

Project Readiness Financing Project Administration Manual

Project Number: 51131-003
October 2022

Islamic Republic of Pakistan: Naulong Integrated
Water Resources Development Project

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Project Administration Manual for Project Readiness Financing: Purpose and Process

The project administration manual (PAM) for the project readiness financing (PRF) is an abridged version of the regular PAM of the Asian Development Bank (ADB) and describes the essential administrative and management requirements to implement the PRF following the policies and procedures of the government and ADB. The PAM should include references to all available templates and instructions either by linking to relevant URLs or directly incorporating them in the PAM.

Water and Power Development Authority, Balochistan Irrigation Department, and Balochistan Agriculture and Cooperative Department are wholly responsible for the implementation of ADB-financed PRF projects, as agreed between the borrower and ADB, and following the policies and procedures of the government and ADB. ADB staff is responsible for supporting implementation, including compliance by executing and implementing agencies of their obligations and responsibilities for PRF project implementation following ADB's policies and procedures.

In the event of any discrepancy or contradiction between the PAM and the PRF loan agreement, the provisions of the PRF loan agreement will prevail.

After ADB's approval of the PRF proposal, changes in implementation arrangements are subject to agreement and approval pursuant to relevant government and ADB administrative procedures (including the Project Administration Instructions) and upon such approval, they will be subsequently incorporated in this PAM.

ABBREVIATIONS

ADB	–	Asian Development Bank
APFS	–	audited project financial statement
FMA	–	financial management assessment
GOB	–	Government of Balochistan Province
PMU	–	project management unit
PRF	–	project readiness financing
SOE	–	statement of expenditures
SPP	–	strategic procurement plan
SSS	–	single-source selection
TA	–	technical assistance
TOR	–	terms of reference
WAPDA	–	Water and Power Development Authority

Activities	Advance Action (2022)						PRF Year 1 (2023)												PRF Year 2 (2024)												PRF Year 3 (2025)								
	Q3			Q4			Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4			Q1		Q2						
	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6			
PRF signing																																							
PRF effectiveness																																							
Submission of Semiannual report																																							
Submission of annual report																																							
Submission of APFS																																							
Estimated effectiveness of ensuing loan																																							
Submission of PCR (if required)																																							
TRTA																																							
Approval and Effectiveness																																							
Implementation																																							

ADB = Asian Development Bank, APFS = audited project financial statement, DD = detailed design, PCR = project completion report, PRF = project readiness financing, RFP = request for proposal, TRTA = transaction technical assistance.

Source: Asian Development Bank estimates

II. PROJECT MANAGEMENT ARRANGEMENTS

A. Project Implementation Organizations: Roles and Responsibilities

Table 2: Roles and Responsibilities of Key Stakeholders

PRF Project Implementation Organizations	Management Roles and Responsibilities
A. Executing Agency Water and Power Development Authority	<ul style="list-style-type: none"> (i) Administer entire PRF implementation and ensure coordination with federal and provincial organizations; (ii) Ensure feasibility studies and detailed engineering design are consulted with GOB through P&D, and review and endorse the studies and design; (iii) Prepare draft PC-1 for the ensuing investment project; (iv) Responsible for recruitment, contract management, and quality assurance of PRF consultants; (v) Maintain adequate staff for PRF implementation; (vi) Ensure adequate and timely provision of counterpart support funds, disbursements, advance account, accounting, and auditing; (vii) Constitute and coordinate meetings of the Project Working Committee in consultation with GOB through P&D and relevant federal organizations. Also act as secretariat to all project management committees; (viii) Comply with the project's public disclosure requirements; (ix) Prepare and submit to ADB and GOB periodic progress reports and project completion reports; (x) Ensure full compliance with relevant loan and PRF covenants; and (xi) Oversee preparation and implementation of LARPs, EIA, and other social safeguards studies.
B. Implementing agencies 1. Balochistan Irrigation Department	<ul style="list-style-type: none"> (i) Coordinate with WAPDA and Balochistan Agriculture and Cooperative Department and provide inputs to transaction TA and PRF consultants' deliverables for preparation of ensuing project; (ii) Participate in project management committee meetings; and (iii) Provide data and information, as available, to WAPDA and consultants for undertaking studies, notably integrated water resource management, river basin planning, irrigation management, and agricultural development plan.
2. Balochistan Agriculture and Cooperative Department	<ul style="list-style-type: none"> (i) Coordinate with WAPDA and Balochistan Irrigation Department and provide inputs to transaction TA and PRF consultants' deliverables for preparation of ensuing project; (ii) Participate in project management committee meetings; and (iii) Provide data and information, as available, to WAPDA and consultants for undertaking agriculture, command area development studies, and irrigation management and agricultural development plan.
C. Collaborating Departments	<ul style="list-style-type: none"> (i) This includes GOB departments of (i) Energy; (ii) Forest and Wildlife; (iii) Fisheries; (iv) Local Government and Rural Development; (v) Public health Engineering; (vi) Board of Revenue; (vii) Planning and Development; and (viii) Office of the Deputy Commissioner; and federal departments of Quetta Electric Supply Company and National Electric Power Regulatory Authority; and (ii) The role of these departments is to assist WAPDA and GOB in project preparation and finalize the implementation arrangements for the ensuing project in following areas: power houses and associated infrastructure design, provision of water supply for project area households, watershed management and afforestation to secure the reservoir, development of fisheries in reservoir, land acquisition, rural infrastructure development in project area (if any); power evacuation and decision of tariff.

PRF Project Implementation Organizations	Management Roles and Responsibilities
D. Project Management Committees	<ul style="list-style-type: none"> (i) <u>Project Steering Committee (PSC)</u>: Oversee, guide, and direct the overall implementation of feasibility studies, detailed engineering design, and planning for the ensuing project by meeting twice a year or as needed. PSC will be chaired by the Ministry of Water Resources, Government of Pakistan; (ii) <u>Project Working Committee</u>: Review the technical, economic, financial, sustainability, operation and maintenance, and other technical matters of the feasibility studies, detailed engineering design (PRF), and planning for the ensuing project. Meet and receive walk-through of PRF consultant's deliverables and recommend improvements. Each member of the committee will act as focal person. Provide advice to PSC. The project working committee will be chaired by WAPDA; and (iii) <u>Project Coordination Committee</u>: Coordinate for security, social and environmental safeguards, including preparation of land acquisition and resettlement plan, gender action plan, and project communication strategy for consulting stakeholders notably displaced people and beneficiary community. Provide advice to PSC. The project coordination committee will be chaired by Deputy Commissioner of Jhal Magsi of GOB. <p><i>(Detailed composition and terms of reference for the committees are presented in Annex 1 of PAM)</i></p>
E. Asian Development Bank	<ul style="list-style-type: none"> (i) Assist the executing agency, implementing agencies, the project management committees, Economic Affairs Division, and Ministry of Water Resources through provision of timely guidance for smooth implementation of the PRF following the agreements made; (ii) Process and approve withdrawal applications; (iii) Review all the documents that require ADB approval; (iv) Conduct PRF administration missions; (v) Monitor compliance with loan covenants, social, gender, and environmental safeguards, and technical and financial requirements; and (vi) Regularly post on ADB website the updated project information documents for public disclosures.
F. Ministry of Water Resources	<ul style="list-style-type: none"> (i) Oversee overall project development at federal ministry level and coordination with EAD, Ministry of Planning Development and Special Initiatives, and GOB through P&D; and (ii) Constitute and hold meetings of the Project Steering Committee in consultation with GOB and relevant federal organizations.
G. GOB	<ul style="list-style-type: none"> (i) Oversee overall project development at provincial government level and coordination with WAPDA, EAD, Ministry of Planning Development and Special Initiatives, and Ministry of Water Resources; and (ii) Constitute and hold meetings of the Project Coordination Committee in consultation with relevant provincial and federal organizations.

Note: WAPDA is a Semi-Autonomous Body under the administrative control of the Federal Government (Ministry of Water Resources).

ADB = Asian Development Bank, EAD = Economic Affairs Division of Government of Pakistan, EIA = environmental impact assessment, GOB = Government of Balochistan, LARP = land acquisition and resettlement plan, PAM = project administration manual, PRF = project readiness financing, PSC = project steering committee, P&D = Planning and Development Department, Government of Balochistan, TA = technical assistance, WAPDA = Water and Power Development Authority.

Sources: Asian Development Bank.

B. Key Persons Involved in Implementation

Executing Agency

WAPDA

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Implementing Agencies

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Asian Development Bank

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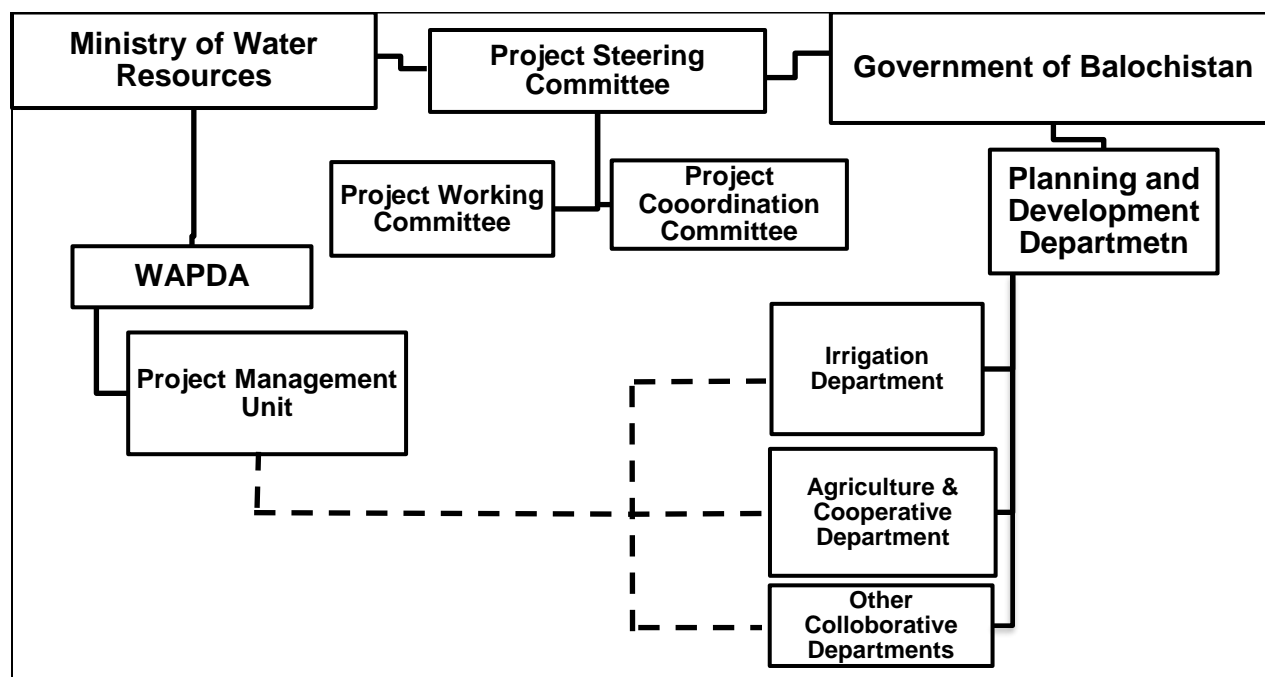
C. Focal Persons of WAPDA and Government of Balochistan (GOB)

- The roles of the focal persons are summarized below and detailed in Annex 2.

- (i) **WAPDA.** The focal person will communicate and liaise with all stakeholders; respond to queries; facilitate and coordinate for GOB's security clearance arrangement; organize and facilitate meetings; share consultants' reports and consolidate comments; and support Project Director's office to work as secretariat to project management committees.
- (ii) **Planning and Development Department.** The focal person will communicate and liaise with all stakeholders; respond to queries; facilitate meetings and other activities; coordinate with other provincial departments; and provide comments and feedback on consultants' reports.
- (iii) **Irrigation Department.** The focal person will communicate and liaise with all stakeholders; respond to queries; support consultants in field topographic surveys, canal alignments, design criteria, river basin and existing irrigation system data etc.; and review consultants' reports and provide comments and feedback.
- (iv) **Agriculture and Cooperative Department** including directorates (research, extension, engineering, on-farm water management). The focal person will communicate and liaise with all stakeholders; respond to queries; advise consultants on the selection of crops, location and alignment of watercourses and selection of lining and type of structures, and climate smart agriculture; facilitate meetings; and review consultants' reports and provide comments and feedback.

D. Project Organogram

Figure 1: Project Organogram

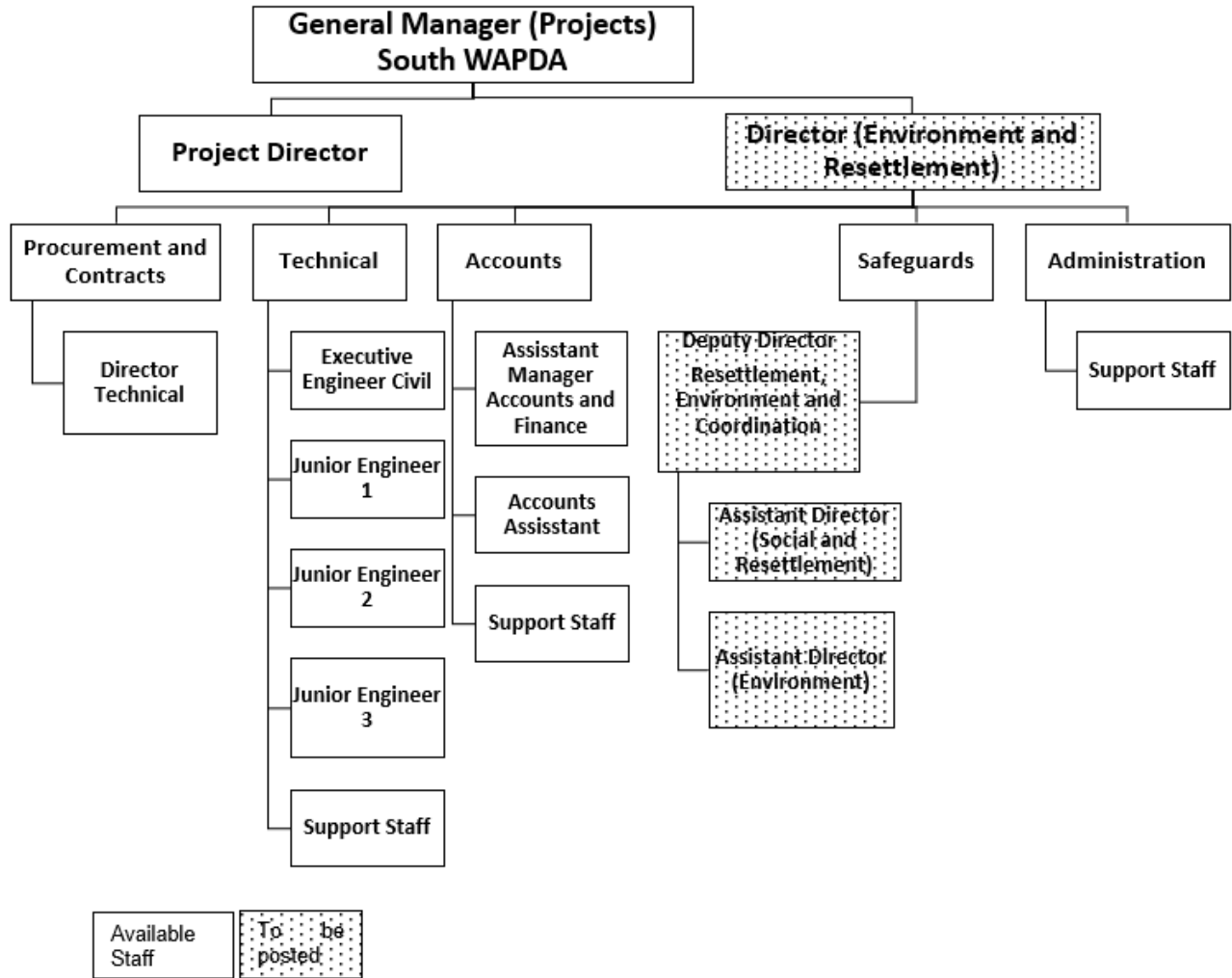


Note: WAPDA will serve as secretariat of the committee.

Source: Asian Development Bank and Water and Power Development Authority.

E. Project Organogram of Project Management Unit

Figure 2: Project Management Unit (Water and Power Development Authority)



Source: Asian Development Bank and Water and Power Development Authority.

III. COSTS AND FINANCING

3. The PRF is estimated to cost \$7.39 million. ADB will finance consulting services cost. ADB's financing support is required for validating the feasibility level studies and social and environmental safeguard documents prepared by WAPDA and its consultants. ADB also finances a part of contingencies, and financial charges during implementation. The government will finance taxes and duties, security arrangements and other management costs, and a part of contingencies.

A. Key Assumptions

4. The following key assumptions underpin the cost estimates and financing plan:

- (i) Exchange rate: PRs 186.000 = \$1.00.
- (ii) Price contingencies based on expected cumulative inflation over the implementation period are as follows:

Table 3: Escalation Rates for Price Contingency Calculation

Item	2023	2024	2025	Average
Foreign rate of price inflation	1.7%	1.8%	1.8%	1.77%
Domestic rate of price inflation	8.5%	6.5%	6.5%	7.17%

Source: Asian Development Bank.

- (iii) In-kind contributions were calculated based on estimates provided by the executing agency and includes in-kind project management cost, if any, contributed by the executing agency and other government organizations during implementation.

B. Allocation and Withdrawal of Loan Proceeds

Table 4: Allocation and Withdrawal of Project Readiness Financing Loan Proceeds

No.	Category	Total Amount Allocated for ADB Financing (\$ million)	Basis for Withdrawal from the Loan Account
1	Consulting Services, studies and surveys, capacity building, project management	3.56	100% of total expenditures claimed*
2	Financial charges during implementation	0.13	100% of amounts due
3	Unallocated	1.31	
	Total	5.00	

*Exclusive of taxes and duties imposed within the territory of the Borrower.

ADB = Asian Development Bank.

Source: Asian Development Bank estimates.

C. Detailed Cost Estimates by Expenditure Category and Financier

Table 5: Detailed Cost Estimates by Expenditure Category and Financier
(\$ million)

Item	ADB		Government		Total Cost	
	Amount	% of Cost Category	Amount	% of Cost Category	Amount	Taxes and Duties
A. Consulting services						
1. Consultancy Services	3.17	92%	0.28	8%	3.45	0.28
Subtotal (A)	3.17	92%	0.28	8%	3.45	0.28
B. Recurrent Cost						
1. Capacity building	0.39	86%	0.07	14%	0.46	0.06
2. Management Cost	0.00	0%	1.47	100%	1.47	0.06
Subtotal (B)	0.39	20%	1.53	80%	1.93	0.12
Total Base Cost (A+B)	3.56	66%	1.81	34%	5.37	0.40
C. Contingencies	1.31	67%	0.58	31%	1.89	0.07
D. Financial Charges During Implementation	0.13	100%	0.00	0%	0.13	0.00
Total Project Cost (A+B+C+D)	5.00	68%	2.39	32%	7.39	0.53
% Total Project Cost		68.0%		32.0%	100%	

ADB = Asian Development Bank

Note: Numbers may not sum precisely because of rounding.

Sources: Asian Development Bank and Water and Power Development Authority estimates.

D. Detailed Cost Estimates by Year

Table 6: Detailed Cost Estimates by Year
(\$ million)

Item	Total Cost	2023	2024	2025
A. Consulting Services				
1. Consultancy Services	3.45	0.54	1.73	1.17
Subtotal (A)	3.45	0.54	1.73	1.17
B. Recurrent Cost				
1. Capacity Building	0.46	0.07	0.23	0.16
2. Management Cost	1.47	0.24	0.74	0.49
Subtotal (B)	1.93	0.31	0.97	0.65
Total Base Cost	5.37	0.85	2.70	1.83
C. Contingencies (C)	1.89	0.23	0.91	0.75
1. Physical Contingency	1.03	0.16	0.52	0.35
2. Price Contingency	0.86	0.07	0.39	0.39
D. Financial Charges During Implementation (D)	0.13	0.01	0.04	0.08
Total Project Cost (A+B+C+D)	7.39	1.09	3.65	2.65
% Total Project Cost	100%	15%	49%	36%

Note: Numbers may not sum precisely because of rounding.

Sources: Asian Development Bank and Water and Power Development Authority estimates.

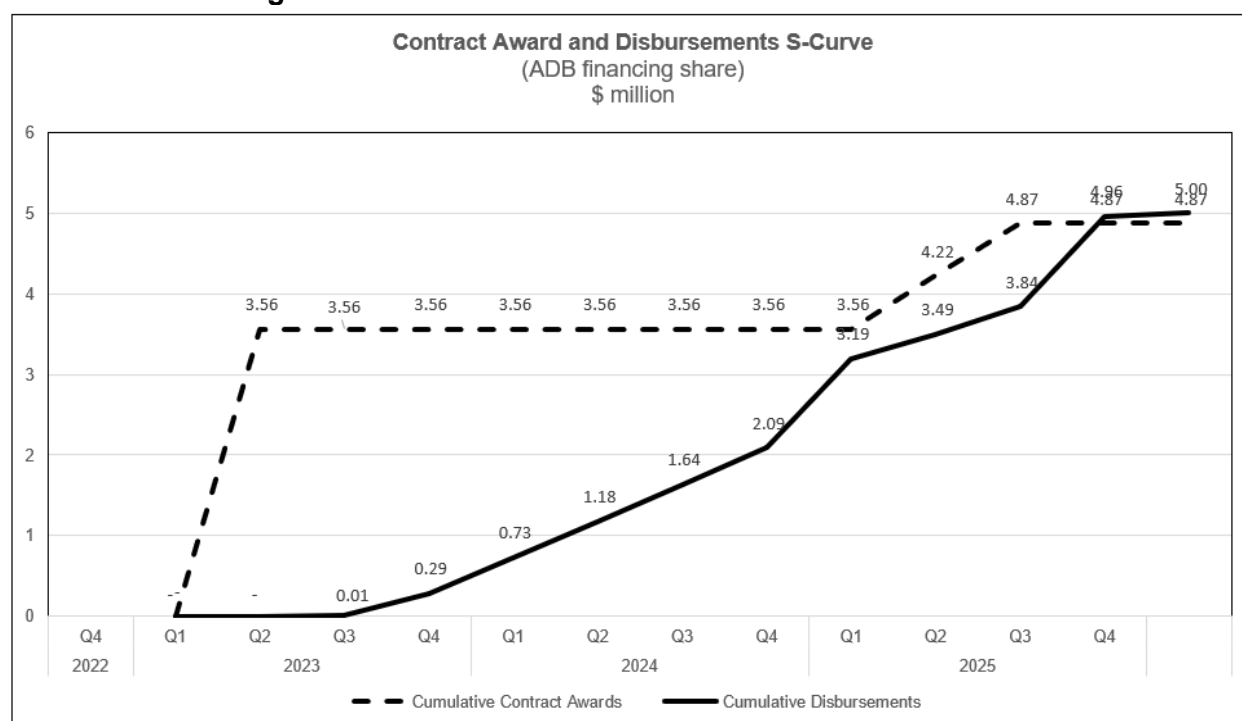
E. Contract and Disbursement S-Curve

Table 7: Contract Awards and Disbursements
(\$ million)

	Contract Awards					Disbursements				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2022	-	-	-	-	-	-	-	-	-	-
2023	3.56	0.00	0.00	0.00	3.56	0.00	0.01	0.28	0.44	0.73
2024	0.00	0.00	0.00	0.00	0.00	0.45	0.47	0.45	1.10	2.46
2025	0.66	0.66	-	-	1.31	0.30	0.34	1.12	0.04	1.81
	Total Contract Awards				4.87	Total Disbursement				5.00

Source: Asian Development Bank estimates.

Figure 3: Contract Awards and Disbursements S-Curve



Source: Asian Development Bank estimates.

IV. FINANCIAL MANAGEMENT

A. Financial Management Assessment

5. The financial management assessment (FMA) was conducted following Asian Development Bank (ADB)'s Technical Guidance Note on Financial Management Assessment, 2015. Under this PRF, only WAPDA, the executing agency, will manage financial transactions and is included in the fund flow. The role of the implementing agencies is limited to coordination and technical inputs. As the implementing agencies will not be involved in financial transactions, the PRF does not require an FMA on the implementing agencies at this stage. A detailed FMA on the implementing agencies will be conducted during the project processing stage of the ensuing loan. The FMA was undertaken in two stages. First at the country level to understand Pakistan's financial accountability systems, governance policies and accounting and auditing policies and procedures. The second stage assessed the financial management capability and adequacy at the project level mainly focusing on the financial management capacity and adequacy of WAPDA. As the executing agency of the project will manage project financial transactions and financial reporting, a detailed FMA was carried out, including a financial management action plan (FMAP) which was agreed with WAPDA.

6. WAPDA has considerable experience in executing externally funded projects of multilateral organizations such as World Bank and United States Agency for International Development. It has recently taken the role of an executing agency for a recent ADB PRF approved in November 2021 and is new to ADB's policies, procedures, and project implementation guidelines. The mitigation measure under the FMAP of the recently approved Kurram Tangi PRF includes hiring and training of additional staff to build capacity and knowledge to implement ADB's loan. For this PRF, a project management unit (PMU) was set up at WAPDA, general manager South branch and the staff will be trained in ADB's financial management requirements and guidelines. WAPDA has adequate capacity to manage and administer advance funds and the statement of expenditures (SOE) procedures and has deployed a customized enterprise resource planning software which covers financial reporting and inventory management. External auditors have highlighted recurring issues of ineffective internal control system, overpayment to contractors, non-recovery of liquidated charges, and abnormal delay in completion of projects. The FMA conducted on WAPDA in November 2021 assessed the pre-mitigation financial management risk of the entity as 'moderate'.

7. GOB's role is limited to that of coordination, providing data and information to consultants and participating in project management committee meetings. A detailed FMA will be carried out during project processing of the ensuing loan. The FMA of GOB conducted in 2018 identified key weaknesses such as non-existent internal audit function, manual accounting systems and inadequate staffing. The pre-mitigation financial management risk of the entity was assessed in November 2021 as 'substantial'. As the PRF does not require FMA on GOB because of its limited role, the financial management risk of GOB will be taken into consideration while assessing the overall pre-mitigation financial management risk of the ensuing loan.

8. The overall pre-mitigation financial management risk rating also considers the country's public financial management risks as well as the sector risks that may lead to non-achievement or sub-optimal achievement of the project outcomes and/or outputs. ADB's Country Partnership Strategy (CPS) for Pakistan has repeatedly identified issues such as inadequate corporate governance of Public Sector Enterprises (PSEs) and vulnerability to corruption. CPS for Pakistan 2021-2025 noted poor budget planning practices, energy sector constraints, and inadequate

public financial system.¹ The CPS further states that Pakistan is ranked low on political stability and government effectiveness. This will be further aggravated considering the ongoing political uncertainty thereby directly affecting public financial management and quality and timeliness of audit reports of WAPDA. According to the latest publicly available Public Expenditure and Financial Accountability (PEFA) report for Pakistan, the inherent risk at national level is substantial because of ineffective internal audit, lack of transparency in procurement, and timeliness of reconciliations and payments. The PEFA report on Balochistan published in 2017 reported the risk as 'High' in most of its evaluation pillars, such as transparency of public finances, external audit, fiscal risk management, and management of assets and liabilities. Considering the inadequate Project Financial Management (PFM) country systems and the looming political uncertainty under which WAPDA will operate, the overall pre-mitigation financial management risk for the PRF is identified as '**substantial**'.

Table 8: Financial Management, Internal Control and Risk Assessment

Risk	Risk rating*	Remarks/Risk Mitigation Measures
Inherent Risk		
Country-specific Risks	S	Ongoing political instability and economic uncertainty coupled with slow pace of PFM reforms will be mitigated by vigilant and continuous oversight of the PRF activities by ADB staff. Renewal of IMF program will spur economic activity. WAPDA shall ensure that its annual budget for the project is allocated and made available during the fiscal year.
Entity-specific Risks	M	WAPDA has been appointed as the executing agency for the recently approved Kurram Tangi PRF. WAPDA also has experience in implementing externally funded projects specifically large- and medium-sized dams and hydropower plants including Tarbela, Dasu, and Ghazi-Barotha.
Project-specific Risks	M	As an action item under the FMAP training is yet to be conducted on ADB procedures, frequent risk reassessments and timely project progress reporting will be undertaken. Security in the project area may be a concern. Adequate security measures and their costs should be embedded in the project.
Overall Inherent Risk	S	
Control Risk		
Experience of managing externally financed projects	M	WAPDA has experience in executing externally financed projects funded by the World Bank, USAID, KfW and other multilateral donor agencies. A new PMU will be set up under WAPDA's GM South branch to undertake project implementation.
Fund Flow Mechanisms	L	A rule-based mechanism for fund flow is available and governed under the rules of the Ministry of Finance. Advance Account, Reimbursement (Statement of Expenditures procedure) and Direct Payment can be suitably used by WAPDA.
Organization and Staffing	L	There will be two accounting staff and an accounting

¹ ADB. 2021. [Country Partnership Strategy Pakistan. Manila.](#)

Risk	Risk rating*	Remarks/Risk Mitigation Measures
		clerk under the new PMU, the staff is sufficient in number and well-qualified to manage the project. The staff is deployed from WAPDA's head office on a permanent basis.
Accounting Policies and Procedures	M	Accounting standards and practices are based on IPSAS which are following International Accounting Standards. The entity follows IFRS.
Payments	M	All payments are governed under the Government of Pakistan's Financial Rules and WAPDA's financial manuals. Payments are verified by the concerned department head and pre-audited.
Cash and Bank	M	WAPDA will have separate bank accounts for the project that would be operated jointly with dual signatories along with up-to-date cashbooks and bank reconciliations.
Safeguard Over Assets	M	Physical verification and stock take is carried out on a periodical basis.
Internal Audit	M	WAPDA has an independent Internal Audit division which provides assurance to the Authority on a wide range of internal control related matters through review of financial and operational accounts of WAPDA formations across the country.
Information Systems	M	WAPDA's tailor-made computerized accounting ERP software and Excel-based accounting ledgers are sufficient. The software can record financial transactions, has access controls, and can generate reports such as trial balances for financial reporting. Manual and guidelines to use the software are made available to the staff in addition to the mandatory training.
Overall Control Risk	M	
Overall (Combined) Risk	S	

* H = High, S = Substantial, M = Moderate, L = Low

ADB = Asian Development Bank, ERP = enterprise resource planning, FMAP = Financial Management Action Plan, GM = General Manager, IFRS = International Financial Reporting Standards, IMF = International Monetary Fund, IPSAS = International Public Sector Accounting Standards, KfW = German Development Bank, PFM = public financial management, PMU = project management unit, PRF = project readiness financing, WAPDA = Water and Power Development Authority, USAID = United States Agency for International Development.

Table 9: Financial Management Action Plan

No.	Risk	Action	Responsibility	Target Date
1	Accounting and finance staff may be unfamiliar with ADB's financial reporting requirements.	Provide training on ADB's financial management requirements and disbursement procedures.	WAPDA and ADB	Within 3 months after PRF loan effectiveness
2	Delayed submission of APFS leading to non-compliance with ADB financial management requirements	Build awareness of ADB's mandatory requirement of preparation of project financial statements, ensuring submission of audited project financial statements within six months of fiscal year end.	WAPDA and ADB	First APFS to be submitted within 6 months after end of Fiscal Year.

ADB = Asian Development Bank, APFS = audited project financial statements, PRF = project readiness financing, WAPDA = Water and Power Development Authority.

B. Disbursement

9. WAPDA will disburse the project readiness loan proceeds following ADB's *Loan Disbursement Handbook* (2017, as amended from time to time), and detailed arrangements agreed between the government and ADB. Online training for project staff on disbursement policies and procedures is available.² Project staff are encouraged to avail of this training to help ensure efficient disbursement and fiduciary control. The types of disbursement procedures to be utilized under the PRF are direct payment, advance fund, and reimbursement procedure.

10. **Advance account.** An advance account will be established at the National Bank of Pakistan for receipt of funds from ADB. The currency of the advance account is United States dollar. The account is to be used exclusively for ADB's share of eligible expenditures. WAPDA will administer the advance account and be responsible for the proper use of the advance account. WAPDA has adequate capacity to manage and administer advance funds and the statement of expenditure (SOE) procedures. Majority of large transactions representing 90% of estimated disbursement transactions will be made through direct payments, while 10% of small payments will be using the advance account. Considering WAPDA's financial management arrangements which is adequate, the advance fund limit is set at the advance equivalent of 6 months' forecast of contracts to be awarded or 10% of the loan amount, whichever is lower.

11. **Statement of expenditure procedure.** WAPDA may use the SOE procedure for reimbursement of eligible expenditures or liquidation of advances to the advance accounts.³ The ceiling of the SOE procedure is the equivalent of \$100,000 per individual payment. Supporting documents and records for expenditures claimed under the SOE should be maintained and made readily available for review by ADB's disbursement and review missions, upon ADB's request for submission of supporting documents on a sampling basis and for independent audit. Reimbursement and liquidation of individual payments more than the SOE ceiling should be supported by full documentation when submitting the withdrawal application to ADB.

12. Before submitting the first withdrawal application, the government should submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the government, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is stipulated in ADB's *Loan Disbursement Handbook*. Individual payments below such amount should be paid by WAPDA and subsequently claimed from ADB through reimbursement unless otherwise accepted by ADB. The borrower should ensure sufficient category and contract balances before requesting disbursements. Use of ADB's Client Portal for Disbursements system is encouraged for submission of withdrawal applications to ADB.⁴

13. No further disbursements will be made from the PRF account upon refinancing under an ensuing or ongoing loan. The PRF loan amount and accrued financing charges are paid out under the PRF cost category of the ensuing or ongoing loan that will refinance the PRF loan. Provided

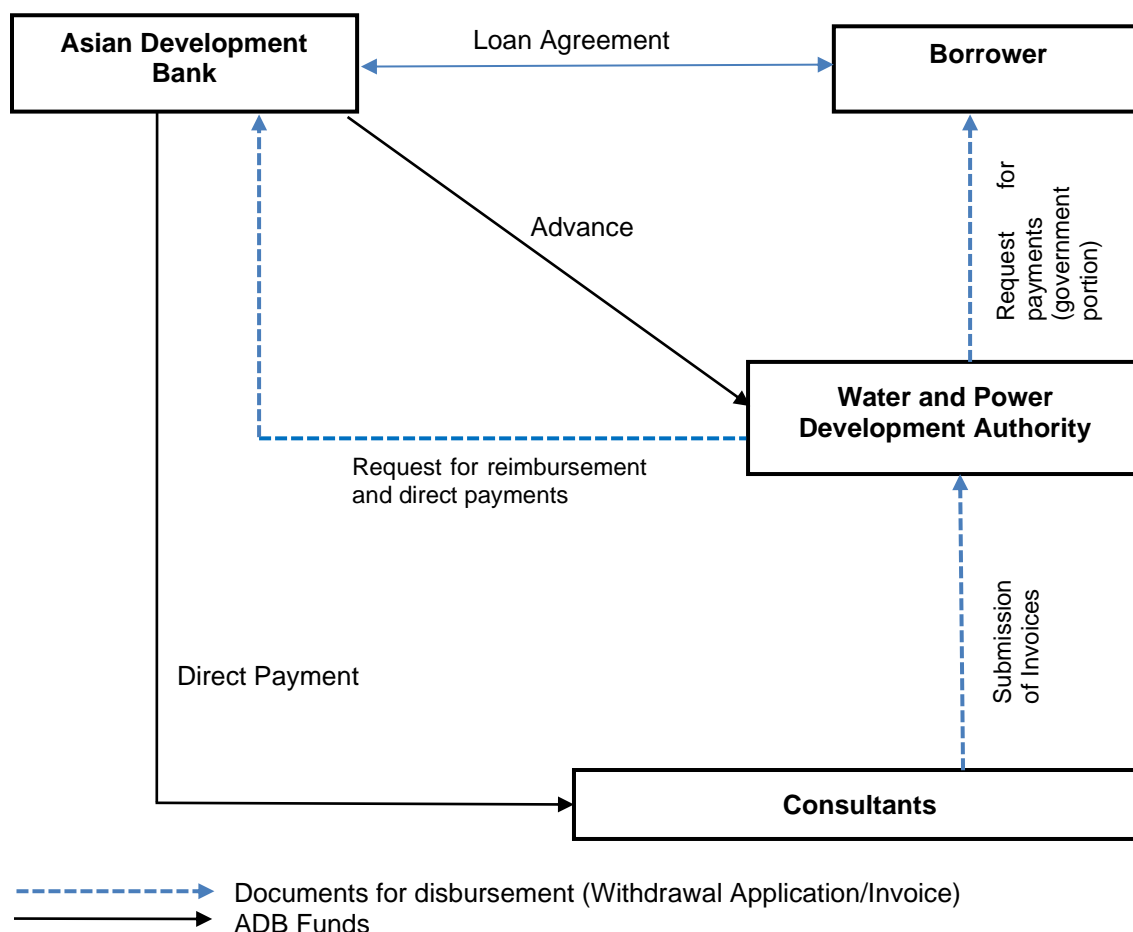
² Disbursement eLearning. http://wpqr4.adb.org/disbursement_elearning.

³ SOE forms are available in Appendix 7B of ADB's *Loan Disbursement Handbook* (2017, as amended from time to time).

⁴ ADB's Client Portal for Disbursements system facilitates online submission of withdrawal applications to ADB, resulting in faster disbursement. The forms to be completed by the borrower are available at ADB. [Guide to the Client Portal for Disbursements](#).

the following costs are eligible expenditures, the ensuing or ongoing loan will finance (i) costs incurred under PRF that have not yet been paid from the PRF account by the refinancing date; (ii) costs for activities initiated under PRF and continuing beyond the refinancing date; and (iii) costs incurred during PRF implementation but ineligible under PRF.

Figure 4. Fund Flow Diagram



Notes: A local NGO, Balochistan Rural Support Program, (BRSP) will be paid by WAPDA.

Source: Asian Development Bank.

C. Accounting

14. WAPDA will maintain separate PRF project accounts and records by funding source for all expenditures incurred on the PRF project, following cash basis of accounting. PRF project accounts will follow the International Public Sector Accounting Standards (IPSAS) cash-based accounting or equivalent national standards.⁵

D. Auditing and Public Disclosure

⁵ International Public Sector Accounting Standards (IPSAS) are issued by the International Public Sector Accounting Standards Board (IPSASB).

15. WAPDA will cause the detailed project financial statements to be audited following the practices of the International Organization for Supreme Audit Institutions (ISSAI) or by an independent auditor acceptable to ADB.⁶ WAPDA will present the audited project financial statements together with the auditor's opinion, in English, to ADB within 6 months from the end of the fiscal year.

16. The audit report for the project financial statements will include a management letter and auditor's opinions, which cover (i) whether the project financial statements present an accurate and fair view or are presented fairly, in all material respects, following the applicable financial reporting standards; and (ii) whether the proceeds of the loan were used only for the purposes of the project.

17. WAPDA will monitor compliance with financial reporting and auditing requirements during review missions and normal program supervision and will follow up regularly with all concerned, including the external auditor.

18. ADB has made the government and WAPDA aware of ADB's approach to delayed submission and the requirements for satisfactory and acceptable quality of the audited project financial statements.⁷ ADB reserves the right to require a change in the auditor (in a manner consistent with the constitution of the borrower) or for additional support to be provided to the auditor, if the audits required are not conducted in a manner satisfactory to ADB or if the audits are substantially delayed. ADB reserves the right to verify the project's financial accounts to confirm that its policies and procedures were followed when the share of ADB's financing was used.

19. ADB's Access to Information Policy will guide the public disclosure of the audited project financial statements, including the auditor's opinion on the project financial statements. After the review, ADB will disclose the audited project financial statements and the opinion of the auditors on the project financial statements no later than 14 days of ADB's confirmation of their acceptability by posting them on its website. The management letter and additional auditor's opinions will not be disclosed.⁸

V. PROCUREMENT AND CONSULTING SERVICES

A. Advance Contracting and Retroactive Financing

20. Advance contracting will be undertaken in conformity with ADB Procurement Policy (2017,

⁶ Third-party audits for public sector agencies in Pakistan are generally conducted by the Auditor General of Pakistan, which is acceptable to ADB.

⁷ ADB's approach and procedures regarding delayed submission of audited project financial statements:

- (i) When ADB does not receive the audited project financial statements by the due date, ADB will write to the executing agency to inform it that (a) the audit documents are overdue; and (b) if they are not received within the next 6 months, requests for new contract awards and disbursement such as new replenishment of advance accounts, processing of new reimbursement, and issuance of new commitment letters will not be processed.
- (ii) When ADB does not receive the audited project financial statements within 6 months after the due date, ADB will withhold processing of requests for new contract awards and disbursement such as new replenishment of advance accounts, processing of new reimbursement, and issuance of new commitment letters. ADB will inform the executing agency (a) of ADB's actions and (b) that the loan may be suspended if the audit documents are not received within the next 6 months.
- (iii) When ADB does not receive the audited project financial statements within 12 months after the due date, ADB may suspend the loan.

⁸ ADB. 2018. [Access to Information Policy](#). Manila. pp. 23–24, paras. 97(iv) and/or 97(v). This type of information would generally fall under access to information policy exceptions to disclosure.

as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time) and its procurement staff instructions and project administration instructions. The issuance of consulting service recruitment notices under advance contracting and retroactive financing will be subject to ADB approval. ADB has advised the borrower and WAPDA that approval of advance contracting and retroactive financing does not commit ADB to finance the PRF.

21. **Advance contracting.** Advance contracting will be used for all consulting service packages.

22. **Retroactive financing.** Retroactive financing will be used under the PRF for CS-03 for the stakeholder's engagements and social mobilization for inclusive, community centered and gender-based project design. Expenditures that are incurred prior to loan effective date but generally no earlier than 12 months before signing the loan agreement can be financed under retroactive financing. A period longer than 12 months may be allowed if justification is provided. The retroactive financing amount is up to 20% of the total ADB loan amount.

B. Procurement of Consulting Services

23. WAPDA will recruit all consultants following ADB Procurement Policy and Procurement Regulations for ADB Borrowers. Procurement method for each package was discussed and agreed with WAPDA as part of strategic procurement planning. Value for Money will be achieved by using open competition and other appropriate selection method, i.e., single-source selection for engagement of a nongovernment organization (NGO), allocating sufficient qualified staff at the PMU, support from the central contracts cell of WAPDA, and support through ADB staff and TA consultant to the executing agency to enhance procurement readiness and contract management.

24. An estimated 318 person-months of consulting services are required to conduct review and update detailed design of dam, spillway, power houses, tunnels, intakes, irrigation canals and structures, and command area and agriculture development.⁹ This will also include support for surveys, studies, geological and hydrological investigations, climate risk and vulnerability assessment, community participation strategy, and other necessary assessments for updating the existing detailed engineering design. Climate resilience measures, innovative solutions using digital technologies, modernized irrigation methods, and climate smart agriculture practices will be incorporated in the detailed design. The consultants will update the land acquisition and resettlement plan, social impact assessment, environment impact assessment, financial and economic analysis, and gender analysis and gender action plan. The consultant will prepare a procurement strategy for the ensuing project and provide procurement support to implementing agencies. The consultants will also conduct strategic procurement planning, prepare draft bidding documents, independently review and advise the executing and implementing agencies on project preparatory work, and strengthen the institutional capacity of the executing agency. The consulting firm will be engaged using the quality- and cost-based selection method with a quality-cost ratio of 90:10 and full technical proposal. Time based contract shall be used. The consulting firm that will be engaged for the PRF may be engaged using single-source selection (SSS) method for providing construction supervision services of the ensuing project, at the request of the executing/implementing agency, subject to the satisfactory performance of the firm.

⁹ For construction supervision, an estimated 1,033 person -months of consulting services are required to supervise the construction of the main works and command area development works, manufacturing supply and installation of mechanical / electrical equipment, testing and commissioning of evaluation & monitoring equipment in accordance with the specifications and drawings and to coordinate and manage contracts.

25. An international panel of experts (POE) on dam safety (estimated 9 person-months) will be engaged through individual consultant selection method during the review and update of the engineering design.

26. A local NGO, Balochistan Rural Support Program (BRSP)¹⁰ will be engaged using SSS method for stakeholder engagement and community mobilization for inclusive community and gender-based project design. BRSP is an experienced local NGO in areas of gender mainstreaming, livelihood development, natural resource management, social development, and mobilization. The SSS method will be applied because (i) the assignment of social mobilization necessitates a group of experts who have extensive experience in outreaching to vulnerable population in rural areas, (ii) BRSP can bring requisite experience, (iii) BRSP is the only province-wide NGO with presence in the project area and across local communities in the province, (iv) it currently implements programs in the project area and maintains community database; (v) BRSP is a member of a larger network of Rural Support Programs in Pakistan, and (v) engagement of the BRSP through SSS and its timely mobilization will help the PRF consultants in integrating an agriculture development and irrigation management plan into an infrastructure development plan. This package will also facilitate ADB's due diligence activities through access to information and surveys on all beneficiaries, including women and vulnerable households ensuring inclusive project design.

C. Procurement Plan

27. The procurement plan is prepared and given below.

Basic Data	
Project Name: PRF for Naulong Integrated Water Resources Development Project	
Project Number: 51131-003	Approval Number:
Country: Pakistan	Executing Agency: Water and Power Development Authority (WAPDA)
Project Procurement Classification: Substantial	Implementing Agency: Departments of Irrigation and Agriculture and Cooperative of Balochistan, and WAPDA
Procurement Risk: Medium	
Project Financing Amount: \$7.39 million ADB Financing: \$5.00 million Government Financing: \$2.39 million	Loan Closing Date: 31 December 2025
Date of First Procurement Plan:	Date of this Procurement Plan:
Procurement Plan Duration: 18 months	Related to COVID-19 response efforts: No
Advance contracting: Yes	Use of e-Procurement (e-GP): No

a. Methods, Review and Procurement Plan

28. Except as ADB may otherwise agree, the following prior or post review requirements apply to various procurement and consultant recruitment methods used.

Procurement of Goods and Works	
Method	Comments
Request For Quotation for Goods	Goods such as office equipment or survey benchmarks will be included in the consulting services contract and procured by the consulting firm

¹⁰ Information on BRSP can be found on <https://brsp.org.pk>.

Consulting Services	
Method	Comments
Quality- and Cost-Based Selection for Consulting Firm	Quality-Cost Ratio: 90:10 Prior review Open competitive bidding, international
Individual Consultant Selection	Prior review
Single-Source Selection	Prior review

b. List of Active Procurement Packages (Contracts)

29. The following table lists goods, works, non-consulting and consulting services contracts for which the procurement activity is either ongoing or expected to commence within the procurement plan duration.

Goods and Works							
Package Number	General Description	Estimated Value (in \$)	Procurement Method	Review	Bidding Procedure	Advertisement Date (quarter/year)	Comments

Consulting Services							
Package Number	General Description	Estimated Value (in \$)	Selection Method	Review	Type of Proposal	Advertisement Date (quarter/year)	Comments
CS-01	Review and update of detailed design, preparation of procurement documents, and update of safeguards documents	3,141,676	QCBS	Prior	FTP	Q3 / 2022	Non-Consulting Services: No Type: Firm Assignment: International Quality-Cost Ratio: 90:10 Advance Contracting: Yes Covid-19 Response? No
CS-02 Dam	Dam specialist - dam safety panel	58,824	ICS	Prior		Q4 / 2022	Non-Consulting Services: No Type: Individual Assignment: International Expertise: Dam engineering/geo technical specialist Advance Contracting: Yes Covid-19 Response? No
CS-02 Hydrology	Hydrology and	58,824	ICS	Prior		Q4 / 2022	Non-Consulting Services: No

	Hydraulic specialist - dam safety panel						Type: Individual Assignment: International Expertise: Hydrology, Hydraulic structure specialist Advance Contracting: Yes Covid-19 Response? No
CS-02 Giotech	Geotechnical specialist - dam safety panel	58,824	ICS	Prior		Q4 / 2022	Non-Consulting Services: No Type: Individual Assignment: International Expertise: Geology Advance Contracting: Yes Covid-19 Response? No
CS-02 Mechanical	Hydro electrical and mechanical specialist - dam safety panel	58,824	ICS	Prior		Q4 / 2022	Non-Consulting Services: No Type: Individual Assignment: International Expertise: Electro and mechanical engineering Advance Contracting: Yes Covid-19 Response? No
CS-03	Stakeholders engagement and social mobilization	306,460	SSS	Prior	STP	Q3/2022	Non-Consulting Services: No Type: Firm Assignment: National RFP to be used Advance Contracting: Yes Covid-19 Response? No

c. List of Indicative Packages (Contracts) Required Under the Project

30. The following table lists goods, works, non-consulting and consulting services contracts for which procurement activity is expected to commence beyond the procurement plan duration and over the life of the project (i.e., those expected beyond the current procurement plan duration).

Goods and Works						
Package Number	General Description	Estimated Value (in \$)	Procurement Method	Review	Bidding Procedure	Comments
None						

Consulting Services						
Package Number	General Description	Estimated Value (in \$)	Selection Method	Review	Type of Proposal	Comments
None						

D. Consultant's Terms of Reference

31. The detailed terms of reference (TOR) for reviewing and updating detailed design (package CS-01) are in Annex 3. The TOR for the dam safety panel is in Annex 4. The TOR for the Stakeholders engagement and social mobilization are in Annex 5.

VI. SAFEGUARDS

32. **Environmental Safeguards.** The ensuing project is likely to be categorized A for environmental safeguards as it may have significant, unprecedented, and irreversible impacts. Hence, the existing environmental impact assessment (EIA) for the Naulong Dam, which was prepared by WAPDA-hired consultant (Pakistan Engineering Services Ltd.), will be updated. Separate environmental assessment studies for various project components including powerhouses, irrigation canals, roads, and transmission lines will also be prepared by the PRF consultants. These components may need initial environment examinations (IEEs), instead of EIA. Requirements for each package will be assessed during the PRF. A TOR scoping report will be prepared prior to updating/preparing the EIA and IEE for various project components. This study will provide the methodology for any additional baseline surveys, impact assessment, stakeholder engagement, and other project details. Detailed activities related to environmental safeguards are provided in the Environmental and Social Safeguards Strategy.¹¹

33. **Involuntary resettlement.** The ensuing investment project is likely to be categorized A. The construction of a dam, associated structures, irrigation canals and other structures, and inundation by a dam reservoir will involve considerable land acquisition and resettlement. Initial assessments indicate that about 1,548 ha of productive land will be acquired and 31 households physically displaced with preliminary assessment indicating 96 households to be severely affected. The existing land acquisition and resettlement plan (LARP), which was prepared by WAPDA-hired consultant (Pakistan Engineering Services Ltd.), will be substantially updated under the PRF. A comprehensive socioeconomic survey will be undertaken to determine the livelihood patterns of the affected people and to understand the full extent of the impacts. Resettlement planning will require extensive and iterative consultations with affected people to inform appropriate and adequate resettlement and livelihood restoration planning. In addition to

¹¹ Environmental and Social Safeguards (supplementary document of Project Readiness Financing Report and accessible from its list of linked documents).

private landowners, particular attention will be paid to tenant farmers and informal land users, who are considered potentially vulnerable and subject to disproportionate impacts.

34. **Indigenous people.** The PRF will undertake an indigenous people's assessment as part of project preparation to inform the appropriate indigenous people's categorization of the ensuing project as well as associated impacts and approaches to mitigate risks and enhance project benefits.

35. **Prohibited investment activities.** Pursuant to ADB's Safeguard Policy Statement (2009), ADB funds may not be applied to the activities described on ADB Prohibited Investment Activities List set forth in Appendix 5 of the Safeguard Policy Statement.

36. **Social, Poverty and Gender.** With increased access to water and livelihood opportunities, the project is expected to have significant socioeconomic benefits for the local communities including women and vulnerable groups. According to ADB's gender mainstreaming policy guidelines, the project is categorized as "Effective Gender Mainstreaming" (EGM) with a potential to be upgraded to "Gender Equity Theme" (GEN) category. The PRF will undertake a Social Impact Assessment (SIA) including a gender assessment of the project area which will inform the scope and design of the social and gender development plan. The key focus of the social and gender development plan will be to: (i) improve households and women's access to irrigation water for agriculture and domestic needs, (ii) improve skills of women in on-farm and off-farm economic activities, and (iii) enhance capacities of the executing and implementing agencies in gender mainstreaming in the agriculture sector.

VII. PERFORMANCE MONITORING

A. Monitoring

37. **Project readiness financing project performance monitoring.** WAPDA will monitor PRF project performance semiannually and provide consolidated reports to ADB. These reports will include (i) each activity's progress measured against the implementation schedule, (ii) key implementation issues and solutions, (iii) an updated procurement plan, and (iv) an updated implementation plan for the next 12 months. To ensure PRF projects continue to be both viable and sustainable, WAPDA will review PRF's project financial statements and the associated auditor's report. If an ensuing loan is not approved, WAPDA will submit a PRF project completion report to ADB within 6 months of physical completion of the PRF project.¹²

38. **Compliance monitoring.** ADB and WAPDA will monitor compliance with the covenants on policy, legal, financial, environmental, and others through semiannual and annual reports and during project administration missions, including review, midterm, and completion missions.

B. Reporting

39. WAPDA will provide ADB with:

- (i) semiannual progress reports on the PRF project in a format consistent with ADB's project performance reporting system;
- (ii) consolidated annual reports, including (a) progress achieved by output measured against the performance targets, (b) key implementation issues and solutions,

¹² ADB. 2018. [Project Completion Report for Sovereign Operations](#). *Project Administration Instructions*. PAI 6.07A. Manila.

- (c) an updated procurement plan, and (d) an updated implementation plan for the next 12 months;¹³
- (iii) completion report; and
- (iv) PRF project accounts, WAPDA's audited financial statements, and the associated auditor's report.

VIII. ANTICORRUPTION POLICY

40. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy (1998, as amended to date) relating to the PRF project following ADB's Integrity Principles and Guidelines.¹⁴ All contracts financed by ADB will include provisions specifying ADB's right to audit and examine the records and accounts of the executing agency and all PRF project contractors, suppliers, consultants, and other service providers. This includes the examination of project outputs, assets, and all other information that may be considered relevant for audit or inspection by ADB regardless of project completion, termination, or cancellation. Firms or individuals on ADB's anticorruption debarment list are ineligible to participate in activities that are financed, supported, or administered by ADB; and may not be awarded any contracts under the PRF project.¹⁵

41. To support these efforts, ADB included relevant provisions in the loan agreement and the bidding documents for the PRF project. The consulting firm(s) will assess the capacity of the WAPDA, the Balochistan Irrigation Department, and the Balochistan Agriculture and Cooperative Department and develop procurement strategy for the ensuing project and highlight the procurement risks and propose mitigation action. In addition, governance risks and specific mitigation measures will be implemented under the PRF and ensuing projects to mitigate the risks, as recommended by ADB's Second Governance and Anticorruption Action Plan.¹⁶ The project consultants will put in place probity guidelines that will apply to all parties involved in the PRF project, based on ADB anticorruption guidelines and any anticorruption laws and regulations that pertain to the project.

IX. ACCOUNTABILITY MECHANISM

42. People who are, or may in the future be, adversely affected by the PRF project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted PRF project can voice and seek a resolution for their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make an effort in good faith to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.¹⁷

¹³ The regional departments will present the performance of the completed PRF in the project completion report of the ensuing loan.

¹⁴ ADB. 2015. [Integrity Principles and Guidelines \(2015\)](#). Manila.

¹⁵ ADB. [Anticorruption and Integrity](#).

¹⁶ ADB. 2006. [Second Governance and Anticorruption Action Plan \(GACAP II\)](#). Manila; ADB. 2008. [Guidelines for Implementing ADB's Second Governance and Anticorruption Action Plan \(GACAP II\)](#). Manila; and ADB. 2008. [Sourcebook: Diagnostics to Assist Preparation of Governance Risk Assessments](#). Manila (draft).

¹⁷ ADB. [Accountability Mechanism](#).

X. RECORD OF CHANGES TO THE PROJECT ADMINISTRATION MANUAL

43. All revisions and/or updates during implementation should be retained in this Section to provide a chronological history of changes to implemented arrangements recorded in the PAM.

Composition and Terms of Reference for Project Management Committees

1. **Background:** The Ministry of Water Resources, Water and Power Development Authority (WAPDA), Government of Balochistan (GOB), and the Asian Development Bank (ADB) agreed to have multi-tier and multi-function project management committees for the Naulong Integrated Water Resources Development Project. WAPDA will ensure the project is co-executed with Agriculture and cooperative and Irrigation departments. The committees' draft terms of reference are presented below for government review before formal notification. Likewise, the composition of the committees is indicative and may change as required.

2. **Project Steering Committee:** The following are key terms of reference (TORs) of the committee:

- a. oversee overall planning and preparatory work for the ensuing project linked with the feasibility studies and detailed engineering design implementation;
- b. ensure federal and provincial coordination and inter-provincial coordination is maintained during the project preparatory work;
- c. advise PC-1 revision or modification for the ensuing project if required;
- d. monitor the progress and ensure adopted phased approach remains on track with the overall timeline agreed between government and ADB;
- e. ensure working and coordination committees meet monthly basis in view of the stringent timelines, providing summary of proceedings of their meetings, decisions taken and guidance required to the members of the Project Steering Committee;
- f. suggest solutions to issues brought for the decision of the committee and provide guidance for the overall improvement and innovation in the project;
- g. meet at least twice a year or more as needed;
- h. the Project Management Unit (PMU), WAPDA will serve as secretariat to the committee and prepare and circulate the agenda, working paper, and minutes of the proceedings; and
- i. the following composition is proposed:
 - Secretary, Ministry of Water Resources of the Government of Pakistan (Chair)
 - Additional Chief Secretary, Planning and Development Department GOB (Member)
 - Senior Member Board of Revenue, GOB Member
 - Secretary Irrigation department, GOB Member
 - Secretary Agriculture department GOB Member
 - Member (Water) WAPDA Member
 - Deputy Commissioner, Jhal Magsi Member
 - Representative of PD&SI division Member
 - Project Director Naulong Dam Member
 - *Other members or co-opted members as suggested*

3. **Project Working Committee:** The following are key TORs of the committee:

- a. review the technical, economic, financial, sustainability, social and environmental safeguards, operation and maintenance, institutions, and other related matters of feasibility studies, detail engineering design and overall planning for the ensuing project;
- b. attend walk-through meetings of feasibility and detailed design consultants about their

- deliverables and recommend improvements;
- c. each member of the committee will act as focal person ensuring departmental representation to all matters considered under the purview of committee;
 - d. provide advice to project steering committee and share proceedings of the meetings;
 - e. monitor the progress and ensure adopted phased approach remains on track with the overall timelines agreed between government and ADB;
 - f. suggest solutions to issues brought for the decision of the committee;
 - g. the Project Management Unit, WAPDA will serve as secretariat to the committee and prepare and circulate the agenda, working paper, and minutes of the proceedings;
 - h. meet initially on a monthly basis in view of the agreed stringent timelines; and
 - i. Following composition is proposed:
 - General Manager Projects (South) WAPDA (Chair)
 - Chief Engineer Water West, WAPDA
 - Chief Engineer Irrigation Department (Member)
 - Chief Engineer Energy Department
 - Superintending Engineer Irrigation Department (Member)
 - Relevant district directors of Jhal Magsi, GOB Agriculture department from (i) Agriculture Extension, (ii) On-Farm Water Management, Agriculture, (iii) Agriculture Engineering (Members)
 - Representative of Fisheries, Local Government and Rural Development, Forest and Wildlife, Public Health Engineering.
 - Project Director, WAPDA (Member and Secretary)
 - **Member or co-opted members**
 - Director General, GOB Directorate On-Farm Water Management, Agriculture Department (Member)
 - Director General GOB Directorate of Agriculture Extension (Member)
 - Director General, GOB Directorate of Agriculture Engineering (Member)
 - General Manager Quetta Electric Supply Company
 - Other members or co-opted members as suggested

4. **Project Coordination Committee:** The following are key TORs of the committee:

- a. review and coordinate security arrangements in the project area for the officials of the government, consultants, contractors, ADB staff, and others;
- b. review and coordinate social and environmental safeguards consultations and affected and beneficiary community consultation;
- c. review and coordinate preparation and implementation of land acquisition and resettlement plan, gender plan, project communication strategy for consulting stakeholders;
- d. facilitate provision of revenue record required for land acquisition and resettlement plan and new command area development preparation;
- e. provide advice to project steering committee and share proceedings of the meetings;
- f. monitor the progress and ensure adopted phased approach of the land acquisition and resettlement remains on track with the overall timelines agreed between government and ADB;
- g. suggest solutions to issues brought for the decision of the committee;
- h. the PMU, WAPDA will serve as secretariat to the committee and prepare and circulate the agenda, working paper, and minutes of the proceedings;
- i. meet initially on a monthly basis initially and later more as needed; and

j. Following composition is proposed:

- Deputy Commissioner Jhal Magsi (Chair)
- Representative of Revenue and Estate Department (Member)
- Project Director, WAPDA (Member and Secretary)
- Associated Assistant Commissioners (co-opted members)
- Representatives of the GOB irrigation and agriculture departments (members)
- *Other members or co-opted members as needed*

Terms of Reference for Departmental Focal Persons

The Water and Power Development Authority (WAPDA), Government of Balochistan (GOB) Planning and Development Department (BP&D), Irrigation Department (BID) and Agriculture and Cooperative Department (BACD) will nominate focal persons for the project readiness financing (PRF). The focal persons will be responsible for providing inputs, liaising with the stakeholders, and reviewing consultants' deliverables during the field surveys, investigations, and detailed design. Key tasks of focal persons of each department are listed below.

1. **Water and Power Development Authority (WAPDA)**
 - i. Communicate and liaise with all stakeholders including ADB, PRF consultants, BP&D, BID and BACD (Extension, Engineering, On-farm Water Management), and other GOB departments of Energy, Public Health Engineering, Fisheries, Forest and Wildlife, Local Government and Rural Development;
 - ii. Respond to all queries and provide required information and feedback;
 - iii. Facilitate consultants and GOB provincial departments during field visits and data collection;
 - iv. Facilitate and arrange security clearance and escort to the project area for ADB, consultants and provincial department staff during surveys and investigations (topographic, socioeconomic, environmental, land acquisition and other investigations—geological and geotechnical etc.);
 - v. Organize and facilitate meetings with consultants, local government, and community concerning project activities;
 - vi. Share consultants reports with the concerned GoB departments and WAPDA units concerned for technical quality, social and environmental safeguards, and procurement, and consolidate feedback/comments for sharing with consultants ensuring comments have been incorporated in the consultant's reports;
 - vii. Supervise the consultants' performance and be responsible for overall quality assurance of the consultant's reports; and
 - viii. Support the Project Director office to work as secretariat to the project steering committee, working committees, and coordination committee.

2. **Planning and Development Department (BP&D), Government of Balochistan (GOB)**
 - i. Communicate and liaise with all stakeholders including WAPDA, ADB, and PRF consultants on behalf of the provincial government;
 - ii. Respond to queries from WAPDA and consultants and provide required information and feedback;
 - iii. Facilitate WAPDA, ADB, and consultants for meetings and other activities concerning provincial government;
 - iv. Coordinate with other concerned provincial departments for integration of and consistency in approach towards project objectives and role of provincial government; and
 - v. Provide comments and feedback to consultants on reports and activities.

3. **Irrigation Department, GOB**
 - i. Communicate and liaise with all stakeholders including WAPDA, and PRF consultants;
 - ii. Respond to queries from WAPDA, ADB, and consultants and provide required information and feedback;

- iii. Support consultants in field activities especially topographic surveys, canal alignments, finalization of design criteria and cropping pattern and intensities, river basin and existing irrigation system data etc.;
- iv. Facilitate and organize regular meetings with consultants in the field and with senior management for a holistic and integrated approach to the design of the system;
- v. Supervise the consultants' performance relating to irrigation system design and be responsible for quality assurance of the consultant's reports relating to irrigation system design; and
- vi. Review consultants reports and provide timely comments and feedback.

4. **Agriculture and Cooperative Department, GOB**

The department comprises many directorates like Extension, On-Farm Water Management (OFWM), Engineering and others. The important ones to be involved in the project more frequently include:

a. Extension

- i. Communicate and liaise with all stakeholders including WAPDA, and PRF consultants;
- ii. Respond to queries from WAPDA, ADB, and consultants and provide required information and feedback;
- iii. Advise consultants on the selection of crops and cropping pattern suitable for the climate of the command area;
- iv. Advise consultants on the selection of suitable high value crops—vegetables and fruits—to be introduced in the area for more economic benefits to farmers;
- v. Facilitate and organize regular meetings with consultants and provide feedback during the design phase of the project;
- vi. Supervise the consultants' performance relating to agriculture development and livestock and be responsible for quality assurance of the consultant's reports on these aspects; and
- vii. Review consultants reports and provide timely comments and feedback.

b. On-Farm Water Management (OFWM)

- i. Communicate and liaise with all stakeholders including WAPDA, and PRF consultants;
- ii. Respond to queries from WAPDA, ADB, and consultants and provide required information and feedback;
- iii. Support and advise consultants in the field during surveys, location and alignment of watercourses, and selection of lining and type of structures;
- iv. Advise consultants on the introduction and selection of climate smart agriculture and technologies to be introduced in the command area;
- v. Review consultants reports and provide timely comments and feedback;
- vi. Supervise the consultants' performance relating to command area development and on-farm water management and be responsible for quality assurance of the consultant's reports on these aspects; and
- vii. Facilitate and organize regular meetings with consultants and provide feedback during the design phase of the project.

c. Agriculture Engineering

- i. Communicate and liaise with all stakeholders including WAPDA, and PRF consultants;
- ii. Respond to queries from WAPDA, ADB, and consultants and provide required information and feedback;
- iii. Support and advise consultants in the field during surveys, regarding areas for land leveling and for groundwater development using solar energy;
- iv. Supervise the consultants' performance relating to agriculture development and be responsible for quality assurance of the consultant's reports on agriculture engineering aspect; and
- v. Review consultants reports and provide timely comments and feedback.

Terms of Reference for Review and Update of Detailed Design, Preparation of Procurement Documents, and Update of Safeguards Documents

I. Background

1. Since 1960, Naulong gorge carved by the passage of Mula River has been the focus of planning studies for construction of a storage dam on the river. Originally, the Feasibility Study of the Project was carried out by the Planning and Investment Division of the Water and Power Development Authority (WAPDA) in April 1996. Though PC-I (project approval document) of the Project for its implementation was not approved due to financial constraints, PC-II (detail design request) approved by CDWP in August 2001 triggered the preparation of Project's Detailed Engineering Design (DED) and other related activities. WAPDA hired the services of the Naulong Dam Project Consultants (NDPC) to carry out project planning studies, preparation of detailed engineering design, and tender documents. The Executive Committee of the National Economic Council (ECNEC) approved the original PC-I of Project on 3 September 2009. The original PC-I was revised due to (i) higher bid cost quoted by the lowest bidder in April 2010, (ii) change in operation of mechanism of development of command area, (iii) change in design parameters, and (iv) inclusion of High Efficiency Irrigation System (HEIS). PC-I was approved on 16 August 2012. The third instance of the bidding process was carried out in 2015. The first Revised PC-I was prepared on the basis that rates quoted by the lowest bidder was also not relevant due to high rate of escalation prevalent during the period. Accordingly, the second Revised PC-I was prepared in 2015 and WAPDA was asked to explore avenues of project financing. Meanwhile, WAPDA prepared the updated second Revised PC-I in 2020 and received direction from ECNEC on 26 March 2020 to include command area development works executed by WAPDA, modify the PC-I and negotiate with the Asian Development Bank (ADB). In July 2020, following recommendations and decisions done at the meeting held by ECNEC, the modified second Revised PC-I of the Project amounting to Rs. 35,484 million was developed which includes command area development work cost supposed to be borne by the Government of Balochistan. The Central Development Working party approved the modified second Revised PC-I on 10 January 2022.

2. The Government of Pakistan requested a project readiness financing (PRF) from ADB to prepare the Naulong Integrated Water Resources Development Project (the ensuing investment project). The ensuing investment project comprises a 57-meter-high zoned earth-filled main dam, a 54 meter high auxiliary dam with similar zoned configuration, an orifice gated spillway structure, a fuse plug embankment, a tunnel, two powerhouses, and an irrigation scheme with 2 main canals. Ninety million cubic meters (MCM) of water will be provided to a new command area of 10,927 ha on the right side of the river and 80 MCM for irrigating 8,094 ha on the left side including availability of water for drinking purpose of the local population.

3. PRF will enhance the agriculture development and irrigation management planning in the project area by having the reliable and enhanced water availability with improved water and agriculture productivity. PRF will complete the DED by reviewing and revising where needed, the existing DED and prepare due diligence document for the ensuing project. This will include hydrology study with 50 years of simulated hydrology and climate change forecasts. Based on hydrology and water flow estimations, the PRF will prepare DED of the dam and its appurtenant structures, power houses, irrigation, and command area development; preparation of procurement strategy including capacity assessment of the EA and IAs, risk register and procurement plan; safeguard documents update; and other project readiness activities by filling

the identified gaps and missing data. The WAPDA is the executing agency of the PRF and will engage a consultant team for this assignment. The Irrigation Department of Government of Balochistan (BID), Agriculture and Cooperative Department of Government of Balochistan (BACD) are the key implementing agencies. WAPDA will be responsible for the preparatory work on dam and related works. The BID in coordination with WAPDA will be responsible for all the preparatory work related to irrigation canal system. The BACD in coordination with WAPDA will be responsible for preparatory work for command area and agriculture. Other departments potentially collaborating with WAPDA are GOB departments of (i) Energy, (ii) Forest and Wildlife; (iii) Fisheries; (iv) Local Government and Rural Development; (v) Public health Engineering; (vi) Board of Revenue; (vii) Planning and Development; and (viii) Office of the Deputy Commissioner; and federal departments of Quetta Electric Supply Company and National Electric Power Regulatory Authority.

4. WAPDA will recruit all consultants following ADB Procurement Policy (2017, as amended from time to time), Procurement Regulations for ADB Borrowers (2017, as amended from time to time), and its associated procurement staff instructions.

II. Objective of the Assignment

5. The key objectives of the assignment are to (a) review the overall agriculture development and irrigation management plan; (b) review climate change impact evaluation and the hydrology review which could have impact on the reservoir and spillway sizing and changes of the model of command area development approaches; and (c) review and update the existing DED. The DED update shall be based on (a) all the technical aspects using international best practices for the design of high dams and hydropower plants including respective electromechanical equipment and power evacuation substation and transmission lines following the International Commission on Large Dams (ICOLD) guidelines; (b) design of new, upgraded, and remodeled irrigation system with improved technologies and practices in command area development; and (c) design of all other project allied facilities. The survey and investigation data shall meet the DED requirements to calculate all the quantities with maximum accuracy as per site conditions to prepare the Bill of Quantities for the bidding documents for works contracts. FIDIC's red book or similar contract as appropriate shall be used. ADB standard bid document for supply of goods and goods/equipment may be used. The type of contract to be used shall be decided based on the procurement strategy that shall be developed as part of scope of the PRF. The updated DED shall cover sufficient details required for the preparation of drawings and technical specifications to prepare comprehensive bidding documents. In addition, the assignment will facilitate (i) preparation of strategic procurement planning to develop a procurement plan for the ensuing project; (ii) project approval; (iii) enhance procurement readiness; (iv) compliances with environmental and social safeguards; and (v) ensure project remains technically, economically, financially, institutionally relevant, viable and sustainable after the updated DED. Experience and lessons learned from implementation of other projects of WAPDA will be drawn and incorporated in the detailed design.

6. The consulting firm engaged for this package may be engaged for the ensuing project as a construction supervision consultant team through a single-source selection (SSS) method, subject to the satisfactory performance of the firm.

III. Possible Constraints

7. The completion and magnitude of the scope of the services and overall terms of reference delivery will depend on the development of a comprehensive agriculture and irrigation

management plan, and the incorporation of results in the design of overall project scope. It is to be noted that the location of project area is in a security risk zone, which may affect international experts travel to site. WAPDA and GOB are responsible for providing the security arrangements to ensure consultants have access to site to do accomplish their tasks.

IV. Scope of Services and Overall Terms of Reference

A. Overall Assignment

8. The duration of services is estimated at 28 months from Q1 2023 to Q2 2025, with the major design works will be completed in maximum 12 months or earlier for initiating the main works procurement. The following are key scope of services while details are provided in subsequent sections.

- i. Review the existing reports including feasibility studies, followed by field visits and consultations, and determine the scope of additional surveys and studies.
- ii. Prepare a comprehensive Agriculture Development and Irrigation Management Plan;
- iii. Key element of improvements is hydrology and the consultants will adopt alternative models, compare with existing DED computations, and finalize the flood flows and dependable releases taken in account the climate change studies. This will determine the reliability of water supply from the reservoir (reservoir sizing) and estimated flood design discharges for spillway design and dam safety;
- iv. Study and design sediment management options in watershed and redefine the scope and provide design;
- v. As a result of Agriculture Development and Irrigation Management Plan, revise (a) the DED of irrigation system in the command area based on the agriculture and drinking water requirements, and hydropower components based on capacity optimization exercise, reservoir simulation study and determination of releases according to the principles of integrated water resource management; and (b) the DED for command area and agriculture development, including efficient and productive irrigation and agricultural production methods, cropping patterns and diversification, water requirements, irrigation scheduling and modern methods to identify actual water demands, market-oriented agriculture etc;
- vi. Consider and include elements of water-energy nexus in water security and climate adaptation, for example, equipping solar panels in the project area;
- vii. Prepare procurement strategy and procurement plan;
- viii. Support WAPDA in procurement;
- ix. Review and update social and environmental safeguards documents;
- x. Review and update economic and financial analysis;
- xi. Review and update the climate risk and vulnerability assessment of project;
- xii. Review and update the detailed implementation plan including procurement and construction planning;
- xiii. Review of topographic and geographic information system (GIS) data and maps produced in the existing DED and prepare additional maps if needed for the revised DED; and
- xiv. Review geotechnical investigation prepared by the existing DED consultants and identify the requirements for further investigation and testing to be carried out for DED and/or during construction.

B. Concept Design Update

9. **Agriculture Development and Irrigation Management Plan:** This includes review of irrigation system described in the PPR (2009) and agriculture development study report (March 2022), and infrastructural development conditions of the project's command area and the farming communities. The DED shall cover the following aspects of development plan and the consultants will work closely with consulting firm recruited by WAPDA for "Stakeholders Engagement and Social Mobilization for Inclusive, Community and Gender Based Project Design":

- i. Review "Recommendations for Agriculture Development and Irrigation Management Plan" prepared by "Stakeholders Engagement and Social Mobilization for Inclusive, Community and Gender Based Project Design" firm;;
- ii. Based on above, prepare detail assessment on alternative options for irrigation design and water productivity, including modern systems as center pivot, drip irrigation and combinations of drip and sprinkle, and possibly circular water use in greenhouses of high value crops, including analysis of required management structures and institutional options;
- iii. On the basis of the above prepare option analysis for full or hybrid demand-based irrigation system and prepare proposals regarding application of water conveyance, application and conservation technologies;
- iv. Identify, change in cropping patterns, use of seed of improved variety, land use development, soil, farming practices, value addition of the products, better market access to maximize water productivity and value added;
- v. Conduct agriculture value chain assessment in the command area;
- vi. Conduct survey and mapping of the crops especially vegetable and fruit grown in the command areas with estimates of production and potential for commercial production;
- vii. Assess accessibility to market and current mode of surplus supplies to markets;
- viii. Assess current profitability and potential for improvement with improved inputs, packaging, and value addition;
- ix. Analyze data, conduct consultations with stakeholders and present options for agribusiness model for both areas; and
- x. Review other associated development plan in the area including (i) identification of value chains for both command areas in crops, livestock/dairy, and proposed fish production in the reservoir area with annual net fishing stock estimate around 0.9 million; (ii) development of drinking water supply system with multiple filtration plants for both command areas; (iii) access road.

C. Feasibility Study and Detail Engineering Design Update

10. **Climate Change Impact Evaluation:** The services shall cover the following:

- i. Review and update of the Climate Risk and Vulnerability Assessment (CRVA) report prepared under the feasibility study;
- ii. Confirm climate-related vulnerabilities to project assets, beneficiaries, and outcomes and key associated climate variables;
- iii. Prepare qualitative narratives and quantitative projections of climate change and variability for selected scenarios representing an envelope of feasible outcomes incorporating natural variability, emissions and modelling uncertainties;
- iv. Identify risks and impacts on the project assets and outcomes based on the assessment and workshop discussions with design engineers;
- v. Assess and identify if required additional analysis shall be carried out to

- vi. determine the impacts on choice of crops and agricultural water demand; Identify climate resilience and climate adaptation measures, associated costs and which of these measures are integrated into design using national guidelines and standards or international best practice;
- vii. Identify any residual risks and recommend further measures to reduce risks to an acceptable level in the event of greater climate variability or more severe climate change;
- viii. Work closely and iteratively with the design team and the engineers to refine the design considering the projects performance under future scenarios;
- ix. Estimate annual and lifetime project net greenhouse gas emissions using established practices, including incremental reservoir emissions;
- x. Incorporate net greenhouse gas emissions into economic analysis in line with ADB guidelines;
- xi. Prepare assessment of project's alignment to the Paris Agreement and Climate Action in line with ADB guidelines and templates, including:
 - Demonstration that the project is resilient to range of possible futures;
 - Demonstration that the project is compatible with country development plans, including updated Nationally Determined Contribution (NDC) report; avoids lock-ins or support to high emission activities; avoids creating stranded assets and benefits the livelihoods of climate vulnerable communities; and
- xii. Prepare Climate Change Assessment document in line with ADB template, including calculation and documentation of climate change mitigation and adaptation finance.

11. Hydrological and Sedimentation Studies: The consultants will review the adopted models and recommend alternative models for improving the decision on adequacy and efficacy of the hydrological report (March 2022). The DED shall perform following:

- i. Propose alternative models to check runoff simulation model based on which Probable Maximum Flood (PMF) discharges at dam site has been calculated and approve the PMF;
- ii. Review an inflow design flood hydrograph and its attenuation for design of spillway. Review the design flood estimates for spillway design and for the diversion flood to optimize project cost;
- iii. Review a check design flood hydrograph and its attenuation for design of spillway;
- iv. Validate rainfall-runoff model to estimate flood frequency and design flows/droughts to compliment the empirically derived relationships;
- v. Validate the rainfall-runoff model for time series simulation and assess the hydrologic statistics to ensure that the essential character of the simulated hydrologic series is compatible with the semi-arid to arid nature of the catchment. Of particular importance is defensible reflection of the annual coefficient of variation of the flow series compatible with what would be expected in a semi-arid to arid region representing this catchment;
- vi. Check the size of the reservoir to ensure reliability of supply of water and power, using the specified reliability of supply for irrigation, domestic water supply and power generation as the norm;
- vii. Review the results of upstream dam breach study and assess its impact on the discharge capacity of the spillway under such extreme conditions;
- viii. Review the reservoir area capacity curve to determine the height of proposed dam that will assure water availability at the specified reliability. Conduct a sensitivity

analysis on the water availability simulations by varying the mean and coefficient of variation of annual streamflow. Adjust the crop and other demand for water to the levels that ensure dependable releases;

- ix. Review sediment study carried out and check the approach by which sediment inflow quantity was determined including the yearly influx and deposition of sediments in the reservoir;
- x. Review impact of sediments on the reservoir capacity and useful life of the dam. Determine the sensitivity of the life of the reservoir by using the highest sediment yields that have been observed in the area;
- xi. The consultants will assess watershed management approach and suggest if recommended reservoir sedimentation management approaches minimizing the rate of storage loss prove viable. If yes, design, and incorporate features in the project design in detail allowing reservoir sedimentation management. Assess its potential success by making use of a sediment transport simulation model illustrating the potential to minimize the rate of storage loss due to reservoir sedimentation;
- xii. Propose detailed sediment control measures in the catchment area, including revised estimates of sedimentation rates for different scenarios; and
- xiii. Prepare recommendations for installing and operating a real-time sediment monitoring system to measure sediment inflows to the reservoir, sediment inflows to the powerhouse, and sediment discharge from the outlet and spillway into the river downstream. Develop proposed techniques to analyze the sediment data for checking the long-term changes in reservoir storage volume due to reservoir sedimentation. Measure both sediment concentration and discharge of water concurrently.

12. **Water Resource Management:** Based on the “Agriculture Development and Irrigation Management Plan”, other uses of water for drinking, energy, e-flows, and the climate change assessment, the consultants will:

- i. review and revise if needed the water resources and allocation and distribution management options over the expected economic life of the project;
- ii. review and revise if needed the reservoir operation rule for the most economic and equitable use of water resources, along with the necessary institutional and organizational framework suitable to the prevailing institutional, political, social, and human resource conditions; and
- iii. Review the water balance model to determine the impact of reservoir operation and reservoir base flow requirements to alleviate any adverse environmental, economic, and social impacts from the project.

13. **Irrigation Infrastructure Design and Development:** This includes review of irrigation infrastructure design and development and proposed modernization of existing conveyance system. The DED shall cover the following aspects of irrigation infrastructure design and development in the command area:

- i. Propose improvements in left bank irrigation system based on the “Agriculture Development and Irrigation Management Plan”;
- ii. Analyze options for piped irrigation system in the right bank irrigation system currently comprising right bank upper canal, spill channel, right bank canal, west distributary, and east distributary and a minor with a cumulative length of about 42 km; and

- iii. Propose technological options in design and construction introducing modern, alternative, suitable system, methods, and technologies for local conditions with strengthened institutional capacity and arrangements.

14. **Design of Command Area Development:** This includes review of the command area development design in the agriculture development study report based on the Agriculture Development and Irrigation Management Plan. The DED shall cover the following aspects of the command area development:

- i. Review and recommend command area development, using modernized approaches and technologies for improved water and agriculture productivity including full or hybrid on-demand water delivery;
- ii. Present tertiary system alignments, *chakbandi* boundaries, farmers data, GIS based features including georeferenced, digitize farmers data for designing farmers outreach and support initiatives.
- iii. Consultation with communities to develop the *chakbandi*, water distribution and irrigation scheduling.
- iv. Preparation of recommendations on cost sharing arrangements in consultation with beneficiaries and coordination with Agriculture Department to promote adoption of modern technologies like watercourse development, laser land levelling, pressure irrigation system, drip, or simpler cost-effective piped irrigation system;
- v. Suggest procedure for the capacity building of the farmers and other stakeholders for successful implementation of project deliverables;
- vi. Propose afforestation measures in slopes and social forestry inside and out-of-command areas with potential for livelihood, nature-based solutions, and ecosystem services increased plantation, conservation, non-timber and medicinal benefits; and
- vii. Explore relevant non-crop intervention that may facilitate income to the project beneficiaries.

15. **Topographic surveys and geographic information systems (GIS) mapping:** The scope of work given in the following is in addition to what has been assigned to the feasibility study consultants to meet the DED requirements. The following surveys will be carried out.

- i. Review the available survey data and maps and suggest additional surveys if required;
- ii. Prepare and digitize land ownership records in command area and prepare digitized command area units (*chakbandi*) maps; and
- iii. Collect the GIS/RS images of the command area and assess the change detection in landuse, extent of historic flood inundation and compare the cropped baseline data with statistical data.

16. **Geological, Geotechnical Investigations and Analyses:** The services will include review of the available Geological, Geotechnical Investigations and Analyses and propose additional studies if required. WAPDA has agreed carrying out additional geo-tech investigations at the tunnel portals and on the alignment of right bank contour channel.

17. **Seismology:** The DED shall review the seismology estimation and confirm the adopted parameters including specialized confirmatory study involving probabilistic methods.

18. **Design of Dam and Allied Components:** This includes primarily the review of existing detail design on the following:

- i. Review of the surface geology along the reservoir rim and within the reservoir to know the extent of overburden and exposed rock and make assessment of the integrity and water tightness of the reservoir;
- ii. Review of the Project Layout Plan especially the sizing of the spillway in view of the PMF and Climate Change recommendations;
- iii. Review of the dam embankment analyses, parameters selected and analyzed, and the final design;
- iv. Review the existing DED of Power Tunnels and its geological formations and validation of carrying capacity.
- v. Review of the dam foundation design for the control of bypass seepage and if found deficient suggest design measures to minimize the seepage and suggest measures for the monitoring after reservoir impounding;
- vi. Review static and dynamic conditions using the recommended seismic design parameters. The dam abutments investigation data shall be reviewed to ascertain type of rocks, its jointing pattern, fracturing status and in case of limestone formation its solutioning potential and possibility of seepage through the abutments. The measures shall be suggested to reduce the bypass seepage through abutments if conditions exist;
- vii. All the other structures of the Project shall be reviewed using the geotechnical investigation results and design parameters for both static and dynamic conditions;
- viii. Review the proposed instrumentation sections for standpipe piezometers, vibrating wire piezometers, surface markers vertical inclinometer with spider magnets. Review the additional relief wells at the downstream toe weirs/flumes and accelerographs will be installed in the main body of the embankments to monitor bedrock acceleration during an earthquake.
- ix. Review the hydraulic and structural design of spillway using the updated investigation data and route the designed flood through Spillway to check the surcharge and free board requirements. Review the physical hydraulic model studies especially the tail water depths for hydraulic jump conditions, stilling basin and uplift pressure relief mechanisms, approach channel geometry from the model study.
- x. Review and upgrade the design of fuse plug in view of changes in PMF;
- xi. Review of hydropower development studies made at existing DED and update if needed the design of Power Houses Complex and Power Circuit Design including conveyance tunnels or channels, intakes, headraces, penstocks, surge shafts, pressure shafts, switchyard and tailraces using the investigation test results carried out at DED stage;
- xii. Review of hydromechanical, electromechanical, electrical, auxiliary, instrumentation, telecommunication, safety installations, back-up systems, and automation systems;
- xiii. Review transmission line design prepared under previous project and confirm or update the layout for power transmission systems connectivity to the proposed power houses under the project enabling WAPDA to send a request to the power transmission and/or generation companies; and
- xiv. Design of permanent, and realigned roads, all buildings, other allied infrastructure, and facilities for social, residential and offices.

19. The additional analysis will include:

- i. Perform tunnel designing by using numerical model to assess potential stress induced stability problem due to overburden to confirm the maximum deformation;
- ii. Perform a hydraulic transient analysis for detail design; and
- iii. Review the surface geology along the contour channel leading from the tail of power house – 1 to power house – 2 (about 7 km) for the construction method, slope stabilization, operation, and maintenance. If needed the channel design may change with different technological options.

20. **Dam Break Study:** The services shall cover review of the Dam Break Modeling Report (December 2021) and additional studies which WAPDA agreed to conduct by acquiring fine resolution global land-use and land-cover data for better estimates. The consultants will confirm the risk category (very low risk dam) and confirm if preparation of Emergency Action Plan document is required, with key measures for the population and infrastructure at risk because of inundation caused due to dam breach.

21. **Drawings, Bills of Quantities and Costs:** Review and revise all civil, mechanical, transmission lines and electrical drawings (power houses and substations) with pertinent details and separate bills of quantities for each structure and costs as per standard format and guidelines and making use of ADB's standard bidding documents for Works, Goods, Plant and services, as appropriate, based on the outcome of the procurement strategy.

22. **Preparation of Bidding Documents:** The consultants will update or modify the available bidding documents or prepare new documents for all packages included in the procurement plan with the sufficient level of details including technical specifications, qualification and evaluation criteria based on the type of each transaction and market condition required for each bid documents to be ready for bidding

23. **Operation and Maintenance Plan:** The services shall cover the following:

- i. Assess if project agencies will have sufficient funding to cover long-term operational expenditures as needed to ensure adequate and sustainable asset management and identify actions to ensure project's financial sustainability in line with financial analysis. The operation and maintenance plan will be based on the future incremental costs for operation and maintenance of the project facilities; and
- ii. Propose systems for instrumentation, measurement, control, information which is easier to implement with plan for upgraded to next phase with system-based units created and trained.

24. **Land Acquisition and Resettlement Plan (LARP):** The services shall cover the following:

- i. Continue the land acquisition and resettlement plan process taken over from feasibility study update by technical assistance consultants and ensure applicable national/provincial laws/rules/regulations and the ADB's Safeguard Policy Statement (SPS) are adhered to in plan formulation and implementation;
- ii. Undertake additional or new surveys based on the detailed design for census of displaced persons, inventory of losses socioeconomic information, including upstream and downstream areas and livelihood impacts and irreversible changes to lifestyles, identify displaced persons (DPs) affected by various impacts

associated with land acquisition and restricted land use related to the project. Census data should include all those affected by the project's involuntary resettlement impacts, including non-landowners and should assess the vulnerability status of affected persons. The socio-economic survey of affected persons needs to be sufficiently rigorous to inform the project about vulnerability and needs of the affected population as well as form a meaningful socio-economic baseline for subsequent monitoring of the effectiveness of LARP implementation;

- iii. Assess and recommend if independent third-party valuation should be engaged before finalizing the LARP. If such valuation is suggested, engage an appropriately qualified independent third-party valuer to assess full replacement cost of the affected assets to ensure full replacement cost compensation;
- iv. Review and update the mechanisms to receive and facilitate the resolution of affected persons' concerns and grievances. How the procedures will be accessible to affected persons and gender sensitive;
- v. Define displaced persons' entitlements and eligibility, and describes all resettlement assistance measures (includes an entitlement matrix), specifies all assistance to vulnerable groups, including women, and other special groups;
- vi. Devise income restoration programs, in consultation with affected persons and relevant stakeholders/agencies including multiple options for restoring all types of livelihoods and describe special measures to support vulnerable groups, explain gender considerations, and describe training programs, if any;
- vii. Study the institutional arrangement responsibilities and mechanisms for carrying out the measures of the resettlement plan, identify and assess the role of local or international civil service organizations (CSOs) working in related topics or in the area, and describe how women or vulnerability focused CSOs will be involved in resettlement planning and management;
- viii. Prepare a detailed, time bound, implementation schedule for all key resettlement and rehabilitation activities. The implementation schedule should cover all aspects of resettlement activities synchronized with the project schedule of civil works construction, and provide land acquisition process and timeline;
- ix. Describe the mechanisms and benchmarks appropriate to the project for monitoring and evaluating the implementation of the resettlement plan, including reporting procedures; and
- x. Undertake a capacity assessment of WAPDA and GOB to implement the LARP and recommend capacity building as well as institutional strengthening requirements.

25. **Indigenous Peoples Plan:** The services shall cover the following:

- i. Undertake an assessment of tribal, ethnic, and cultural context of the project area considering ADB SPS Safeguard Policy Requirement and national legislation and policies and project impacts; and
- ii. If SPS SR3 is categorized by ADB as triggered for the ensuing project, prepare an Indigenous Peoples Plan (IPP) for the project as per SPS requirements and as guided by ADB.

26. **Implementation, Procurement and Construction Planning:** The services shall cover the following:

- i. Prepare the "Strategic Procurement Plan (SPP), including Procurement Plan" based on ADB suggested SPP template. SPP shall be conducted by following three main steps, - Analysis, Choices and planning, collect, market analysis and

- review data of previously available data available with in EA/IAs, ADB and other IFIs where available to support options for various packages (make use of tools referred in the SPP Guidance Note);
- ii. Develop well-planned and fit-for-purpose procurement arrangement that will supporting achieving value for money for the project;
 - iii. Discuss the strategy with the WAPDA, BID and BAC&D in a workshop and seek government and ADB concurrence of the SPP that includes procurement plan;
 - iv. Include value for money statement in the procurement strategy;
 - v. Review and update the overall implementation schedule synchronized with activities including procurement, award of works, social safeguards plan, commencement of works, mobilization, sequencing of construction methods, water diversions, annual canal closures, preliminary configuration for equipment, plan for inspections, shipments, installation, testing and commissioning, overall testing and commissioning of powerplants, dam, and irrigation systems;
 - vi. Review and update (if required) the proposed high and low flow diversion plan, and the construction sequence currently shown as four stages and two coffer dams;
 - vii. Analysis and recommend planning for labor, construction machinery, and materials and recommend implementation period;
 - viii. Propose technological options in design and construction introducing modern, alternative, suitable system, methods, and technologies for local conditions;
 - ix. Re-analyze the options between tunnel drill and blast method, and mechanical excavation method for cost effectiveness and constructability;
 - x. Propose project implementation arrangements including institutional structure clearly defining the role of WAPDA, implementing agencies, consultants, contractors, and supervisory engineers. Layout an appropriate workflow for technical approvals, approvals for technical design, approval for changes in technical designs during construction, for effective implementation, measurements and verification of works undertaken, payment procedure, flow of funds; and
 - xi. Set up framework for monitoring and evaluation of the project.

27. Preparation of Revised Draft PC-I and Provide inputs to Project Administration Manual (PAM): The services shall cover the following:

- i. Provide inputs to the draft PAM; and
- ii. Revise Draft PC-I if required.

28. Financing Strategy and Financing Plan: The services shall cover the following:

- i. Development of a financing plan for the project, considering government financing and public borrowing by the WAPDA and other loans and credits from public and private institutions and supplier etc.; and
- ii. Development of an overall strategy for project financing in collaboration with WAPDA.

29. Financial Analysis: The services shall cover the following:

- i. Prepare the Detailed Financial Analysis and update Detail Cost Estimate Report based on ADB's Technical Guidance Note on Cost Estimation in Sovereign

- Operations (February 2022)¹⁸ including component/output-wise, investment cost, segregated by foreign exchange and local costs, with tax and duties, physical contingencies and price escalation estimating for each component/output, and the total interest and financial charges during construction, using Excel, according to ADB's financial management guidelines;
- ii. Prepare a disbursement schedule including S-curve for projections of contract awards and disbursements, and standard cost estimates tables (by expenditure category, by financier, by Output, and by Year;
 - iii. Undertake financial sustainability analysis of the project;
 - iv. Prepare projections of future incremental costs for operation and maintenance of the project facilities, assess if the project agencies will have funding to cover such long-term operational expenditures as needed to ensure adequate and sustainable asset management, and identify actions to ensure project's financial sustainability; and
 - v. Update or conduct of additional survey data from the field.

30. **Economic Analysis:** The services shall cover the following:

- i. Review and update of the "Economic and Financial Analysis" (March 2022) following ADB's Guidelines for the Economic Analysis of Projects (2017)¹⁹, including the risks associated with the project and undertaking a sensitivity and risk analysis;
- ii. Update of the economic analysis for the individual components/sub-components estimating benefits/costs for: (i) hydropower and (ii) irrigation systems on agricultural production (farmer income; (iii) flood damage prevention; (iv) other benefits; and
- iii. Update of sensitivity and switching value analysis, distribution analysis between different groups, calculating poverty impact ratio and analyzing project impact on farmers' incomes (farm budget analysis).

31. **Financial Management Systems:** The services shall cover the following:

- i. Review and update of the "Economic and Financial Analysis" (March 2022), including review and update the financial management capacity of WAPDA, The Irrigation Department of Government of Balochistan (BID) and Agriculture and Cooperative Department of Government of Balochistan Irrigation Department (BAD) in terms of planning and budgeting, management and financial accounting, reporting, auditing, internal controls, and information systems following ADB's relevant requirements;
- ii. Review and update of proposed disbursement and fund flow arrangements in light of executing agency and implementing agencies capacity and needs of the ensuing project, along with disclosure arrangements for financial reporting and auditing requirements; and
- iii. Review and update of financial management, internal control and risk assessment, identify any new potential project and inherent risks, and proposing mitigation measures along with timelines agreed by the executing agency and implementing agencies or where the risk is deemed high in nature, propose

¹⁸ <https://www.adb.org/documents/preparing-cost-estimates-adb-financed-projects-programs>

¹⁹ <https://www.adb.org/documents/guidelines-economic-analysis-projects>

financial covenants to be incorporated in the ensuing loan / project agreement.

32. Environmental Assessment and Environmental Management Plan (EMP): The services shall cover the following:

- i. Continue the environmental safeguards preparation process taken over from FS and ensure applicable national/provincial laws/rules/regulations and the ADB's SPS - 2009 are adhered in plan formulation and implementation;
- ii. Update / prepare the environmental assessment reports (EIA's and IEE's) for different project components including dam, power house, irrigation canals, roads, transmission lines etc., describing the environment of the project area of influence and downstream, the anticipated environmental impacts including (but not limited to) e-flows, downstream water usage, transboundary impacts, socio-economic impacts, occupational and community health and safety impacts during construction and operation works (including dam safety), mitigation measures to address likely adverse impacts, results of public consultation, and environmental management plan including institutional requirements and monitoring. The sections related with soil and geology in the EIA will need to be further strengthened after extracting relevant information from the geotechnical study, based on the geotechnical study under the PRF;
- iii. Prepare a terms of reference (ToR) / scoping study. This study will provide the methodology for any additional baseline surveys, impact assessment and other details and will feed into the respective environmental assessment studies (EIA's / IEE's);
- iv. Conduct baseline surveys including ambient air quality, noise, water (surface and ground water) as well as terrestrial and aquatic ecological surveys;
- v. Prepare a critical habitat assessment (CHA, as per IFC GN 6). Based on the assessment a biodiversity action plan (BAP) and biodiversity monitoring plan (BMP) may also need to be prepared;
- vi. Continue public consultation with groups affected by the project and nongovernment organizations to obtain views that need to be incorporated in the project design and environmental mitigation measures;
- vii. Interact with non-governmental and community-based organizations to identify needs and concerns, including the need for capacity development as identified in the feasibility study;
- viii. Assist WAPDA in the preparation and implementation of the EIA's / IEE's and environmental management plans, and their approval from government and ADB; and finalize the EMPs for bidding documents and prepare checklist for safeguards EMPs and site-specific environment management plan (SSEMP);
- ix. Contribute to the stakeholder engagement plan to identify and carry out meaningful consultations with all the stakeholders including affected people, government and nongovernment departments etc.; and
- x. Prepare a detailed livelihood section in the EIA's / IEE's from information gathered during LARP and stakeholder consultations.

33. Risk Assessment and Management Plan: The services shall cover the following:

- i. Review and update of the "Risk Assessment and Management Plan" prepared under the FS; and
- ii. If required, identify additional risks, analyze, and advise WAPDA on potential risks during the design, construction, commissioning, and operational phases of the project.

D. Implementation Readiness Support

34. **LARP Implementation Start-up Support:** The services will cover supporting WAPDA and land acquisition collector in implementing LARP including land acquisitions sections, exhaustive efforts and consultations, addressing or documenting administrative impediments, monitoring and reporting progress.

35. **Procurement Transaction Support:** The services will cover providing support to WAPDA and implementing agencies in: (i) prepare bidding documents and advertisement; (ii) prepare evaluation reports for various transactions till the award of contract; (iii) participate in EA's procurement committees meeting.

E. Indicative Activities during the Construction Supervision Stage

36. Activities of the construction supervision tentatively included, but not limited to the following items. Overall service period is tentatively estimated to 1,033 person- months.

- preparation of construction drawings
- contract management and construction supervision
- preparation of bidding documents, procurement support, and construction supervision of command area development works
- Environmental management monitoring
- Land acquisition and resettlement plan implementation support, and
- Project management support

V. Deliverables

37. The consulting services will be for 28 months tentatively from Q1 2023 to Q2 2025. The schedule for various reports and documents is given in Table 1.

Table 1. Schedule of Deliverables

Sr.	Report	Submission Deadline
1	Inception Report, which includes indications of gaps in FS and plan to fill the gaps	1.5 months after the Commencement of Services
2	Environmental Scoping Report / Terms of Reference for EIA's / IEE's	2.0 months after the Commencement of Services
3	Climate Change Impact Evaluation Report	Initial version after 3.0 months after the commencement of Services. Report to be subsequently updated after 15 months after the commencement of Services to reflect finalized design to incorporate further climate change adaptation measures.
4	Agriculture Development and Irrigation management Plan	4.0 months after the Commencement of Services
5	Topographic Survey and Geotechnical Assessment Report Update	4.0 months after the Commencement of Services
6	Award of Geotechnical Investigation Work	5.0 months after the commencement of Services if additional tests are required

Sr.	Report	Submission Deadline
7	Consultant's Concept Design	6.0 months after the Commencement of Services
8	Finalization of Layout Plan of the Project	6.0 months after the Commencement of Services
9	Hydraulic Design of Spillway (using validated design flood and Seismic parameters)	6.5 months after the Commencement of Services
10	Design of Irrigation Infrastructure Command Area Development Report	7.0 months after the Commencement of Services
11	Consultant's Interim Design	7.0 months after the Commencement of Services
12	Land Acquisition and Resettlement Plan, including livelihood restoration strategy	7.0 months after the Commencement of Services
13	Indigenous Peoples Plan (if SPS Safeguard Requirement 3 is triggered)	7.0 months after the Commencement of Services
14	Submission of Geotechnical Investigation Report if additional test were required	7.5 months after the Commencement of Services
15	Main Dam Design Report and Assessment of Reservoir geology and Rim stability.	8.0 months after the Commencement of Services
16	Design of Power Houses	8.0 months after the Commencement of Services
17	Layout of substations and transmission lines connecting power houses to national grid	8.0 months after the Commencement of Services
18	Design of Tunnel, Inlet and Penstock	8.0 months after the Commencement of Services
19	Environmental Assessments (EIA's and IEE's) for various project components including Environmental Management Plans	8.0 months after the Commencement of Services
20	Risk Assessment and Management Plan	8.0 months after the Commencement of Services
21	Implementation, Procurement and Construction Planning Report	8.0 months after the Commencement of Services
22	Preparation of Engineer's Estimate	8.0 months after the Commencement of Services
23	Dam Break Study and Preparation of Emergency Action Plan Report	8.0 months after the Commencement of Services
24	Draft Final Detailed Engineering Design Report	8.0 months after the Commencement of Services
25	Bidding Documents	10.0 months after the Commencement of Services
26	Final Detailed Engineering Design Report	10.0 months after the Commencement of Services
27	Financial Analysis	11.5 months after the Commencement of Services
28	Economic Analysis	11.5 months after the Commencement of Services

Sr.	Report	Submission Deadline
29	Preparation of necessary information of PAM	12.0 months after the Commencement of Services
30	Solar power potential and proposed Solar power plants in the project area	12.0 months after the Commencement of Services
31	Procurement Transaction and LARP Implementation Support	Continuous Support

VI. Executing Agency's Support

38. WAPDA will give the Consultant access to all available data relevant to their task. The data shall include, but not be limited to, the following:

- i. Any report prepared by and for WAPDA relating to the development of water sector projects as well as supporting data. This includes the project planning report (July 2009) which can be regarded as a revised feasibility study, the detailed engineering design (February 2010), involuntary resettlement and indigenous people screening report (October 2020), topographical studies report (September 2021), updated hydrology and sedimentation report (March 2022), climate change vulnerability and risk assessment report (June 2021, revised in February 2022), dam break modeling report (December 2021), agriculture development studies report (March 2022), gender action plan (November 2021), economic and financial analysis report (March 2022), land acquisition and resettlement plan (February 2022), revised environmental impact assessment report (March 2021), modified second revised PC-1 (August 2021); and
- ii. Relevant ordinances, legislation, regulations, and administrative orders.
- iii. The client will facilitate all security arrangements in coordination with GOB during site visits to the project area. This has been agreed and approved at the highest level between the federal government and GOB.

VII. Key Personnel, Qualification Requirements and Job Description

39. A total of 318 person-months including 20 person-months of the international key experts; 31 person-months for the national key experts; and 267 person-months for no-key experts would be required. Table 2 provides indicative required expertise including key and non-key experts. The consulting firms will need to identify the need for technical (such as junior and assistant engineers) and administrative support staff (such as team assistant) and include their costs in the financial proposal.

Table 2. Summary of minimum key and non-key expertise (Indicative) Consulting Services Requirement

SI. No.	Area of Expertise	International (person-months)	National (person-months)
	Key Experts		
1	Water Resource Planning Specialist / Team Leader	7	
2	Hydraulics Specialist / Deputy Team Leader /Chief Design		15

Sl. No.	Area of Expertise	International (person-months)	National (person-months)
	Engineer		
3	Geotechnical Engineer (Dam Design Specialist)	1.5	
4	Engineering Geologist	1.5	
5	Hydrology and Sedimentation Specialist	1.5	
6	Dam Specialist		5
7	Structure Design Specialist		5
8	Tunneling Design Specialist	1.5	
9	Social Safeguards Specialist	4	
10	Environment Specialist	4	
11	Principal Seismologist / Seismic Specialist	1.5	
12	Principal Agronomist / CCA Development expert		6
13	Principal Irrigation Engineer / Specialist	1.5	
	Subtotal	24	31
	Non-Key Experts		
1	Geotechnical Engineer (Dam Design Specialist)		1.5
2	Engineering Geologist		1.5
3	Hydrology and Sedimentation Specialist		6
4	Hydropower Specialist	1	6
5	Electrical Engineer (Transmission lines)	1	5
6	Electrical Engineer (Substations)	2	5
7	Solar Power Engineer	1	5
8	Tunneling Design Specialist		5
9	Mechanical Specialist	2	8
10	Principal Seismologist/Seismic Specialist		3
11	Construction Planning Specialist		6
12	Principal Irrigation Engineer / Specialist		7
13	On-farm Water Management Specialist		6
14	Institutional / Governance Specialist		4
15	High Value Agriculture Specialist		4
16	GIS & Remote Sensing Specialist		4
17	Biodiversity Specialist		4
18	Watershed Management Specialist		6
19	Climate Change Specialist	1	4
20	Principal Economist	2	6
21	Financial Management Specialist	2	4
22	Principal Contract Engineer		2
23	Procurement Specialist		6
24	Principal Reports / Documentation Engineer		12
25	Senior Engineers / SQS / Costing Engineer		12
26	Jr. Engineers / Jr. Geologists / Jr. Seismologist		18
27	Jr (Economist/Environmental LA Officer) etc.		24
28	AutoCAD Operators		18
29	Social Safeguards Specialist		15
30	Resettlement Support Staff		18
31	Environmental Specialist		15
	Subtotal	12	241
	Unallocated Persons		10
	Total	36	282

Note: Key experts proposed to be named by firm and evaluated under the technical proposal. Firms are required to submit the CVs of all non-key experts on the same format as for the key experts. CVs of the Non-key experts shall not be scored but they shall be evaluated on fail/pass criteria and considered in overall proposal evaluation.

40. **Qualification of Key Experts.** The following is a brief description of required qualification, experience and expected role for the assignment.

a. **Water Resource Planning Specialist / Team Leader – International (7 person-months)**

General Qualification	Bachelor's degree, preferably post graduate degree, in Civil Engineering, water resources engineering or other relevant degrees.
Project Related Experience	At least 20 years of international work experience in design of large dams' projects. Experience in multipurpose dam including irrigation and hydropower generation will be advantageous. The applicant shall have worked as a Team Leader on at least one similar type and size of dam. Experience in externally funded projects will be given advantage.
Overseas/Country Experience	5 years of work experience on major projects in Asia is preferred. Experience in South Asia, especially in Pakistan, will be given advantage.
Job Description	<ol style="list-style-type: none"> 1. Coordinate and manage team activities to ensure full compliance with the TOR and delivery of quality outputs in a timely manner; 2. Liaise with WAPDA, ADB, Government of Balochistan, executing and implementing agencies, and other authorities as required; 3. Manage field surveys, investigations, and physical and mathematical models, required for detail design; 4. Coordinate the studies related to water balance, design, and hydraulic simulations in close coordination with Hydrologist, Hydraulic Expert, Dam Design Engineers, and other team members; 5. Provide guidance in Hydrological studies, PMP, Sedimentation, and Climate change impact on the design; 6. Supervise the team to achieve the milestones proposed for the various studies and submission of documents in timely manner and establish a quality control mechanism for the technical coordination, design, and documents control; and 7. Review of PC-I and Bidding Documents.

b. **Hydraulics Specialist / Deputy Team Leader /Chief Design Engineer – National (15 person-months)**

General Qualification	Minimum Bachelor's degree in Civil Engineering and Master's degree in hydraulic engineering. A degree from a recognized foreign university will be an advantage.
Project Related Experience	At least 15 - 20 years of national work experience in hydraulic structures design of large dams' projects and Irrigation infrastructure development. The applicant shall

Experience with International Organization	have worked as a Deputy Team Leader on at least one dam project for a period of minimum 5 years.
Job Description	<p>3 years of work experience with ADB, the World Bank and/or other international financial institutions is preferred.</p> <ol style="list-style-type: none"> 1. Coordinate and manage team activities to ensure full compliance with the TOR and delivery of quality outputs in a timely manner; 2. Assist Team Leader in keeping Liaison with WAPDA, ADB, Government of Balochistan, executing and implementing agencies, and other authorities as required; 3. Lead the survey and investigation works in close collaboration with Dam Specialist and Geotechnical Specialist to ensure that the survey and investigation outputs fully meet the requirement of the design criteria; 4. Review and finalize the hydraulic design of all major structures of the project; 5. Coordinate and guide being the Chief Engineer Design for the review and validation of the Design Criteria; 6. Carryout and supervise all the hydraulic design of Irrigation infrastructures; 7. Lead the team in finalizing the design parameters, concept design and the final design. 8. Ensure findings of the physical model study is incorporated in the design; 9. Close coordination with the Reports and Documents Engineer on the timely issuance of all the reports; and 10. Review of Bidding Documents with special reference of estimation of quantities and bidding Drawings.

c. **Geotechnical Engineer (Dam Design Specialist) – International (1.5 person-months)**

General Qualification	Minimum Bachelor's degree in Civil Engineering and Master's degree in geotechnical engineering.
Project Related Experience	At least 15 years of international work experience in geotechnical investigations and testing for design of large dams' projects and Irrigation infrastructure development. The applicant shall have worked as a geotechnical specialist on at least one similar type and size of dam for a period of minimum 5 years.
Overseas/Country Experience	5 years of work experience on major projects in Asia or experience in Pakistan is preferred.
Job Description	<ol style="list-style-type: none"> 1. Lead the geotechnical investigation and analyses, in close collaboration with Water Resources Planning Specialist, Hydraulic Specialist, Design Specialist and other team members as required; 2. If additional investigations is required, lead and assist

	<p>in the site selection of boreholes, guide for in-situ testing and lab tests following the international standards;</p> <ol style="list-style-type: none"> 3. Elaborate test reports and guide design team of concerned structures for the selection of geotechnical design parameters; 4. Prepare geotechnical report of the project; 5. Assist in reviewing, validating, or finalizing establishing design criteria, standards, and specifications for structural works; and 6. Assist in the engineering design works, particularly in selecting quarries and selection of construction materials.
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d. **Engineering Geologist – International (1.5 person-months)**

General Qualification	Minimum Master's degree in engineering geology or related field.
Project Related Experience	At least 15 years of international work experience in geological investigations and testing for design of large dams' projects and Irrigation infrastructure development. The applicant shall have worked as an engineering geologist on at least one dam for a period of minimum 5 years.
Overseas/Country Experience	5 years of work experience on major projects in Asia or experience in Pakistan is preferred.
Job Description	<ol style="list-style-type: none"> 1. Guide in reviewing available and carrying out the additional (if required) geological investigation and analyses work in the dam reservoir area; 2. Review the site selection of dam axis keeping in view the rock formation of the abutments; 3. Guide in the preparation of water pressure tests to be carried out in borehole in reservoir area, dam axis and other structures; 4. Finalization of geological report of the seepage potential in reservoir area and dam foundations; 5. Supervise the preparation of geological sections and surface geological mapping of the project area; 6. Guide in the engineering design works, particularly in selecting quarries and selection of construction materials; and 7. Supervise the geological mapping of rock formations of the Tunnels in the project.

e. **Hydrology and Sedimentation Specialist – International (1.5 person-months)**

General Qualification	Bachelor's degree in Civil Engineering and Master's degree in hydrology and sedimentation engineering or related field.
Project Related Experience	At least 15 years of work experience as hydrologist in analyses and sedimentation, design, and implementation of similar projects; Demonstrated competencies in leading

Overseas/Country Experience	comprehensive hydrological and sedimentation studies for detailed design of at least three large dams and/or related water resources development projects 5 years of work experience on major projects in Asia or experience in Pakistan is preferred.
Job Description	<ol style="list-style-type: none"> 1. Lead the hydrological and sedimentation analyses, in close collaboration with Water Resources Planning Specialist, Hydraulic Specialist and other team members as required; 2. Assist in the preparation of water balance study including all type of water uses at downstream and water resources management plan; 3. Prepare credible water availability at dam and dependable releases. Estimate the design life of the dam based on sedimentation analysis. 4. Assist in the engineering design works, particularly in setting the relevant climatic and hydrological design parameters; and 5. Assist in the preparation of the reservoir and irrigation system operational plan.

f. **Dam Specialist – National (5 person-months)**

General Qualification	Minimum Bachelor's degree in Civil Engineering and Master's degree in geotechnical engineering. A degree from a recognized foreign university will be an advantage.
Project Related Experience:	At least 15 years of work experience in dam design and/or construction; Demonstrated competencies in leading detailed engineering design of at least two large dams in Pakistan.
Experience with International Organization	3 years of work experience with ADB, the World Bank and/or other international financial institutions is preferred.
Job Description	<ol style="list-style-type: none"> 1. Review the FS and relevant documents related to the dam design parameters; 2. Guide and lead the design keeping in view the material and test results, for suitability, foundation, and rock suitability; 3. Confirm the dam axis location, design and type of dam selected using the available materials; 4. Carry out the stability analyses of the dam section using the computer software for various loading conditions using static and dynamic parameters; 5. Carry out the seepage analysis of the dam; 6. Carryout the dam break analysis assuming various modes of failures; 7. Prepare quantity and cost estimate for relevant part and assist in the preparation of the project cost estimates, including the preparation of bill of quantities and relevant specifications of the materials and construction methods; and

	8. Assist in the preparation of the draft final report and bidding documents.
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g. Structure Design Specialist – National (5 person-months)

General Qualification	Minimum Bachelor's degree in Civil Engineering and Master's degree in structural engineering or related field. A degree from a recognized foreign university will be an advantage.
Project Related Experience	At least 15 years of work experience in structures design of similar projects and/or construction; Demonstrated competencies in leading detailed engineering design of structures in at least two large dams' projects in Pakistan.
Experience with International Organization	3 years of work experience with international organizations is preferred.
Job Description	<ol style="list-style-type: none"> 1. Review the existing DED and relevant documents related to the dam structures design parameters; 2. Guide and lead the design keeping in view the material and test results, for suitability, foundation, and rock suitability; 3. Review and confirm and if needed carry out the structural design of the Spillway for various loading conditions using designed seismic coefficient; 4. Review and confirm and if needed carry out the foundation analysis of the spillway; 5. Prepare the structure design of all the hydraulic structures of the irrigation system; 6. Review and confirm and if needed carry out the structure design of powerhouse and all other allied structures of the project; 7. Prepare quantity and cost estimate for relevant part and assist in the preparation of the project cost estimates, including the preparation of bill of quantities and relevant specifications of the materials and construction methods; and 8. Assist in the preparation of the draft final report and bidding documents.

h. Tunneling Design Specialist – International (1.5 person-months)

General Qualification	Minimum Bachelor's degree in civil engineering or similar and Master's degree in geotechnical/rock mechanics or related field.
Project Related Experience	At least 15 years of international work experience in tunnels design for hydropower projects, Demonstrated competencies in leading detailed engineering design of tunnels in at least three large dams' projects.
Overseas/Country Experience	5 years of work experience on major projects in Asia or experience in Pakistan is preferred.

Job Description	<ol style="list-style-type: none"> 1. Review the existing DED and available, geotechnical investigation reports and relevant documents of tunnels and assist in the design; 2. Guide and lead the design keeping in view the rock type, test results for suitability, and rock stability; 3. Review and confirm the design criteria for tunnels loads and stresses, size, locations, and type; 4. Lead tunnels design drawings and works and assist other engineering design works as required; 5. Prepare quantity and cost estimate for relevant part and assist in the preparation of the project cost estimates, including the preparation of bill of quantities and relevant specifications of the materials and construction methods; 6. Lead tunnel designing by using numerical model to assess potential stress induced stability problem due to overburden to confirm the maximum deformation and design support required; and 7. Lead the preparation of tunnels as part of the final report.
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i. **Social Safeguards Specialist – International (4 person-months)**

General Qualification	Minimum Graduate (preferable Masters)_degree in social science discipline or related field.
Project Related Experience	At least 15 years of work experience in land acquisition and resettlement planning, indigenous peoples planning along with implementation and monitoring or same. Demonstrated competencies in developing and/or managing land acquisition and resettlement plan for projects with large-scale land acquisition and resettlement impacts. Demonstrated competencies preparing safeguards instruments in tribal and/or conflict sensitive areas preferred.
Experience with International Organization	10 years of work experience with ADB, the World Bank or other international financial institutions_finance projects. Guide and undertake the following tasks:
Job Description	<ol style="list-style-type: none"> 1. Determine and confirm the scope of land acquisition and resettlement; classify resettlement and land acquisition losses by type; 2. Prepare census of displaced persons (DPs) and inventory of losses based on/specifying the stage of project design; 3. Propose resettlement policy specific to the project, including the DPs by types of project impacts, entitlements and eligibility; 4. Carry out consultation with the affected communities to identify their concerns, expectations, and the willingness for and the preferred forms of participation in the formulation of land acquisition and resettlement plan; 5. Summarize Baluchistan policy relevant to land

	<p>acquisition, compensation, resettlement, conflict/grievance redress mechanism and propose a participatory mechanism and institutional framework for the development of land acquisition and resettlement plan, including the roles and responsibilities of the institutions and institutional personnel relevant to LARP, the entitlement matrix, relocation planning, income restoration, grievance redressing and monitoring and evaluation;</p> <ol style="list-style-type: none"> 6. In consultations with DPs and key project stakeholders, propose a livelihood restoration and resettlement strategies including the resettlement options that address the needs of those requiring to be resettled with their proper livelihood restoration; 7. Prepare a land acquisition and resettlement plan (LARP) and, if required, an Indigenous Peoples Plan in consultation with WAPDA, GOB, and DPs in accordance with ADB's Safeguard Policy Statement (2009); 8. Assess the current institutional capacity of WAPDA and GOB for implementing the LARP, and , if required the IPP, and identify the needs for capacity strengthening including training in safeguards management, implementation and monitoring; 9. Identify the possible need and role of non-governmental and community-based organizations, including the need for capacity development; 10. Assist in the preparation of the project cost estimates, as they relate to the land acquisition and resettlement. Undertake an assessment of the need for an independent valuation study of affected property; and 11. Assist in the preparation of various reports as required.
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j. **Environment Specialist - International (4 - PMs)**

General Qualification	Minimum Graduate (preferable Masters) degree in, Environmental Sciences / Environmental Engineering, or in related field.
Project Related Experience	At least 15 years of work experience in environmental assessment studies (IEE's / EIA's) for large dams, hydropower plants, irrigation canals and other related projects.
Experience with International Organization	5 years of work experience with ADB, the World Bank and/or other international financial institutions directly or on projects is preferred.
Job Description	<ol style="list-style-type: none"> 1. Conduct environmental categorization of project as per ADB SPS 2009 as well as with local environmental regulations 2. Lead updating or preparation of project-specific environmental assessment studies (IEE's / EIA's) based on earlier feasibility study. This includes (but not limited to) assessment related with e-flows,

	<p>downstream water usage, transboundary, socio-economic and occupational and community health and safety impacts;</p> <ol style="list-style-type: none"> 3. Prepare Terms of Reference / scoping study to feed into the respective EIA / IEE studies. 4. Carry out baseline surveys (also including terrestrial and aquatic surveys). 5. Prepare critical habitat assessment study as per IFC GN 06 and associated plans (BAP, BMP); 6. Preparation / update of stakeholder engagement plan (SEP) with robust consultations with various stakeholders (community, government departments, NGO's, and water user associations etc.) carried out 7. Preparing Framework SSEMP as part of the EIA / IEE studies. 8. Assist WAPDA in getting the No Objection Certificate (NoC) on the environmental assessment studies (EIA's / IEE's) from Balochistan Environmental Protection Agency (BEPA). 9. Coordination with resettlement specialist to include detailed socio-economic impacts in the in the EIA / IEE studies 10. Providing environmental safeguards input in the construction bidding documents
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k. Principal Seismologist / Seismic specialist – International (1.5 PERSON-MONTHS)

General Qualification	Minimum Bachelor's degree in civil engineering/geology, and Masters in Seismology, Geotechnical Engineering, Geosciences, or in related field.
Project Related Experience	At least 20 years of relevant work experience as Seismologist involved in analyzing, designing and implementation of dam projects; Demonstrated competencies in leading seismic studies for detailed design of at least three large dams and/or related water resources development projects.
Overseas/Country Experience	5 years of work experience on major projects in Asia or experience in Pakistan is preferred.
Job Description	<ol style="list-style-type: none"> 1. Review, confirm the seismic hazard analysis using deterministic and probabilistic analysis. Confirm the calculated values for MCE (0.30g), OBE (0.15g), and DBE (0.25g) accelerations, and validation testing with a 3D structural analysis software model; and 2. Recommendations on Peak Ground Acceleration (PGA) values for a robust design based on ICOLD and internationally accepted standards. 3. Confirm the design using deterministic and probabilistic assessment.

l. Principal Agronomist / CCA development expert – National (6 person-months)

General Qualification	Minimum Master's degree in agronomy/crop sciences, or a related field from a recognized local/foreign university.
Project Related Experience	At least 15 years of work experience in agriculture development, irrigation scheduling and design and implementation of agriculture development projects; Demonstrated competencies in leading agricultural development planning for at least three large-scale irrigation development projects design.
Experience with International Organization	3 years of work experience with ADB, the World Bank and/or other international financial institutions is preferred.
Job Description	<ol style="list-style-type: none"> 1. Prepare agriculture development plan, irrigation scheduling and canals operations; 2. Lead, in close collaboration with Principal Irrigation Engineer, Water Resources Planning Expert, Water Resources Planning Specialist, Social Development Specialist, and others as required), the development of agricultural development plan, and assist in the development of irrigation management plan to ensure that it fully reflects the prevailing and potential agricultural development constraints and opportunities; 3. Review existing cropping pattern and constraints, irrigation methods, crop water requirements and opportunities to improve the cropping pattern that is socially and economically acceptable; 4. Lead and assist in the preparation of modern and innovative best practices and methods for crops in accordance with the required agricultural development support; and 5. Assist in the preparation of the draft final report.

m. **Principal Irrigation Engineer / Specialist – International (1.5 person-months)**

General Qualification	Minimum Bachelor's degree in civil engineering, or agricultural engineering and Masters in irrigation Engineering, or in related field.
Project Related Experience	At least 20 years of work experience in irrigation design and management; Demonstrated competencies in leading detailed design of at least three large-scale irrigation development projects.
Overseas/Country Experience	5 years of work experience on major projects in Asia or experience in Pakistan is preferred.
Job Description	<ol style="list-style-type: none"> 1. Lead in the finalizing water allocation and water allowance for equitable water distribution to the irrigation system; 2. Lead engineering design works for irrigation component; 3. Lead, in close collaboration with Agricultural Specialist, Water Resources Expert, Institutional/Governance

	<p>Specialist, and others as required), the development of irrigation management plan, and assist in the development of agricultural development plan to ensure that agricultural development scenario is fully consistent with the irrigation system and management designs. Work with the team for proposing modernization, technology, demand-based system, for concept design preparation.</p> <p>4. Lead the preparation of the irrigation component cost estimates, including the preparation of bill of quantities and relevant specifications of the materials and construction methods, as well as costs of plausible institutional development for sustainable and equitable irrigation management; and</p> <p>5. Assist in the preparation of the draft final report. report.</p>
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41. **Qualification of Non-Key Experts.** All non-key experts will have university degree in related field and have at least 7 years of working experiences in related field of the work assignments (3 years of working experience for junior positions). For international experts, having working experience in Pakistan or similar geographic countries will be advantage. For national experts, experience with ADB and/or the World Bank financed projects will be preferred. Firms are required to provide CVs of all non-key experts in addition to key experts. CVs of non-key expert will not be scored but considered on fail/pass criteria and considered in the overall evaluation of the proposal.

42. It is the responsibility of the consulting firms to identify junior and/or assistant engineers and supporting staff required under the assignment and included in the proposal. Firm should include cost of all their proposed experts, key, non-key and any other expert that firm deem fit to deliver the assignment as per the TOR, in their financial proposal.

VIII. Construction Supervision²⁰

43. Construction supervision may be awarded to the same firm, through single-source selection (SSS) method, subject to the satisfactory performance of the firm. The key objective of the construction supervision (CS) is to ensure that the project is constructed satisfactorily with a high standard of workmanship and high quality of materials, within the scheduled contract times, and in conformity with the approved drawings and specifications, acceptable environmental standards, and in accordance with the WAPDA's requirements. The main assignment is expected to supervise the construction of the main works and command area development (CAD) works, manufacturing supply and installation of mechanical / electrical equipment, testing and commissioning of evaluation and monitoring equipment, all in accordance with the specifications and drawings and to coordinate and manage contracts i.e main works and CAD works to ensure timely and successful completion of the entire project to get the requisite objectives, The consultant shall be vigilant and take timely appropriate action to discourage and minimize the claims from contractors.

²⁰ Construction supervision will be financed by ensuing project.

Terms of Reference for Dam Safety Panel of Experts

I. OBJECTIVE

1. Pakistan's Water and Power Development Authority (WAPDA) desires to develop the Naulong Multipurpose Dam Project (NMDP) consisting of a 57 m high dam at the downstream end of the Mula River, storing 247 MCM, irrigating 19,000 ha, providing 13.5 MCM of water for household use and generating 4.4 megawatt (26.6 gigawatt hours) of hydropower.
2. A Dam Safety Panel of Experts (DSPOE) will be established to provide technical review of the detailed designs and ensure that the dam safety is assured over the long term and that the dam and reservoir are sustainably developed, operated, and maintained. The Panel will be appointed, in line with their individual experts under framework contracts, throughout the project preparation and implementation phases, up to the first period of the operation phase.
3. The safety assessment of the Dam and associated structures will be carried out in line with the relevant regulations of the Pakistan Government as well as international technical standards, such as those of the International Commission on Large Dams (ICOLD). The DSOPE will review and provide the Client with recommendations on detailed designs, bidding documents, construction plan, implementation schedules, etc.

II. SCOPE OF SERVICES

4. The DSPOE will consist of four (4) members each with 2 person-months input:²¹
 - (i) dam specialist / Chairperson;
 - (ii) geotechnical specialist;
 - (iii) hydrology and hydraulics specialist; and
 - (iv) hydro electrical and mechanical specialist.

In addition to the four experts, other experts, subject to actual requirements, may be mobilized for implementing specialized reviews.

5. The Client will organize periodic working missions for the DSPOE at the dam site depending on requirements in each phase of project implementation. The Client will provide the DSPOE with documents, drawings, information, and data required for safety review. The DSOPE will prepare, sign, and submit a Report before completion of each mission. The Report should indicate issues to be paid attention to and propose recommendations. The Chairperson (Dam Specialist) will be responsible for coordinating activities of the DSPE, presiding at meetings, making final decisions, and finalizing the DSPOE's Reports.

III. KEY TASKS

6. The tasks of the different members of the DSPOE are outlined below.
7. **Dam Specialist/Chairperson (2 person-months)**

- a. Tasks

²¹ Additional one person-month is unallocated as contingency.

The primary tasks of the Dam Specialist and Chairperson of the DSPOE will include, but not necessarily be limited to the following:

- (i) Performing dam site inspection, and review field investigations, survey, test results, etc. and check their adequacy; and assess the need for additional drilling, sampling, laboratory testing or other field exploration with other panelists if any;
- (ii) Review of the dam engineering aspects of the design reports and construction plan /schedule of the Naulong Dam r works in conformity with the national and international standards and assess the adequacy of the overall design and construction plan;
- (iii) Review of the overall construction procedure and schedule, including upstream and downstream cofferdams, and recommend additional analyses and possible adjustments / refinements if any;
- (iv) Review of the overall implementation arrangement and schedule of the dam works, including cofferdam;
- (v) Review of the adequacy of the Construction Supervision and Quality Assurance Plan including monitoring and testing procedures;
- (vi) Recommending follow up actions if any to assure the safety of the dam's design and construction plan, considering potential risks and required safety level;
- (vii) Review of the dam engineering aspects of the bidding documents, including technical specifications and drawings; and provide technical support during bidding process, including prequalification, bid evaluation and contract negotiations; and
- (viii) Review of the dam safety instrumentation plan, such as piezometers, seepage measuring devices, settlement survey, slope inclinometers, and extensometers, and their adequacy and recommend possible improvements.

b. Deliverables

The Dam Specialist, as a chairperson of the panel, will direct preparation of a comprehensive report by all members of the Panel during each visit and meeting. The Panel is expected to develop one report for each visit, containing the findings and recommendations of all the experts.

- (i) Dam Engineering component of the DSPOE Report covering:
 - o Dam site inspection findings;
 - o Findings from the review of field investigations, surveys, and test results;
 - o Summary of an assessment of the adequacy or the need for additional drilling, sampling, laboratory testing or other field exploration investigations as necessary;
 - o Summary of the review of the design reports and construction plan /schedule in conformity with the national and international standards, with comments on the adequacy of the overall design and construction plan;
 - o Summary of a review of the overall construction procedure and schedule, including upstream and downstream cofferdams, with recommendations of additional analyses and possible adjustments / refinements if any;
 - o Summary of a review of the overall dam safety conditions;
 - o Summary of a review of the overall implementation arrangement and schedule of the dam works, including cofferdam arrangements and excavation blasting works;
 - o Summary of a review of the adequacy of the Construction Supervision and Quality Assurance Plan including monitoring and testing procedures;
 - o Summary of a review of the dam safety instrumentation plan, such as piezometers, seepage measuring devices, settlement survey, slope inclinometers, and their adequacy; recommending possible improvements; and
 - o Recommendations on follow up actions if any to assure the safety of the dam's design

- and construction plan, considering potential risks and required safety level.
- (ii) Review Report on the adequacy of the bidding documents, including technical specifications and drawings;
- (iii) Technical support of the dam engineering aspects of the bidding process, including prequalification, bid evaluation and contract negotiations;

c. **Qualifications**

The Dam Specialist should meet the following minimum requirements:

- An advanced degree in Civil Engineering, Hydropower, Water Resources or related field or other relevant majors;
- Minimum 25 years of experience in relevant professional works;
- Having worked as a dam expert in designing and construction of dams;
- Extensive experience in preparing construction plans and schedules for large-scale or complex dam projects;
- Extensive experience of dam safety planning, instrumentation, and monitoring; and
- Experience in leading teams comprising multiple experts in various technical disciplines of dam design.

8. **Geotechnical Engineer (2 person-months)**

a. **Tasks**

The primary tasks of the Geotechnical Expert on the DSPoE will include, but not necessarily be limited to, the following:

- (i) Review of the geological and geotechnical aspects of design reports;
- (ii) Review of the geological and geotechnical investigation reports, such as drilled core assessment, permeability tests, in-situ and laboratory tests, etc.; and assess the need for additional investigations and tests, if required;
- (iii) Review of the seismological aspects of the dam site and areas as required;
- (iv) Performance of the dam site inspection, along with the results of site investigations, surveys, and test results, and check their adequacy;
- (v) Review of the geotechnical aspect of the Construction Supervision and Quality Assurance Plans, and assessment of the results of instrumentation data related to geotechnical aspects of the foundation during construction works and recommending additional monitoring, survey, and design modifications if any;
- (vi) Recommending follow up actions related to geotechnical aspects of the work (if any) to ensure the safety of the dam's works, considering potential risks and required safety level;
- (vii) Review of the technical specifications and drawings of the bidding documents and providing technical support for the geotechnical aspects of the bidding process, including pre-qualification, bid evaluation, contract negotiations;
- (viii) Review of the adequacy of the instrumentation plan, such as piezometers, seepage measuring devices, settlement survey, slope inclinometers, and extensometers, including their numbers, locations, monitoring frequency, etc.; and
- (ix) Coordinating with the DSPOE chair and other panelists for fulfilling the assignments in the field and his/her home offices under the guidance of the client.

b. **Deliverables**

Preparation of the Geotechnical component of the DSPoE report covering:

- (i) Contribute to the Panel's comprehensive report during each visit and meeting, as directed by the Chair of the Panel;
- (ii) Review of the geological and geotechnical aspects of design reports;

- (iii) Review of the geological and geotechnical investigation reports, such as drilled core assessment, permeability tests, in-situ and laboratory tests, etc.; and assess the need for additional investigations and tests, if required;
- (iv) Review of the seismological aspects of the dam site and areas as required;
- (v) Performance of the dam site inspection, along with the results of site investigations, surveys, and test results, and check their adequacy;
- (vi) Review of the geotechnical aspect of the Construction Supervision and Quality Assurance Plans, and assessment of the results of instrumentation data related to geotechnical aspects of the foundation during construction works and recommending additional monitoring, survey and design modifications if any;
- (vii) Recommending follow up actions related to geotechnical aspects of the work (if any) to ensure the safety of the dam's works, considering potential risks and required safety level;
- (viii) Review of the technical specifications and drawings of the bidding documents and providing technical support for the geotechnical aspects of the bidding process, including pre-qualification, bid evaluation, contract negotiations; and
- (ix) Review of the adequacy of the instrumentation plan, such as piezometers, seepage measuring devices, settlement survey, slope inclinometers, and extensometers, including their numbers, locations, monitoring frequency, etc.;

c. **Qualifications**

The Geotechnical Specialist should meet the following minimum requirements:

- An advanced degree in Geology, Geotechnical Engineering, or other relevant majors;
- Minimum 25 years of experience in relevant professional works;
- Having worked as a geotechnical expert in designing and construction of large dams;
- Intensive experience in preparing geotechnical aspects of construction plan and schedule for large-scale or complex dam projects; and
- Intensive experience of geotechnical related works for dam safety planning, instrumentation, and monitoring.

9. **Hydrology and Hydraulics expert (2 person-months)**

a. **Tasks**

The key tasks of the Hydrology and Hydraulics Expert on the DSPoE include, but are not necessarily be limited to, the following:

- (i) Review of the hydrological and hydraulic engineering aspects of the design reports;
- (ii) Review of the hydraulic design of the spillway;
- (iii) Review of the criteria, methodology and adequacy of the design flood, flood routing studies, and spillway capacity and recommend measures if any;
- (iv) Review of the overall reservoir operational rules for water supply for irrigation and domestic water use, flood control and power generation including operational records (reservoir water level, inflow, discharge volume, etc.) and hydrological /meteorological monitoring data;
- (v) Review of the overall construction plan and the discharge for selected return periods of both upstream and downstream cofferdam arrangements from hydrological and hydraulic aspects;
- (vi) Recommending additional actions and measures to assure the safety of the dam's design and construction plans considering potential hydrological / hydraulic risks and required safety level if any;
- (vii) Review of the hydrology and hydraulic aspects of the technical specifications and drawings of the bidding documents and provide technical support of the hydrology

and hydraulic design aspects of the bidding process, including pre-qualification, bid evaluation, contract negotiations;

- (viii) Review of the adequacy of hydro-meteorological monitoring instruments, including their numbers, locations, monitoring frequency, etc.;
- (ix) Review of sedimentation issues in the reservoir and management strategy / plan for ensuring long term sustainability; and
- (x) Coordinating with the DSPoE chair and other panelists for fulfilling the assignments in the field and his/her home offices under the guidance of the client.

b. Deliverables

Preparation of the Hydrology and Hydraulics component of the DSPoE report covering:

- (i) Contribute to the Panel's comprehensive report during each visit and meeting, as directed by the Chair of the Panel;
- (ii) Review report on the hydrological and hydraulic engineering aspects of the design reports;
- (iii) Review report on numerical and physical model studies;
- (iv) Review report on the design criteria and specifications of the hydraulic structures, as well as drawings and construction plans;
- (v) Review report on the hydraulic design of hydraulic structures;
- (vi) Review report on the criteria, methodology and adequacy of the design flood, flood routing studies, and spillway capacity and recommend measures if any;
- (vii) Review report on the overall reservoir operational rules for flood control and power generation including operational records (reservoir water level, inflow, discharge volume, etc.) and hydrological /meteorological monitoring data;
- (viii) Review report on the overall construction plan and the discharge for selected return periods of both upstream and downstream cofferdam arrangements from hydrological and hydraulic aspects;
- (ix) Recommendations on additional actions and measures to assure the safety of the dam's design and construction plans considering potential hydrological / hydraulic risks and required safety level if any;
- (x) Review report on the hydrology and hydraulic aspects of the technical specifications and drawings of the bidding documents and providing technical support for the hydrology and hydraulic design aspects of the bidding process, including pre-qualification, bid evaluation, contract negotiations;
- (xi) Review report on the adequacy of hydro-meteorological monitoring instruments, including their numbers, locations, monitoring frequency, etc.; and
- (xii) Review report on sedimentation issues in the reservoir and management strategy / plan for ensuring long term sustainability if relevant.

c. Qualifications

The Hydrology & Hydraulic Specialist should meet the following minimum requirements:

- An advanced degree in Hydrology, Hydraulics, Water Resources or related field or other relevant majors;
- Minimum 25 years of experience in relevant professional works;
- Having worked as a hydrologist and hydraulic design expert in designing and construction of large dams;
- Extensive experience in hydrological and hydraulic aspects of construction planning and scheduling for large-scale or complex dam projects;
- Extensive experience of hydrological and hydraulic aspects of dam safety planning, instrumentation, and monitoring; and

- Experience in reservoir sedimentation assessment and management.

10. Hydroelectric and Mechanical Expert (2 person-months)

a. Tasks

The primary tasks of the Hydro Electrical and Mechanical Expert on the PoE will include, but not necessarily be limited to, the following:

- (i) Review of the designs of the hydromechanical and electrical equipment;
- (ii) Review of the hydro electrical and mechanical aspects of the drawings and technical specifications of the hydromechanical and electrical equipment in the bidding documents, drawings and other relevant documents;
- (iii) Review of the hydromechanical and electrical aspects of the Operation & Maintenance (O&M) Plan and assess the adequacy of the O&M system of the hydromechanical equipment, including long term maintenance and safety inspection arrangements;
- (iv) Review of the hydromechanical and electrical aspects of the technical specifications and drawings of the bidding documents and providing technical support during the bidding process, including pre-qualification, bid evaluation and contract negotiations; and
- (v) Coordinating with the DSPoE Chairperson and other panelists for fulfilling the assignments in the field and his/her home offices under the guidance of the client.

b. Deliverables

Preparation of the Hydromechanical and Electrical component of the DSPOE reports covering:

- (i) Contribute to the Panel's comprehensive report during each visit and meeting, as directed by the Chair of the Panel;
- (ii) Review report on the hydro mechanical and electrical aspects of the designs of hydro-mechanical and electrical equipment built-in parts lifting mechanism, trash rack, back-up generators, etc. as well as monitoring / control system, operational procedures / arrangements;
- (iii) Review report on the hydro mechanical and electrical aspects of the drawings and technical specifications of the hydro-mechanical and electrical equipment in the bidding documents, drawings and other relevant documents;
- (iv) Review report on the overall conditions of other gates, valves and hydro-mechanical-electrical equipment spillway flood gates and its control/operational system and make recommendations for ensuring the safe operation; and
- (v) Review report on the hydro mechanical and electrical aspects of the technical specifications and drawings of the bidding documents and providing technical support during the bidding process, including pre-qualification, bid evaluation and contract negotiation.

c. Qualifications

The Hydro Electrical and Mechanical Expert should meet the following minimum requirements:

- An advanced degree in Electro, Mechanical Engineering or related field or other relevant majors;
- Minimum 25 years of experience in relevant professional works;
- Having worked as a hydro electrical – mechanical expert in designing and construction of large dams;
- Extensive experience in hydro electrical and mechanical aspects of construction

- planning and scheduling for hydropower projects; and
- Extensive experience of hydro mechanical and mechanical aspects of dam safety planning, instrumentation, and monitoring.

IV. IMPLEMENTATION DURATION AND CONTRACT

11. The services of the DSPOE are envisaged to start in Q1 2023 with a document review period which will be followed by a site visit of 10 working days in support of preparatory activities.

12. The DSPOE will be maintained on an on-call basis throughout the duration of their individual contracts, and this includes home office work.

13. At the request of the Client, the DSPOE members may provide technical support from their home offices and through video/audio conferences.

Terms of Reference for Stakeholders Engagement and Social Mobilization for Inclusive, Community and Gender Based Project Design

I. Background

1. Since 1960, Naulong gorge carved by the passage of Mula River has been the focus of planning studies for construction of a storage dam on the river. Originally, the Feasibility Study of the Project was carried out by the Planning and Investment Division of the Water and Power Development Authority (WAPDA) in April 1996. Though PC-I (project approval document) of the Project for its implementation was not approved due to financial constraints, PC-II (detail design request) approved by Central Development Working party (CDWP) in August 2001 triggered the preparation of Project's Detailed Engineering Design (DED) and other related activities, and the WAPDA hired the services of the Naulong Dam Project Consultants (NDPC) to carry out project planning studies, preparation of detailed engineering design, and tender documents. The Executive Committee of the National Economic Council (ECNEC) approved the original PC-I of Project on 3 September 2009. The original PC-I was revised due to (i) higher bid cost quoted by the lowest bidder in April 2010, (ii) change in operation of mechanism of development of command area, (iii) change in design parameters, and (iv) inclusion of High Efficiency Irrigation System (HEIS). PC-I was approved on 16 August 2012. The third instance of the bidding process was carried out in 2015. The first Revised PC-I was prepared on the basis that rates quoted by the lowest bidder was also not relevant due to high rate of escalation prevalent during the period. Accordingly, the second Revised PC-I was prepared in 2015 and WAPDA was asked to explore avenues of project financing. WAPDA prepared the updated second Revised PC-I in 2020 and received direction from ECNEC on 26 March 2020 to include command area development works executed by WAPDA, modify the PC-1 and negotiate with the Asian Development Bank (ADB). In July 2020, following recommendations and decisions done at the meeting held by ECNEC, the modified 2nd Revised PC-I of the Project amounting to Rs. 35,484 million which includes command area development work cost supposed to be borne by the Government of Balochistan. The CDWP approved the modified 2nd Revised PC-1 on 10 January 2022.

2. The Government of Pakistan requested a project readiness financing (PRF) from ADB to prepare the Naulong Integrated Water Resources Development Project (the ensuing investment project). The ensuing investment project comprises a 57-meter-high zoned earth-filled main dam, a 54-meter-high auxiliary dam with similar zoned configuration, an orifice gated spillway structure, a fuse plug embankment, a tunnel, two powerhouses, and an irrigation scheme with 2 main canals. Ninety Million cubic meters (MCM) of water will be provided to a new command area of 10,927 ha on the right side of the river and 80 MCM for irrigating 8,094 ha on the left side including availability of water for drinking purpose of the local population.

3. PRF will enhance the agriculture development and irrigation management planning in the project area by having the reliable and enhanced water availability with improved water and agriculture productivity. PRF will complete the DED by reviewing and revising where needed, the existing DED and prepare due diligence document for the ensuing project. This will include hydrology study with 50 years of simulated hydrology and climate change forecasts. Based on hydrology and water flow estimations, the PRF will prepare DED of the dam and its appurtenant structures, power houses, irrigation, and command area development; preparation of procurement strategy including capacity assessment of the EA and IAs, risk register and procurement plan; safeguard documents update; and other project readiness activities by filling the identified gaps and missing data. The WAPDA is the executing agency of the PRF and will

engage a consultant team for this assignment. The Irrigation Department of Government of Balochistan (BID), Agriculture and Cooperative Department of Government of Balochistan (BACD) are the key implementing agencies. WAPDA will be responsible for the preparatory work on dam and related works. The BID will be responsible for all the preparatory work related to irrigation canal system. The BACD will be responsible for preparatory work for command area and agriculture. Other departments potentially collaborating with WAPDA are GOB departments of (i) Energy, (ii) Forest and Wildlife; (iii) Fisheries; (iv) Local Government and Rural Development; (v) Public health Engineering; (vi) Board of Revenue; (vii) Planning and Development; and (viii) Office of the Deputy Commissioner; and federal departments of Quetta Electric Supply Company and National Electric Power Regulatory Authority. WAPDA will recruit all consultants following the ADB Procurement Policy (2017, as amended from time to time), Procurement Regulations for ADB Borrowers (2017, as amended from time to time), and its associated procurement staff instructions.

II. Objective of the Assignment

4. The key objectives of the assignment are to (i) engage community in project design upgrades, and ensure stakeholder consultation captures community voice including gender development; (ii) assess project impact on the community; (iii) recommend social mobilization and community institutional anchorage in project design and execution, and (iv) ensure options for agriculture development and irrigation management are well-considered for enhancing water and agriculture productivity, and livelihood in the project area.

III. Scope of Services and Overall Terms of Reference

5. The duration of services is estimated at 12 months from Q3 2022 to Q3 2023. The following are key scope of services while details are provided in subsequent sections.

6. **Stakeholders Consultation:** The services shall cover stakeholder's consultation in the project area, socio-economic profiling, capturing perception of the project positive and negative impacts and mitigation measures (including those related with safeguards), creating awareness on proposed project development options including public investment, training, awareness, micro-financing, discussing challenges and constraints, define continuous engagement plan and communication strategy, improve outreach using existing multiple tiers organizations under the rural support program.

7. **Social and Gender Development Assessment:** The services shall cover

- i. Collecting the data where required on social and gender characteristics of the communities affected by the project as well as communities benefiting from the project.
- ii. Conduct an assessment for preparing a skills development program (relevant to the project's overall scope and design) for the local communities particularly women and vulnerable groups.
- iii. Identify key gender entry points relevant to project's overall scope and design and prepare the Gender Action Plan for the ensuing project in close coordination with the EA and IAs.
- iv. Update and/or prepare social action plan, that will include labor assessment/requirement for the project.
- v. Continuation of consultation with vulnerable groups and women to obtain views on the need and opportunities for social and gender development.

- vi. Suggest special design features and strategies to be built into the sub-projects to facilitate and encourage women's involvement and ensure tangible benefits to women.
- vii. Prepare recommendations on additional social facilities and capacity development, and other measures under the plans; and
- viii. Provide recommendations for capacity development of the community-based organizations for realizing the project design and intended benefits.

8. **Water and Land Shareholding Assessment in the Command Area.** Water and land shareholding survey will be carried out in the command area of the Naulong Dam with the objectives of (i) review and updating of the water and land shareholding survey report; (ii) ascertaining the land tenure system; and (iii) ascertaining the exact number of legal land and water shareholders, tenants, and beneficiaries in the command area (right and left banks). In the proposed survey, some additional parameters like family size and gender ratio in the family sources of economy of the households in the project area, others such as skilled and unskilled labor and nomadic tribes if any, should be included. The resident and non- resident land and water shareholding families will also be ascertained. Both the land and water share entitlements are registered in cadastral records. Both records will be obtained and updated after consultation with the communities. Meetings with the farmers will be arranged and data will be collected in accordance with the designed checklist. The consultants will provide recommendations for digitization of such record to the detail design consultants.

9. **Social Impact Assessment and Social Action Plan:** The services shall cover the following:

- i. Undertake a rigorous Social Impact Assessment (SIA) to assess the socio-economic and gender specific context of the project area and issues related to loss of land, changes and disruptions to land use, other potential risks as well as benefit sharing arrangements;
- ii. Document the tribal social organization, land ownership and distribution. Consider the local Jirga (council of tribal elders) system and different Jirgas empowered under tribal governance system to make decision in case of any conflicts inter and intra tribes;
- iii. Build on the consultation and awareness raising campaign with affected communities and communities (including separate consultations with women groups, landless and other vulnerable groups) within the project area to identify their concerns, summarizes the results of consultations with affected persons, command area population, downstream water users and beneficiary population and discusses how concerns raised and recommendations made were addressed in the resettlement plan;
- iv. Identify the need for broad community support for potentially displaced families keeping in view the complex social and gender issues and conflicts in the area. This will be included in the stakeholder analysis and social action plan;
- v. Other key aspects to be covered under the SIA will include an assessment of livelihood and land tenure practices, stakeholder analysis, a conflict risk assessment along with mitigation approaches of identified risks to be incorporated in the design and delivery of the ensuing project;
- vi. Set out stakeholder engagement and consultation needs for the ensuing project in a standalone Stakeholder Engagement Plan (to be included with the SIA as an annex).
- vii. Prepare mitigation measures for adverse social impacts expected to be caused through environmental media and/or any other reasons. For this purpose, closely liaise with environment team to obtain information about expected social impacts and to jointly come up with mitigation measures for such impacts. Actions to mitigate impacts and

- risks as well as enhance project benefits are to be set out in a standalone social action plan (to be included with the SIA as an annex; and
- viii. Initial scoping of the SIA, including field-level data collection processes are to be shared with ADB and WAPDA prior to undertaking field-level primary data collection.

10. **Recommendations for Agriculture Development and Irrigation Management Plan:**

This will cover the following:

- i. Identify main challenges and constraints to the realization of agricultural development and irrigation management.
- ii. Provide recommendations to the detail design consultants for:
 - agricultural development scenario that the project may adopt through increased and more reliable supply of irrigation service for existing and new command areas, improved operation, management and maintenance of irrigation and drainage system, and effective agriculture development models;
 - alternative options for irrigation design and water productivity, including modern systems as center pivot, drip irrigation and combinations of drip and sprinkle, and possibly circular water use in greenhouses of high value crops, including analysis of required management structures and institutional options;
 - option analysis for full or hybrid demand-based irrigation system and prepare proposals regarding application of water conveyance, application, and conservation technologies; and
 - identification of changes in cropping patterns, using seed of improved variety, land use development, soil, farming practices, value addition of the products, better market access to maximize water productivity and value added.
- iii. Provide advisory support to the detail design consultants for
 - conducting agriculture value chain assessment in the command area and survey and mapping of the crops especially vegetable and fruit grown in the command areas with estimates of production and potential for commercial production;
 - assessing accessibility to market and current mode of surplus supplies to markets;
 - assessing current profitability and potential for improvement with improved inputs, packaging, and value addition;
 - analyzing data, and conducting consultations with stakeholders and present options for agribusiness model for both areas; and
 - reviewing other associated development plan in the area including (i) identification of value chains for both command areas in crops, livestock/dairy, and proposed fish production in the reservoir area with annual net fishing stock estimate around 0.9 million; (ii) development of drinking water supply system with multiple filtration plants for command areas; (iii) access road.

IV. **Deliverables**

11. The consulting services will be for 12 months tentatively from Q3 2022 to Q3 2023. The schedule for various reports and documents is given in Table 3.

Table 1. Schedule of Deliverables

Sr.	Report	Submission Deadline
1	Stakeholders Consultation Plan	1.0 months after the Commencement of Services
2	Stakeholders Consultation Report	6.0 months after the Commencement of Services
3	Social Impact Assessment and Social Action Plan	6.0 months after the Commencement of Services
4	Social and Gender Development Assessment Report	6.0 months after the Commencement of Services
5	Report on Water and Land Shareholding Assessment in the Command Area	6.0 months after the Commencement of Services
6	Report on Recommendations for Agriculture Development and Irrigation Management Plan	6.0 months after the Commencement of Services
7	Advisory Support to detail design consultants	Till end of contract

V. Executing Agency's Support

12. WAPDA and relevant authorities of the Government of Balochistan will give the Consultant access to all available data/other information sources relevant to their task. The data shall include, but not be limited to, the following:

- i. Any report prepared by and for WAPDA relating to the development of water sector projects as well as supporting data. This includes the project planning report (July 2009) which can be regarded as a revised feasibility study, the detailed engineering design (February 2010), involuntary resettlement and indigenous people screening report (October 2020), topographical studies report (September 2021), agriculture development studies report (March 2022), gender action plan (November 2021), economic and financial analysis report (March 2022), land acquisition and resettlement plan (February 2022), revised environmental impact assessment report (March 2021), modified second revised PC-1 (August 2021); latest data on villages/union councils, collected through the National Socio-Economic Registry (coordinated through the Benazir Income Support Program); other relevant information available on households, poverty status and agriculture collated by the Government of Balochistan; and
- ii. Relevant ordinances, legislation, regulations and administrative orders.
- iii. The client will facilitate all security arrangements in coordination with GOB during site visits to the project area. This has been agreed and approved at the highest level between the federal government and GOB.

VI. Key Personnel, Qualification Requirements and Job Description

13. Table 2 provides indicative required expertise including key and non-key experts. The

consulting firms will need to identify the need for technical (such as junior and assistant engineers) and administrative support staff (such as team assistant) and include their costs in the financial proposal.

Table 2: Summary of Indicative Consulting Services Requirement

Sl. No.	Area of Expertise	National (person- months)
Key Experts		
1	Social Mobilization and Institutional Development Specialist (Team Leader)	12
2	Rural Livelihood Development Specialist	12
3	Gender and Development Specialist	12
4	Natural Resource Management Specialist	2
5	Rural Microfinance Development Specialist	2
6	Livestock Development Specialist	2
7	Rural Agribusiness Development Specialist	2
8	Local Irrigation System Specialist	6
Subtotal		50
Non-Key Experts		
1	GIS and Remote Sensing Specialist	12
2	Communication Specialists (four positions)	48
3	Junior Sociologist, Community Mobilizers, Enumerators, Surveyors	24
4	AutoCAD Operators	10
5	Support Staff	48
Subtotal		142
Unallocated Persons		10 ^a
Total		202

Note: Key experts proposed to be named by firm and evaluated under the technical proposal. Firms are required to submit the CVS's of all non-key experts on the same format as for the key experts. CVs of the Non-key experts shall not be scored but they shall be evaluated on fail/pass criteria and considered in overall proposal evaluation.

^a To be met from contingent budget based on increased or actual requirements.

14. **Qualification of Key Experts.** The following is a brief description of required qualification, experience and expected role for the assignment.

a. Social Mobilization, Institutional Development and Monitoring and Evaluation Specialist (Team Leader) (National, 12 person-months)

General Qualification	Minimum Bachelor's degree in human science, social science or related field.
Project Related Experience	At least 10 years of work experience in social assessment, stakeholders' engagement, surveys planning, community outreach and trainings, rural support programs, rural support institutional development, and social impact assessments for infrastructure development projects. Demonstrated competencies in undertaking social assessment using participatory methods and preparing social impact assessments in tribal and/or conflict sensitive areas. Regional relevant experience preferred.

Experience with International Organization	5 years of work experience on development partners financed projects is preferred or working with INGOs
Job Description	<ol style="list-style-type: none"> 1. Coordinate and manage team activities to ensure full compliance with the TOR and delivery of quality outputs in a timely manner. 2. Liaise with WAPDA, ADB, Government of Balochistan, executing and implementing agencies, and other authorities as required. 3. Manage field surveys required under the TORs 4. Coordinate the studies. 5. Supervise the team to achieve the milestones proposed for the various studies and submission of documents in timely manner and establish a quality control mechanism for the technical coordination, design, and documents control;

b. Rural Livelihood Development Specialist (National, 12 person-months)

General Qualification	Minimum Bachelor's degree in human science, social science or related field.
Project Related Experience	At least 10 years of national work experience in rural support programs, or I/NGOs, in rural livelihood development in project design.
Experience with International Organization	5 years of work experience on development partners financed projects is preferred or working with INGOs
Job Description	<ol style="list-style-type: none"> 1. Provide support in designing the stakeholder consultation for capturing rural livelihood development in the project area. 2. Assist Team Leader in keeping Liaison with WAPDA, ADB, Government of Balochistan, executing and implementing agencies, and other authorities as required. 3. Through rapidly conducted surveys and stakeholder consultations, assess the project impact on the rural livelihood and recommend measures for improvements and features to build in design.

c. Gender and Development Specialist (National, 12 person-months)

General Qualification	Minimum Bachelor's degree in human science, social science or related field.
Project Related Experience	At least 10 years of national work experience in gender and development, under rural support program or I/NGOs in project design.
Experience with International Organization	5 years of work experience on development partners financed projects is preferred or working with INGOs
Job Description	<ol style="list-style-type: none"> 1. Provide support in designing the stakeholder consultation for capturing gender and development in

	<p>the project area.</p> <ol style="list-style-type: none"> 2. Assist Team Leader in keeping Liaison with WAPDA, ADB, Government of Balochistan, executing and implementing agencies, and other authorities as required. 3. Lead and document focused group discussions and assess the project impact on the gender and development and recommend measures for improvements and features to build in design.
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d. Natural Resource Management Specialist (National, 2 person-months)

General Qualification	Minimum Bachelor's degree in agriculture, forestry, human science, social science or related field.
Project Related Experience	At least 10 years of national work experience in gender and development, under rural support program or I/NGOs in project design.
Experience with International Organization	2 years of work experience on development partners financed projects is preferred or working with INGOs
Job Description	<ol style="list-style-type: none"> 1. Provide support in designing the stakeholder consultation for capturing natural resources management in the project area. 2. Assist Team Leader in keeping Liaison with WAPDA, ADB, Government of Balochistan, executing and implementing agencies, and other authorities as required. 3. Assess the project impact on the NRM and recommend measures for improvements and features to build in design.

e. Rural Micro-finance Development Specialist (National, 2 person-months)

General Qualification	Minimum Bachelor's degree in finance, human science, social science or related field.
Project Related Experience	At least 10 years of national work experience in rural micro-finance under rural support program or I/NGOs in project design.
Experience with International Organization	2 years of work experience on development partners financed projects is preferred or working with INGOs
Job Description	<ol style="list-style-type: none"> 1. Provide support in designing the stakeholder consultation for microfinance extension in the project area, challenges, and opportunities. 2. Assist Team Leader in keeping Liaison with WAPDA, ADB, Government of Balochistan, executing and implementing agencies, and other authorities as required. 3. Assess how rural micro-finance could be linked in the overall project design of the agriculture

	development.
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f. Livestock Development Specialist (National, 2 person-months)

General Qualification	Minimum Bachelor's degree in livestock, agriculture, forestry, human science, social science or related field.
Project Related Experience	At least 10 years of national work experience in rural micro-finance under rural support program or I/NGOs in project design.
Experience with International Organization	2 years of work experience on development partners financed projects is preferred or working with INGOs
Job Description	<ol style="list-style-type: none"> 1. Provide support in designing the stakeholder consultation for capturing livestock management in the project area. 2. Assist Team Leader in keeping Liaison with WAPDA, ADB, Government of Balochistan, executing and implementing agencies, and other authorities as required. 3. Assess the project impact on the livestock development and recommend measures for improvements and features to build in design.

g. Rural Agribusiness Development Specialist (National, 2 person-months)

General Qualification	Minimum Bachelor's degree in business administration, agriculture, forestry, livestock, human science, social science or related field.
Project Related Experience	At least 10 years of national work experience in rural micro-finance/enterprise development/agricultural and livestock marketing under rural support program or I/NGOs in project design.
Experience with International Organization	2 years of work experience on development partners financed projects is preferred or working with INGOs
Job Description	<ol style="list-style-type: none"> 1. Provide support in designing the stakeholder consultation for rural agribusiness management in the project area, challenges, and opportunities. 2. Assist Team Leader in keeping Liaison with WAPDA, ADB, Government of Balochistan, executing and implementing agencies, and other authorities as required. 3. Assess how rural agri-business could be enhanced in the area with recommendations for improvements in infrastructure, market, financial, digital access, trainings, demonstration, scale successful models, awareness, and linked in the overall project design of the agriculture development.

h. Local Irrigation System Specialist (National, 6 person-months)

General Qualification	Diploma or Bachelor's degree in Civil Engineering or related field.
Project Related Experience	At least 10 years of national work experience in rural micro-finance under rural support program or I/NGOs in project design.
Experience with International Organization	2 years of work experience on development partners financed projects is preferred or working with INGOs
Job Description	<ol style="list-style-type: none"> 1. Provide support in designing the stakeholder consultation for capturing local and prevalent irrigation system of <i>khuskaba</i> and <i>Sailaba</i>, water rights, practices, challenges and opportunities. 2. Assist Team Leader in keeping Liaison with WAPDA, ADB, Government of Balochistan, executing and implementing agencies, and other authorities as required. 3. Assess the project impact on the local and prevalent irrigation system, propose measures for community mobilization in water rights redefinition, identify challenges and opportunities, and identify measures and features to include in the project design.

15. It is the responsibility of the NGO to identify junior and supporting staff required under the assignment and included in the proposal.