General Conditions of Contract (GCC) - Particular Conditions of Contract (PCC) - Rate Analysis of Non-Schedule Items - Bill of Quantities	03 Sets
Proforma including: - Engineer's cost Estimate - Geo Technical Investigation - Hydrology and Hydraulic study report - Economic analysis	03 Sets
Back-up calculation of BOQs in MS-Excel or MS-Word	03 Sets
Soft copies of all documents mentioned above in relevant software file extension *[3 CDs / DVD each (along with USB)]*	

Mode of Payment for Services under Phase-1

Table-4 Mode of Payment for Services under Phase-1

"A" is the **Contract amount**, excluding of (i) Provisional Sum; (ii) Contingency; and (iii) Indirect Local Tax.

S/No	Activity	Percentage of "A"	Days
1	Inception Report / Pre-Feasibility Report Preliminary Site Assessment Report, Flood Risk Analysis Report	03%	30
2	Detailed Engineering Design, EIA/IEE and ESMP with Cost Estimates, Tender Drawings and Technical Specifications for 26 Irrigation and 192 PHE schemes	5%	60

S/No	Activity	Percentage of "A"	Days
3	Quality Control Report, Monitoring and Evaluation Plan. Project Management Plan:	2 %	30
4	Bidding Documents and Construction Drawings for total 55 irrigation schemes and 305 PHE schemes	5%	60
Total		**15%**	**180**

Mode of Payment for Services under Phase-2 (Supervision)

The payment method for services under the remaining 85 % of budget in Phase-2 regarding supervision Phase will be determined by the monthly remuneration of the staff and other related activities, calculated based on the actual number of man-months and activities consumed by the consultant staff.

Note*

Payment Schedule: Payments will be made on a designated Monthly Payment Date, usually on the First or Last working day of each month. It is important to maintain note that payment operations is conditional to the submission of a statement of expenditure.

Taxes and Deductions: All applicable taxes and deductions will be withheld and remitted according to [Local/National] tax regulations.

Annual Review: An annual performance and compensation review will take place at the end of each year, with any necessary adjustments applied at that time. Adjustments will be based on World bank criteria and PMU requirement with subject to Financial Audit.

Contingencies: In the event of premature termination or changes to the scope of work, payment terms may be adjusted in accordance with the terms outlined in the consultant agreement.

Record-Keeping: Accurate records of all payments will be maintained, including payment dates, amounts, and supporting documentation, as required.

Legal and Regulatory Compliance: This payment structure complies with all relevant labor laws, tax regulations, and legal requirements in the jurisdiction where the consulting services are provided.

7. Staffing and Deployment

Table 6 provides a preliminary estimate (subject to change) of the person-months required for the entire assignment. Prospective Project supervisory consultants (PSC) should propose a staffing plan and skill mix necessary to meet the objectives and the scope of work. However, to ensure equitable evaluation of financial proposals, prospective consultants should not reduce the overall time commitment of the key staff.

Firms are encouraged to use national expertise and experience and also to use the Balochistan expertise to the extent possible. If all the required skills are not available within a single consulting firm, a joint venture with other firms should be proposed. Additionally, firms are strongly encouraged to ensure a gender balance across the team, and to ensure appropriate skills and experience in gender issues relevant to Project implementation.

Table 6. **Expected Staffing Requirement**

No.	Position	Staff Months
A. Key Staff for Phase 1 and Phase 2		
1	Team Leader	48
2	Contract Engineer	42
3	Senior Water Supply & Sanitation Engineer	44
4	GIS and Data Manager	8
5	Chief Resident Engineer	42
6	Hydraulic Design Engineer	48
7	Agri Engineering Specialist	24
	Sub Total (A)	256
B. Non Key Staff		
B-1 Engineering Design (06 Months) for Phase-1		
8	Irrigation Engineer/ (02)	12
9	Water Supply Engineer (02)	12
10	Geotechnical Engineer (01)	6
11	Structural Engineer (01)	6
12	Junior Engineer (10)	60
13	CAD Operators (02)	12
14	Quantity Surveyors (05)	30

No.	Position	Staff Months
15	Field Surveyors (05)	30
16	Computer Operators (02)	12
	Total	180
B-2 Engineering Supervision for Phase-2		
17	Water supply & Sanitation Engineer (05)	210
18	Resident Engineer (3 Positions)	126
19	Material Engineer (2 Positions)	84
20	Site Supervision Engineers(10 Positions)	420
21	Site Surveyors(10 Positions)	420
22	Environmental Engineer/ Environmental Compliance Expert (2 Positions)	84
B-3	Sociologist /Social and Community Organizers (2 Positions)	84
Support Staff (Phase-1 and Phase-2)		
23	Legal Expert (01)	42
24	IT Specialist (02)	252
25	Other Staff (06)	210
	Sub Total (B)	1764
	Grand Total	**2200**

5.1 Requirements for Key Staff:-

The **Team Leader** will have overall responsibility for the organization, conduct and delivery of the consultancy services and will work directly with the PIU. He/she will be a civil engineer with at least a Master's degree in irrigation/water resources engineering and minimum of 15 years of experience in design and management of dams, flood protection infrastructure, flood irrigation and perennial irrigation projects. He/she will have knowledge of the donor's procurement procedures or; will be a civil engineer with at least Bachelor degree in irrigation/water resources engineering and minimum of 20 years of experience in design and management of dams, flood protection Infrastructure, flood irrigation and perennial irrigation projects. He/she will have knowledge of the donor's procurement procedures. Experience in at least one irrigation/water sector project and prior experience in Balochistan is essential.

The **Contract Engineer** will have a Masters' Degree in Project Management or Construction Management or Civil Engineering and at least 15 years work experience or Bachelor degree in Project Management or Construction Management or Civil Engineering and minimum of 20 years of experience preferably on mega and

donor funded projects. The Engineer will have demonstrated ability to work in a multidisciplinary team and excellent communication (written and oral) skills.

The Senior Water Supply & Sanitation Engineer having a Project management and technical leadership and can

- Provide technical leadership in water supply and Sanitation n engineering in accordance with World Bank standards and guidelines
- Manage project teams and supervise technical staff
- Develop project work plans, budgets, and monitoring and evaluation plans
- Monitor and supervise the implementation of project activities and ensure that they meet the required quality standards
- Prepare technical reports and progress updates to the Project Manager and World Bank counterparts
- Liaise with stakeholders and partners to ensure that the project is aligned with their priorities and needs
- Provide guidance and support to the project team on technical issues related to water supply and Sanitation n engineering.

Design and planning:

- Develop and review technical designs and specifications for water supply and Sanitation n infrastructure in compliance with World Bank standards and guidelines
- Conduct feasibility studies and environmental and social impact assessments
- Review and provide input on tender documents, including technical specifications, drawings, and bills of quantities.

Construction supervision:

- Supervise construction activities and ensure that they comply with the technical designs and specifications
- Conduct regular site visits to monitor progress, quality, and safety of construction works
- Review and approve contractor's work plans, invoices, and payment requests in compliance with World Bank procurement guidelines
- Identify and address construction issues and risks, and provide guidance and support to the project team in resolving them.

Qualifications and experience:

- A Bachelor's degree in Civil Engineering or related field
- At least 10-15 years of experience in water supply and Sanitation n projects, preferably in World Bank-funded projects
- Knowledge of World Bank procurement guidelines, environmental and social safeguards requirements, and technical standards and guidelines for water supply and Sanitation n engineering
- Strong project management and technical leadership skills
- Experience in managing and supervising technical staff and project teams

- Experience in designing and reviewing technical designs and specifications for water supply and Sanitation n infrastructure
- Experience in construction supervision, monitoring, and quality control
- Strong communication and interpersonal skills, and the ability to work effectively with stakeholders and partners.

The **GIS and Data Manager** should have Master's degree in relevant field with at least 10 years of working experience or Bachelor Degree with at least 15 years of experience in GIS environment and other water or other relevant natural resources information management systems with national or international organizations.

The **Chief Resident Engineer** will be a Civil Engineer with post-graduate degree and minimum of 15 years' experience or Bachelor Degree in Civil Engineering with at least 20 years of experience in managing construction of civil works in water sector. Prior construction management experience in Balochistan is preferable.

The **Hydraulic Design Engineer** will have relevant post-graduate qualifications in Civil Engineering, combined with at least 10 years' experience of designing, costing and implementation of the hydraulic and other irrigation structures preferably with donor funded projects. Awareness with WB safeguards and procurement policies is preferred.

The **Agriculture Specialist** will have relevant post-graduate qualifications in Agriculture Engineering, with at least 15 years' experience of designing, costing and implementation of the On Farm Water Management and other community agriculture structures preferably with donor funded projects. Awareness with WB safeguards and procurement policies is preferred.

8. Consultants Office

The Consultant shall establish main office in Quetta in close proximity (walking distance) from the PIU office. Similarly, the consultant shall have to establish field office near the site.

9. Facilities from the Client

The Client will facilitate the Consultants to obtain all reports, maps, data, or any other information relevant to the project and available with provincial Irrigation Department or other line departments. The Client will also provide the Consultants with all permissions and approvals needed by the Consultants to obtain (if available) maps, aerial photographs, remote sensing data and images, or to import into Pakistan equipment and supplies needed to enable the consultants to carry out the Tasks relevant to the assignment. The Client will assist the Consultants and each of its personnel with work permits and such other documents as shall be necessary to enable them to perform their services; and also assist in issuance of entry and exit visas, residence permits, and other necessary documents for the expatriate employees of the Consultants and their eligible dependents, required for their stay in Pakistan. Any duties, fees or other port charges on staff or equipment shall not be reimbursable by Client.

Equipment, computers, instruments and furniture etc required by the Consultants under the Consultancy Services will be purchased as per World Bank guidelines with prior approval of the employer out of the Lump sum cost of consultancy services and on completion of the project, all these equipment and furniture shall be returned to Irrigation Department.

8. Other Expenditure Details

S.No	Description	Requirement
1	Rent and POL/ maintenance/ repair (4 x 4 Wheel Drive) +POL+ driver (10 Nrs)	(10X48) = 480 months
2	Rental Office Building (01 Nr)	48 months
3	Stationary, Photostat and Utilities Charges (LS)	Lump sum
4	Purchase of office equipment, computers, laptop, printers, digital cameras (Drone and Digital) and office furniture etc (LS)	Lump sum

Annexure-1
List of the Proposed Irrigation Schemes

Sr No	Description	District
	Mekran Irrigation Zone	
1	Barit Pirandar Dam	Awaran
2	Sairh Protection Bund. Jhao, Awaran	Awaran
3	Awaran Bazar, Awaran	Awaran
4	Sawar Kaur Dam	Gwadar
5	Roomrao Dam	Gwadar
6	Thrara Flood Protection Bund	Lasbela
7	Gagoo Flood Protection Bund	Lasbela
8	Restoration of Flood Protection Embankment U/S of Nurg Hingri Weir (Shurli & Faizo Bund)	Lasbela
9	Daroo wala Flood Protection Structure	Lasbela
10	Restoration of Lasbella Canal	Hub
11	Sohar Gath Dam	Hub
12	Drazi Flood Protection Bund	Hub
13	Merani Dam	Kech
	Canal Irrigation Zone	
1	Restoration / Streingthning of flood embankment of Main Rabi Canal from RD.0 to RD.100 and Rabi Canal -II from RD.0 to 22 km District Naseerabad	Naseerabad

2	Restoration / Streingthning of flood embankment of Patfeeder Canal from RD.455 to RD.505 & RD-558 to 621 District Naseerabad.	Naseerabad
3	Rehabilitation of Main Drains i-e Naseer, Judair, Temple, Jhal Pat, Mohabat, Ballan, Rupa, Umrani and Magsi drains in District Naseerabad and Jaffarabad	Naseerabad & Jaffarabad
4	Construction of Syphon at RD.70 and 4 Nos VRBs at different reaches of Uch Canal District Sohbat Pur	Sohbat pur
5	Flood Protection Bund for sohbatpur Town	Sohbat pur
6	Restoration / Streingthning of embankment of Hairdin Main Drain from RD.0 to RD.62 and Construction of 3 Nos VRB at Different PlacesDistrict Sohbat Pur	Sohbat pur
7	Construction of flood Protection Bund for Dera Allah Yar Town and reallignmnet of Jhat Pat main Drain from City area District Jaffarabad	Jaffarabad
8	Restoration of Damages to Escape Channel & Akbar Minor alongwith structures District Jhal Magsi	Jhal Magsi
9	reconstruction of flood protection band near Zain ul abideen Khan Khos	Sohbat pur
10	Restoration of Flood Protection Bund Gandawah Town left and Right Side District Jhal Magsi	Jhal Magsi
	Quetta Irrigation Zone	
1	Rabat Dam	Duki
2	Zarkhail Delay Action Dam Sharaghg Area	Harnai
3	Walla Delay Action Dam Zarghoon Ghar Area	Harnai
4	Flood Protection along Nari River at Ghulam Bolak Area Sibi	Sibi
5	Khumbri Dam	Kachhi
6	Sibri Dam	Kachhi
7	Qamber Dam	Kachhi
8	Mako Kach Dam	Killa Abdullah
9	Toiwer Batozai FIS	Killa Saifullah
10	Akhtar Nikah Dam	Killa Saifullah
11	Khazeena Dam	Musakhel
12	Gargoji perennial irrigation scheme	Musakhel

13	Rehabilitation of Sanzala Karez (Tehsil Huramzai),Zaida Dam i/c check dams & flood protection in Sharan (Tehsil Nana Sahib)	Pishin
14	Mazoo Dam	Ziarat
15	Zandra Tangi Gravity Dam	Ziarat
16	Peechi Dam	Ziarat
17	Kaddi kach Dam	Ziarat
	Khuzdar Irrigation Zone	
1	Laghamgir Dam	Kalat
2	Sarawan Irrigation Scheme	Kalat
3	Padmaran Dam	Kalat
4	Flood Protection Bunds in Zahrazai Bolak & Mangochar Khaliqabad Pandran Makiki	Kalat
5	Flood Protection Bunds in Gazag Area Khaliqabad and Johan Shakhree Khaliqabad	Kalat
6	Restoration of Baddo Perennial Irrigation Scheme	Kharan
7	Garuk Perennial Irrigation Scheme	Kharan
8	Lohi Dam & conveyence system Restoration	Khuzdar
9	Zawa Irrigation Scheme	Khuzdar
10	Gatamon Storage Dam	chagai
11	Thal Dam	Mastung
12	Splinji-I Dam	Mastung
13	Azdaghol Dam	Nushki
14	Zaik Perennial Irrigation Scheme	Washuk
15	Plantak Dam	Washuk

Annexure-2

Public Health Engineering Schemes

S#	Description.	Name of District	Latitude-N	Longitude-E
1	Restoration of WSS Awaran Town, Awaran	Awaran	26.4552440	65.2154450
2	Restoration of WSS Doleji, Awaran	Awaran	26.4335005	65.3927273
3	Restoration of WSS Shandi, Awaran	Awaran	26.4637180	65.6262400
4	Restoration of WSS Barkhan Town & WSS Gravity Flow , District Barkhan	Barkhan	29.8986100	69.5174000
5	WSS Gravity WSS Murghazi to Mir Pathan, Dera Bugti	Dera Bugti	28.986447	69.384059
6	WSS Gravity WSS Donani in Dera Bugti	Dera Bugti	28.982716	69.144664
7	WSS Gravity WSS Lendi in Dera Bugti	Dera Bugti	28.997914	69.095639
8	WSS Gravity WSS Kordan in Dera Bugti	Dera Bugti	29.604294	68.997308
9	WSS Gravity WSS Johari/Pitokh in Dera Bugti	Dera Bugti	29.000814	69.060481
10	WSS Killi Tuni Mat in Sui Dera Bugti	Dera Bugti	28.730230	69.206943
11	WSS Killi Habib Rahi in Dera Bugti	Dera Bugti	29.073276	69.027690
12	WSS Killi Pather Nala in Dera Bugti	Dera Bugti	29.216645	69.254262
13	WSS Killi Kalokushtagh in Dera Bugti	Dera Bugti	29.051838	69.108017
14	WSS Killi Shamol Marrow in Dera Bugti	Dera Bugti	29.064487	69.232236
15	WSS Killi Shamsar Mandwani in Dera Bugti	Dera Bugti	29.073860	69.004854
16	WSS Nasarabad Source No.II Duki	Duki	30.1481250	68.5806830
17	WSS New Garden Source No.I Duki	Duki	30.1536980	68.5654780
18	WSS New Garden Source No.2 Duki	Duki	30.1518180	68.5670030
19	WSS Vot Lahri Fazlo Muhammad Khan Duki	Duki	30.0638670	69.0310570

20	WSS Killi Banhar Duki	Duki	30.0912260	69.0558560
21	WSS Killi Faizullah Jan Manzaki Duki	Duki	30.6154100	68.8710340
22	WSS Killi Gharibabad, Killi Yaro Shaher Duki	Duki	30.1481250	68.5753850
23	WSS Killi Hosri, Duki	Duki	30.0356500	68.6914800
24	Gravity WSS Main Bazar Harnai	Harnai	30.1152800°	67.9624128° E
25	Gravity WSS Killi Garden Killi Sheikhan Harnai	Harnai	30.1022401°	67.9478166° E
26	Gravity WSS Killi Zarmana to Karwol Harnai	Harnai	30.1277921°	67.9589065° E
27	Gravity WSS Kot Ali Khan Harnai	Harnai	29.9731535°	68.0856033° E
28	WSS Khost Bazar Shahrag Harnai	Harnai	30.2257061°	67.5775812° E
29	Gravity WSS Mian Kach Harnai	Harnai	29.9436594°	68.0610470° E
30	Gravity WSS Sur Kach Harnai	Harnai	29.9272848.°	68.0748725° E
31	Gravity WSS Sheen Kach Harnai	Harnai	29.9644386°	68.0928949.° E
32	WSS Killi Ponga Shahrag Harnai	Harnai	30.1959783°	67.7478683° E
33	Gravity WSS Killi Shore Aspani Khadrani Marpani Dag Harnai	Harnai	30.0736693°	67.9544829° E
34	WSS D.A.Yar Phase-1	Jaffarabad	28.2046390	68.2046390
35	2WSS D.A.Yar Phase-II	Jaffarabad	28.2246500	68.2240100
36	WSS Khan Garh	Jaffarabad	28.2154590	68.2056200
37	WSS Rojhan Jamali -I & II	Jaffarabad	28.1918960	68.1558090
38	WSS Nadir Kot, District Jhal Magsi	Jhal Magsi	28.0860800	67.4533100
39	WSS Zarain Abad, District Jhal Magsi	Jhal Magsi	28.0811600	67.4590700

40	WSS Din Muhammad Magsi, District Jhal Magsi	Jhal Magsi	28.6251400	67.3656800
41	WSS Gandawa Laskani Source, District Jhal Magsi	Jhal Magsi	28.6221400	67.3696800
42	WSS Gandawa Rahooja Source, District Jhal Magsi	Jhal Magsi	28.5264800	67.4315400
43	WSS Tajoo Machi, District Jhal Magsi	Jhal Magsi	28.0212900	67.5787200
44	WSS Drib Machi, District Jhal Magsi	Jhal Magsi	28.0920500	67.5846600
45	WSS Killi Dasht-e-Mughalzai, District Kalat	Kalat	29. 04613	66. 58859
46	WSS Killi Mughalzai, District Kalat	Kalat	29. 02230	66. 35118
47	WSS Killi Shesha Deghar, District Kalat	Kalat	29. 01200	66.58341
48	WSS Killi Hindu Mohallah, District Kalat	Kalat	29. 02124	66. 59173
49	WSS Killi Ziarat, District Kalat	Kalat	29. 05022	66. 36201
50	WSS Kalat Bazar, District Kalat	Kalat	29.01944	66.58974
51	Restoration of Kachhi Plain Phase-I Water Supply Scheme	Kachhi	28.33 37.26 504” N	68.12 15 44 58”E
52	WSS Bajoi Kolan Khuzdar	Khuzdar	27.9703510	66.4463620
53	WSS Khuzdar Town	Khuzdar	27.8123320	66.5987470
54	WSS Saroona Town	Khuzdar	26.2081440	67.1431230
55	WSS Karkh Khuzdar	Khuzdar	27.7524330	67.1685296
56	WSS Kharan Town	Kharan	28’58 79.45	65’43’42.91
57	WSS Bunap, Kharan	Kharan	28’38’46.90	65’20’40.98’
58	WSS Killi Mali Said Khan Zarkoon Azad Shaher, Kohlu	Kohlu	30.1481250	68.5806830
59	WSS Killi Umar Mabtani Marri Bohri, Kohlu	Kohlu	30.1518180	68.5670030
60	WSS Killi Zarh Khan Marri Tamboo, Kohlu	Kohlu	30.0638670	69.0310570
61	WSS Killi Mir Nisar Ahmed, Kohlu	Kohlu	30.0912260	69.0558560
62	WSS Oryani District Kohlu	Kohlu	30.6154100	68.8710340

63	WSS Naisoba Kohu & WSS Sufaid Kohu	Kohlu	30.148125 30.03565	68.575385 68.69148
64	WSS Mir Musfta Marri and Master Abdullah Kohlu	Kohlu	30.0356500	68.6579100
65	WSS Killi Inayatullah Maiwand, Kohlu.	Kohlu	30.0352500	68.6578400
66	WSS Killa Saifullah Town Source-I & II (02 No)	Killa Saifullah	30.6924870	68.3624880
67	WSS Marpal Muslim Bagh	Killa Saifullah	30.7017540	68.3605540
68	WSS Salak Murgha Muslim Bagh	Killa Saifullah	30.4353000	67.3743000
69	WSS Surgara, Muslim Bagh	Killa Saifullah	31.0220000	67.4949000
70	WSS Sarana Kan	Killa Saifullah	30.4915000	67.4508000
71	WSS Muslim Bagh	Killa Saifullah	30.4440000	67.3103000
72	WSS Muslim Bagh Town	Killa Saifullah	30.5003000	67.4811000
73	WSS Killi Urgas Babo Qadir Mohallah Muslim Bagh	Killa Saifullah	30.5005000	67.4153000
74	WSS Killi Pan Kunjughi Gravity Scheme, Mushlim Bagh	Killa Saifullah	30.4803000	67.3541000
75	WSS Killi Wali Kach Killa Saifullah	Killa Saifullah	30.4803000	67.3541000
76	PHE Office Killa Saifullah and Muslim Bagh	Killa Saifullah	30.4818 30.702824	68.360385 67.3516
77	WSS Killi Arambai-II, Tehsil Killa Abdullah	Killa Abdullah	30.4946000	67.4418000
78	WSS Killi Marawar Syedan-II, Tehsil Killa Abdullah	Killa Abdullah	30.7149250	66.7142370
79	WSS Killi Machika-II, Tehsil Killa Abdullah	Killa Abdullah	30.7612800	66.6779610
80	WSS Killi Chori Malak Saleem, Tehsil Killa Abdullah	Killa Abdullah	30.6903620	66.6898200
81	WSS Killi Loi Kolak, Tehsil Killa Abdullah	Killa Abdullah	30.7141460	66.8000450
82	WSS Killi Majak, Tehsil Killa Abdullah	Killa Abdullah	30.6956649	66.7645840
83	WSS Killi Jangal Pir Alizai, Tehsil Killa Abdullah	Killa Abdullah	30.6186800	66.6942700
84	WSS Killi New Majak-II, Tehsil Killa Abdullah	Killa Abdullah	30.7059200	66.7563100
85	WSS Killi Machika, Tehsil Killa Abdullah	Killa Abdullah	30.7733300	66.6703400

86	WSS Killi Marawar Syedan, Tehsil Killa Abdullah	Killa Abdullah	30.7175830	66.7155990
87	WSS Killi Ali Shah Machika, Tehsil Killa Abdullah	Killa Abdullah	30.7293000	66.6906100
88	WSS Killi Haji Zareef Machika, Tehsil Killa Abdullah	Killa Abdullah	30.7560900	66.6676200
89	WSS Killi Machika-III, Tehsil Killa Abdullah	Killa Abdullah	30.7496500	66.6674500
90	WSS Killi Ziarat, Tehsil Killa Abdullah	Killa Abdullah	30.3072324	66.6801740
91	WSS Killi Molvi Attaullah & Malik Saleh Muhammad, Tehsil Killa Abdullah	Killa Abdullah	30.7335630	66.6634480
92	WSS Killi Muhallah Qaseem, NADRA Office Tehsil Killa Abdullah	Killa Abdullah	30.6400900	66.6434610
93	WSS Killi Anif Nourk Gulistan, Tehsil Gulistan	Killa Abdullah	30.6448900	66.6338670
94	WSS Killi Baz Muhammad Lajwer, Tehsil Gulistan	Killa Abdullah	30.6428160	66.6341970
95	WSS Killi Lajwer Mohala Murad Ali, Tehsil Gulistan	Killa Abdullah	30.6741860	66.6971430
96	WSS Killi Lajwer Mohala Nizam Agha, Tehsil Gulistan	Killa Abdullah	30.6755430	66.6977254
97	WSS Killi Poladzai Lajwer, Tehsil Gulistan	Killa Abdullah	30.6448900	66.6339870
98	WSS Killi Masszai, Tehsil Gulistan	Killa Abdullah	30.6448730	66.6334100
99	WSS Killi Abudl Rehmanzai UC 1, Tehsil Gulistan	Killa Abdullah	30.6381580	66.6333480
100	WSS Killi Lajwer, Tehsil Gulistan	Killa Abdullah	30.6428160	66.6341970
101	WSS Killi Lajwer Mohala Abdul Wassy, Tehsil Gulistan	Killa Abdullah	30.6427150	66.6359270
102	WSS Killi Ghazi Shaheed Daman Lajwer, Tehsil Gulistan	Killa Abdullah	30.6741860	66.6977143
103	WSS Killi Anif Nourk, Tehsil Gulistan	Killa Abdullah	30.6748970	66.6977879
104	WSS Killi Shagzai Masszai, Majeran Lajwar, Gulistan Karez2, Tehsil Gulistan	Killa Abdullah	30.6771790	66.6988211
105	WSS Norag Segai, Gulistan Killa Abdullah	Killa Abdullah	30.6445800	66.6335200
106	WSS Maizai adda, Killa Abdullah	Killa Abdullah	30.6145670	66.5135430
107	WSS Haji Gulzar Maizi, Killa Abdullah	Killa Abdullah	30.6145670	66.5135430
108	WSS Abadul malik Zakirayzi, Gulistan Killa Abdullah	Killa Abdullah	30.6145670	66.5135430

109	WSS Killi Norak Sulemankhail Gulistan Killa Abdullah	Killa Abdullah	30.6445250	66.6335280
110	WSS Peer Goth at Liari Town	Lasbela	25.8063220	66.5866570
111	WSS Pawan Pir Sawai Uthal	Lasbela	25.7088657	66.6573657
112	WSS Sukan Uthal	Lasbela	26.0080982	66.5316069
113	WSS Lakhra Booster Station	Lasbela	25.8136323	66.5976450
114	WSS Hara Moshani Chankar Lakhra	Lasbela	25.9829099	66.3716965
115	WSS Oba Lakhr 1,2,3 for Chankra	Lasbela	25.942336	66.385453
116	WSS Mini Damb Winder	Lasbela	25.4109400	66.6683700
117	WSS Kud Gundacha Seya Goth Bela	Lasbela	26.3676534	66.2391957
118	WSS Dona Koke Lakhra	Lasbela	25.9531942	66.3746016
119	WSS Liari Boosting Station	Lasbela	25.7053787	66.4937544
120	WSS Killi Chanali Loralai	Loralai	30.33'040"	68.10'07.7"
121	WSS Killi Sardar Gul Muhammad Jogaizai, Loralai	Loralai	30.23'24.0"	68.37'27.5"
122	WSS Killi Nauroz Shah Bypass Road, Loralai	Loralai	30.22'02.6"	68.37'53.8"
123	WSS Old Pahari Source to Loralai Town at Oraygai River	Loralai	30.24'20.9"	68.33'04.6"
124	Loralia Town Muncipal Committee line at Pathan Kot River	Loralai	30.21'12.2"	68.35'04.6"
125	Loralia Town at Oriagai River form Shina Lashta Source to Zangiwal Bridge	Loralai	30.25'31.1"	68.32'03.1"
126	WSS Killi Turkaman, Mastung	Mastung	29.9054700	66.9488800
127	WSS Killi Uskoni, Mastung	Mastung	29.6080400	67.0818600
128	WSS Killi Karez Kalan Pringabad, Mastung	Mastung	29.8782680	66.8682218
129	WSS Killi Babkani and Killi Malik Abad Mastung	Mastung	29.9060453	66.7502730
130	WSS Killi Pull Marove Ispilingji, Mastung	Mastung	29.7693100	67.1358900
131	WSS Killi Babri, Mastung	Mastung	29.9108300	67.0870000

132	WSS Karez Sour, Ushkoni, Jaded abad Kanak and Killi Pirkanoo, Mastung	Mastung	29.815854,29.60804,29.899358,29.786198,29.791747	66.822921,67.08186,66.652336,66.859806,66.855938
133	WSS M. Shahi Mastung Town.	Mastung	29.7971970	66.8605050
134	WSS Drug Town Phase-I	Musakhail	30 51’ 25”	70 11” 09”
135	WSS Karkana Old, Durug	Musakhail	30 49’ 52”	70 14” 38”
136	WSS Gravity Flow Musakhail Town	Musakhail	30 50’ 33”	69 46” 53”
137	WSS Zawar Essot, Musakhail	Musakhail	30 58’ 22”	70 01” 11”
138	WSS Killi Gurgoji Durug	Musakhail	30 47’ 39”	70 08” 29”
139	WSS Killi Molvi Najeebullah Nishpa Tangi Sar, Durug	Musakhail	30 55’ 08”	70 06” 24”
140	WSS Killi Hafiz Noor Khan, Durug	Musakhail	30 89’ 19”	70 11” 75”
141	WSS Killi Inayatullah Tangisar	Musakhail	30 56’ 22”	70 06” 32”
142	WSS Drug Town Phase-II Molvi Abdull Razaq	Musakhail	30 51’ 24”	70 10” 48”
143	WSS Killi Lorkai Raghai Walayat Khan Tangisar	Musakhail	30 55’ 32”	70 06” 11”
144	WSS Killi Salmezai Muskhail	Musakhail	30 58’ 18”	69 50” 23”
145	WSS Shah Nadir Muskhail	Musakhail	31 10’ 24”	69 48” 03”
146	WSS Zari Muskhail	Musakhail	30 44’ 59”	69 45” 21”
147	WSS Haji Fateh Mohallah Musakhail Town	Musakhail	30 51’ 32”	69 49” 20”
148	WSS Sarvar Jan Sheikh Muskhail	Musakhail	30 52’ 06”	69 50” 56”
149	WSS Karkana Elahi Bakhash Durug	Musakhail	30 50’ 02”	70 15” 38”
150	WSS Rind Colony, Rarasham Town.	Musakhail	30 21’ 46”	69 51” 20”
151	WSS Zari Band	Musakhail	31 13’ 28”	69 49” 38”
152	WSS Rest House Muhallah Musakhail	Musakhail	30 51’ 45”	69 49” 13”
153	WSS Karam Shah, Rarasham.	Musakhail	30 23’ 37”	69 51” 53”

154	WSS Killi Musfta Kamal Khan Kingri.	Musakhail	38 25’ 07”	69 48” 37”
155	WSS Garbi Nath Tehsil Durug	Musakhail	30 52’ 35”	70 08” 57”
156	WSS Nekhal Khadozai	Musakhail	30 52’ 60”	69 49” 52”
157	WSS Nawasabad Durug	Musakhail	30 56’ 22”	70 06” 32”
158	WSS Rarasham Town.	Musakhail	30 21’ 52”	69 51” 35”
159	WSS Juma Khan Umarani, Naseerabad	Naseerabad	28.25’42’’	68.01’25’’
160	WSS Sher Muhammad Umrani, Naseerabad	Naseerabad	28.25’’43’’	68’00’00’’
161	WSS Jan Muhammad Mengal, Naseerabad	Naseerabad	28.26’’28’’	68’01’13
162	WSS Ghulam Nabi Marri, Naseerabad	Naseerabad	28.25’28’’	68.01’09
163	WSS Mir Wah Tehsil Tamboo, Naseerabad	Naseerabad	28.25’59’’	68.00’57’’
164	WSS Manjoo Shoori Tehsil Tamboo, Naseerabad	Naseerabad	28.25’27’’	68.01’’03
165	WSS Killi Jamaldini	Nushki	29'24'49	65'57'11
166	WSS Killi Sahib Zada	Nushki	29'38'22	65'38'23
167	WSS Killi Ahmed Wal Kohezai	Nushki	29'32 56	66'1'56
168	WSS Sangeen Daak	Nushki	29'10'7	65'40'11
169	WSS Killi Darzi Chah	Nushki	29'30'01	66'28'08
170	WSS Killi Kohezai Ahed Wal	Nushki	29'38'22	65'38'23
171	WSS Murad Ali Kishingi	Nushki	29'25'44	65'57'58
172	WSS Killi Qabool	Nushki	29'33'06	66'00'56
173	WSS Killi Zaro Chah	Nushki	29'15'24	65'49'13
174	WSS Killi Niyam Durgi	Nushki	29'32'34	66'01''01
175	WSS Killi Reco	Nushki	29'24'49	65'57'11
176	WSS Naseerabad Qazi Abad	Nushki	29'38'22	65'38'23
177	WSS Garibabad Ward No-3	Nushki	29'32 56	66'1'56

178	WSS Garibabad Bus Adda	Nushki	29'10'7	65'40'11
179	WSS Qaziabad Ward No 2	Nushki	29'30'01	66'28'08
180	WSS Irrigation Collony	Nushki	29'38'22	65'38'23
181	WSS Killi Nokjow , Mirza Khan, Ahmed Wall and Naik Muhammad Mall	Nushki	29'25'44	65'57'58
182	WSS Killi Batto	Nushki	29'10'7	65'40'11
183	WSS Killi Badini Nushki	Nushki	29'25'44	65'57'58
184	WSS Killi Bakra Landi Mall & Killi Mangal-I	Nushki	29'33'06	66'00'56
185	WSS Killi Sahibzadi Nushki	Nushki	29'15'24	65'49'13
186	UF Plant Anajh Mandi Dera Allah Yar Jaffarabad	Provincial	28° 22' 37'' N	68° 21' 02'' E
187	UF Plant Nazim Office Dera Allah yar Jaffarabad	Provincial	28° 22' 37'' N	68° 35' 05'' E
188	UF Plant Civil hospital Dera Allah Yar Jaffarabad	Provincial	28° 37' 29'' N	68° 35' 05'' E
189	UF Plant Murad Colony Dera Allah Yar Jaffarabad	Provincial	28° 37' 09'' N	68° 33' 86'' E
190	UF Plant Tehsil Colony Dera Allah Yar Jaffarabad	Provincial	28° 22' 37'' N	68° 21' 22'' E
191	UF Plant Khan Garh Jaffarabad	Provincial	28° 22' 36'' N	68° 21' 29'' E
192	UF Plant Rojhan Jamali Jaffarabad	Provincial	28° 32' 40'' N	68° 13' 14'' E
193	UF Plant PHE office Dera Allah Yar Jaffarabad	Provincial	28° 21' 30'' N	68° 18' 03'' E
194	UF Plant Kashmir Kot Jaffarabad	Provincial	28° 29' 46'' N	68° 26' 58'' E
195	UF Plant Goth Muhammad Hassan Jamali Jaffarabad	Provincial	28° 14' 13'' N	68° 42' 85'' E
196	UF Plant Abdul Ghafoor Lehri Jaffarabad	Provincial	28° 38' 18'' N	68° 42' 63'' E
197	UF Plant Ismail Challgari Jaffarabad	Provincial	28° 30' 09'' N	68° 19' 08'' E
198	UF Plant Noor Muhammad Nawara Jaffarabad	Provincial	28° 30' 01'' N	68° 29' 06'' E
199	UF Plant Lal Baksh Jattak Jaffarabad	Provincial	28° 24' 27'' N	68° 21' 08'' E
200	UF Plant Ghulab Khan Khoso Jaffarabad	Provincial	28° 32' 09'' N	68° 11' 18'' E

201	UF Plant Wapda Colony Naseerabad	Provincial	28° 37' 21'' N	68° 09' 56'' E
202	UF Plant Govt Girls School Joda Khan Joyo Naseerabad	Provincial	30° 32' 40'' N	69° 03' 05'' E
203	UF Plant WSS Juma khan Umrani Naseerabad	Provincial	30° 31' 34'' N	69° 11' 05'' E
204	UF Plant Village Shezada Khan Umrani Naseerabad	Provincial	30° 33' 40'' N	69° 03' 05'' E
205	UF Plant WSS Changezi khan sasoli Naseerabad	Provincial	30° 41' 40'' N	69° 13' 11'' E
206	UF Plant WSS Goth Majeed Lehri Naseerabad	Provincial	30° 32' 40'' N	69° 03' 05'' E
207	UF Plant WSS Mir gul mossiani Naseerabad	Provincial	30° 72' 55'' N	69° 15' 55'' E
208	UF Plant WSS Aziz Abad Jamali Naseerabad	Provincial	30° 06' 40'' N	69° 71' 97'' E
209	UF Plant WSS Manjoo Shori Naseerabad	Provincial	30° 98' 62'' N	69° 61' 06'' E
210	UF Plant WSS gulam Nabi Marri Naseerabad	Provincial	30° 36' 57'' N	67° 06' 10'' E
211	UF Plant Goth Bashir Khan Khosa Sohbatpur	Provincial	28° 51' 78'' N	68° 54' 37'' E
212	UF Plant Haji Hazar Khan Khosa Sohbatpur	Provincial	28° 11' 15'' N	68° 51' 90'' E
213	UF Plant Muhammad Khan(Musharaf Khosa) Sohbatpur	Provincial	28° 16' 31'' N	68° 41' 12'' E
214	UF Plant Ghulam Rasool Jiani Sohbatpur	Provincial	28° 71' 22'' N	68° 22' 21'' E
215	UF Plant Molvi Qadir Bakhsh Sohbatpur	Provincial	28° 51' 78'' N	68° 34' 88'' E
216	UF Plant Ahmed Nawaz Khosa Sohbatpur	Provincial	28° 32' 33'' N	68° 65' 15'' E
217	UF Plant Khawand Bakhsh Khosa Sohbatpur	Provincial	28° 14' 43'' N	68° 41' 76'' E
218	UF Plant Naseer Ahmed Khosa Sohbatpur	Provincial	28° 09' 52'' N	68° 54' 98'' E
219	UF Plant Habib-ur-Rehman Sohbatpur	Provincial	28° 66' 01'' N	68° 04' 29'' E
220	UF Plant Haji Yar Muhammad Sohbatpur	Provincial	28° 29' 59'' N	68° 03' 31'' E
221	UF Plant Near Nazim House JhalMagsi	Provincial	28° 15' 01'' N	67° 41' 06'' E
222	UF Plant Panjuk JhalMagsi	Provincial	28° 38' 26'' N	67° 81' 61'' E
223	UF Plant Saif abad JhalMagsi	Provincial	28° 08' 15'' N	67° 11' 41'' E

224	UF Plant Chukhi village JhalMagsi	Provincial	28° 28' 16'' N	67° 45' 76'' E
225	UF Plant Hathyari JhalMagsi	Provincial	28° 09' 01'' N	67° 41' 06'' E
226	UF Plant Mohalla Qazi JhalMagsi	Provincial	28° 21' 26'' N	67° 88' 67'' E
227	UF Plant Khari Village JhalMagsi	Provincial	28° 72' 15'' N	67° 07' 21'' E
228	UF Plant Gajan JhalMagsi	Provincial	28° 33' 16'' N	67° 13' 16'' E
229	UF Plant Muslimbagh	Provincial	30° 33' 16'' N	69° 13' 19'' E
230	WSS Killi Murgha Zakaryazai	Pishin	30.6915020	67.4186920
231	WSS Kaleem Shah Killi Haji Basoo	Pishin	30.5883210	66.9950670
232	WSS Killi Taimor Shah Sharan	Pishin	30.6656800	67.3281570
233	WSS Hameed Abad	Pishin	30.6904580	67.1261101
234	WSS Qila Vila Barshor	Pishin	30.8662200	67.3382226
235	WSS Killi Dub Khanzia Pishin	Pishin	30.7487550	67.1394640
236	WSS Killi Manzari Kakazi Hurmazai	Pishin	30.7285400	66.2282550
237	WSS Killi Khanozai Town,	Pishin	30.6154177	67.3267135
238	WSS Killi Balozai,	Pishin	30.6430210	67.2966700
239	WSS Killi Rud Malazai,	Pishin	30.4395035	67.1718860
240	WSS Killi Yaro,	Pishin	30.4811103	66.9781276
241	WSS Killi Sharan,	Pishin	30.5375432	67.2026305
242	WSS Killi Tharatha No.1	Pishin	30.5933960	67.0310830
243	WSS Killi Manzari Kakazi Hurmazai	Pishin	30.7285300	66.8367690
244	WSS Killi Niganda Pishin	Pishin	30.6073117	67.2285550
245	WSS Rest House Pishin	Pishin	30.9740950	66.9961310
246	WSS Asmat Tareen Killi Dub Khanzai Pishin	Pishin	30.7231230	67.0785470
247	WSS Killi Dilsora	Pishin	30.7566230	67.5785480

248	Gravety Flow WSS Bagh Ragh Barshure	Pishin	320.8688400	67.1614890
249	WSS Jabbar Killi Sharen UC Margha Zakeryazi Pishin	Pishin	30.6591450	67.3298320
250	WSS for GGH School Faizabad, Sharen, UC Margha Zakeryazi Pishin	Pishin	30.6610600	67.3344720
251	WSS Dasht- E- Shahbaz Gwargo, Panjgur	Panjgur	28 28 25.54	65 10 94.94
252	WSS Dazi, Panjgur	Panjgur	26 98 03.98	64 13 72.85
253	WSS Bonistan, Panjgur	Panjgur	26 42 28.07	63 57 32.75
254	WSS Killi Shah Nawaz	Quetta	30.3025189	66.8548783
255	WSS Baba Jan Town	Quetta	30.3025511	66.8473214
256	WSS for Boys Middle School and Killi Ragi Nasran	Quetta	30.3021090	66.8473830
257	WSS Killi Malazi Nasran-I	Quetta	30.2322549	66.9248870
258	WSS Killi Malazi Nasran-II	Quetta	30.2314700	66.9584770
259	WSS Killi Shahi Karez, Quetta	Quetta	30.1262600	66.2541870
260	WSS Killi Nohisar I & II Quetta.	Quetta	30.2406020	66.8872850
261	WSS Killi Gul Muhammad	Quetta	30.2423210	66.9832510
262	WSS Haji Nawab Killi Haji Barkat Aghbarg Quetta	Quetta	30.2125810	66.8336270
263	WSS in Hanna Urak Vally	Quetta	30.3523210	66.9835221
264	1 No Bore of WSS Karak	Quetta	30.2423580	66.9822200
265	3 No Bores of Nawa Killi area	Quetta	30.6587900	66.9815800
266	3 No Bores of Kuchlak	Quetta	30.2426220	66.9858470
267	WSS Jamia Musjid Killi Kotwal	Quetta	30.2325260	66.9854870
268	WSS Sumangli Housing Scheme, Quetta	Quetta	30.3054800	66.3692510
269	WSS Killi Sumangli Departmental Scheme	Quetta	30.2654800	66.9887450
270	WSS Eman City I & II	Quetta	30.2548900	66.9825180
271	WSS Killi Umer Quetta	Quetta	30.2365400	66.9821510

272	WSS at Shah Nawaz Mill Colony, Quetta	Quetta WASA	30.1004803	66.9803270
273	WSS at Girls College Brewery Road, Quetta	Quetta WASA	30.1888734	66.9614691
274	WSS at Karkhasa -K5 Quetta	Quetta WASA	30.1793871	66.9372219
275	WSS at Karkhasa -K1 Quetta	Quetta WASA	30.1872505	66.9486391
276	Kasi Abad	Quetta WASA	30.1744672	66.9451851
277	Restoration of Dasht Well Field WASA	Quetta QWESIP	30.1877560	66.9493660
278	WSS Sikander Khan Khoso, District Sohbatpur	Sohbat pur	30.2268820	67.1202220
279	WSS Village Abdul Rasheed, District Sohbatpur	Sohbat pur	28 33 56 5 “ N	68 33 27.68 E
280	WSS Jia Khan (Kandi), District Sohbatpur	Sohbat pur	28 36 56 “ N	68 30 47” E
281	Construction of Canal Water Treatment System, District Sohbatpur	Sohbat pur	28 36 56 “ N	68 30 47” E
282	WSS Sibi, District Sibi	Sibi	29.6242570	67.8897420
283	Kach Kocha To Lehri , District Sibi	Sibi	29.5737740	67.8859200
284	WSS Sibi, Tube well No. 1 Nari Road, District Sibi	Sibi	29.5669430	67.8785750
285	WSS Sibi Town, District Sibi	Sibi	29.0416720	68.2249330
286	WSS Killi Mula Qamar ud din, Basima	Washuk	28.2199327	65.2923.26452
287	WSS Kill Nawab Khan, Basima	Washuk	28.2199327	65.2923.26452
288	WSS Killi Barkat Basima	Washuk	28.2199327	65.2923.26452
289	WSS Killi Noor Muhammad	Washuk	28.2199327	65.2923.26452
290	WSS Killi WSS Molvi Abdul Haq Damag, Basima	Washuk	28.2199327	65.2923.26452
291	WSS Mashkail Town	Washuk	27.5552100	62.6455300
292	WSS Lagdasht, Mashkail	Washuk	27.5558110	62.5455140
293	WSS Sodagan. Mashkial	Washuk	27.5641300	62.5136000
294	WSS New Jangian I, Washuk	Washuk	28.2755574	64.4932332

295	WSS New Jangian II, Washuk	Washuk	28.3370440	64.4948061
296	WSS Mengalbad Hurmagi, Washuk	Washuk	28 20 52.60	64 21 34.60
297	WSS Killi Haji Abdul Wahid Hurmagi, Washuk	Washuk	28.1837030	64.3236340
298	WSS Washuk Town	Washuk	27.7132140	64.8391010
299	WSS Killi Sher Zaman Garda Babar	Zhob	31°13'27"N	69°35'28"E
300	WSS Zhob Town	Zhob	31°18'21.98" N	69°38'7.33"E
301	WSS Killi Walma M.Ilyas Zhob	Zhob	31°18'46.89" N	69°22'32.23" E
302	WSS Killi Sheikhan Zhob	Zhob	31°27'29.19" N	69°36'33"E
303	WSS Killi Nasrullah Murgha Kibzai	Zhob	31°27'29.19" N	69°36'33"E
304	WSS in Tehsil Sinjavi, District Ziarat	Ziarat	30°15'44"	68°16'41" E
305	WSS Dola Uch Wani, Killi Mamozan , Killi Shaheed Babo, Killi Haji Nasrullah Dotani, Sinjavi , District Ziarat	Ziarat	30°27'59"	67°35'25"