Project Administration Manual

Project Number: 46528-002
Loan Number: LXXXX
November 2017

Islamic Republic of Pakistan: Jalalpur Irrigation Project

ABBREVIATIONS

ADB	–	Asian Development Bank
CAD	–	command area development
AES	–	agriculture extension service
CSP	–	country strategy partnership
DGA	–	Directorate General Agriculture
EIRR	–	economic internal rate of return
GDP	–	gross domestic product
ha	–	hectare
HEIS	–	high efficiency irrigation system
IBIS	–	Indus Basin Irrigation System
JIP	–	Jalalpur Irrigation Project
km	–	kilometer
LARP	–	land acquisition and resettlement plan
m^3/s	–	cubic meter per second
M&E	–	monitoring and evaluation
O&M	–	operation and maintenance
OCR	–	ordinary capital resources
OFWM	–	on-farm water management
PAD	–	Punjab Agriculture Department
PID	–	Punjab Irrigation Department
PIO	–	project implementation office
PMO	–	project management office
WA	–	withdrawal application
WUA	–	water users' association

CONTENTS

Project Administration Manual Purpose and Process

The project administration manual (PAM) describes the essential administrative and management requirements to implement the Jalalpur Irrigation Project (JIP) on time, within budget, and in accordance with the policies and procedures of the government and Asian Development Bank (ADB). The PAM should include references to all available templates and instructions either through linkages to relevant URLs or directly incorporated in the PAM.

The Government of Pakistan, Punjab Irrigation Department (PID), and Punjab Agriculture Department (PAD) are wholly responsible for the implementation of ADB-financed JIP, as agreed jointly between the borrower and ADB, and in accordance with the policies and procedures of the government and ADB. ADB staff is responsible for supporting implementation including compliance by PID and PAD of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.

At loan negotiations, the borrower and ADB shall agree to the PAM and ensure consistency with the loan agreement. Such agreement shall be reflected in the minutes of the loan negotiations. In the event of any discrepancy or contradiction between the PAM and the loan agreement, the provisions of the loan agreement shall prevail.

After ADB Board approval of the JIP's report and recommendations of the President (RRP), 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 the PAM.

I. PROJECT DESCRIPTION

1. The project will build a new, seasonal (April to October) surface irrigation system covering about 68,263 ha of presently low-productive, predominantly rainfed land in the two districts of Jhelum and Khushab in Punjab province. The irrigation system, diverting the flows of the Jhelum river, will comprise an intake structure, a 117-km main canal, 23 distributaries and 10 minor canals with a combined total length of 210 km with associated structures, and 485 tertiary-level water courses. Primary beneficiaries of the project will be the farming communities of some 384,000 people in 80 villages in and around the project area.[1]

2. The project is aligned with the following impact: enhancing growth in agriculture productivity, by increasing the area under cultivation, improving land resources and environment, and by better on-farm water management (Punjab Growth Strategy 2018).[2] The project will have the following outcome: Increased agricultural productivity.[3]

3. **Project Output 1: Jalalpur irrigation distribution system established.** The system includes an intake structure at the right bank of the Jhelum River at Rasul barrage, with a design discharge capacity of 38.15 m^3/s. The flow will be conveyed to the project area through 117-km long main canal, and further distributed throughout the project area via 23 distributaries and 10 minor canals with combined total length of 210 km. As the main canal traverses numerous natural drainage channels that carry seasonal and saline floods from the Salt Range, a total of 72 cross drainage structures would be constructed for safe passage of floods across the main canal. The project will also construct a total of 18 flood carrier channels to drain flood water to the Jhelum River. These channels will protect the project area from floods, and restore the soil productivity. In addition, the Project will construct a total of 253 various associated structures, including 42 flow regulators and drops across main, distributary and minor canals, 16 railway and road bridges, 15 foot bridges, 2 escapes, and 485 irrigation and 17 drinking water supply outlets.

4. Under Output 1, a monitoring and evaluation (M&E) system using satellite remote sensing technology will be developed to assess irrigation efficiency, crop-growing, water productivity, and *abiana*.[4] The staff of the Punjab Irrigation Department (PID) and the Punjab Agriculture Department (PAD) will be trained to use the system. To ensure sustainable O&M of the Jalalpur irrigation system, a guideline and sustainable plan of the system's O&M with improved asset management and irrigation service delivery with government of Punjab's committed budget allocation will be developed. To address potential risks against extreme torrents from the hilly terrain and floods from the Jhelum River, a flood disaster risk management plan will also be developed.

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[1] Primary beneficiaries of 384,000 was estimated based on the sample survey for 20 villages out of the total 80 carried out under ADB PPTA 8404-PAK (2013): Jalalpur Irrigation Project. It was estimated in the PPTA consultant final report (Annex F.1) that total population in 20 sample villages were 132,798, and out of which, the overall farming occupation accounted for 72.3% of the total. In addition, the distribution of farm area by size of farm was computed based on the latest available data obtained from the Agriculture Census Report (2010), and it was estimated in the PPTA consultant final report (Annex D) that there were 40,032 farms in the project area.

[2] Government of Punjab, Planning & Development Department. 2015. *Punjab Growth Strategy 2018 – Accelerating Economic Growth and Improving Social Outcomes*. Lahore.

[3] The design and monitoring framework is in Appendix 1.

[4] *Abiana* is the irrigation service fee and its assessment is based on expected crop production. PID reported that: (i) the net amount of *abiana* to be collected for PID-managed irrigation systems was $12.6 million during FY 2012–2013; (ii) the average *abiana* recovery rate for PID-managed irrigation systems are very high and 93% in FY 2012–2013; (iii) the high amount of arrears is the serious problem, the total amount of arrears at the start of FY 2012–*20*13 was $22.1 million, but the net amount to be recovered was $12.5 million.

5. **Project Output 2: Water-use capacity improved in the project area.** A total of 485 farm-level field channel (watercourses) will be constructed, along with over 18,910 small Naka (farm turnout) structures to distribute irrigation water over 68,263 ha of farmland during a period between April and October. Watercourses will be planned, designed, and constructed through close consultation with, and participation by the beneficiary farmers, who will be organized into water users' associations (WUAs). Pre-cast parabolic concrete segments will be provided by the project to cover 50% of the length of each watercourse.[5] WUAs will be responsible for O&M of watercourses and associated structures. The formation of WUAs will be guided and the capacity of WUAs will be strengthened by trainings under technical supervision and guidance by PAD. The PIO, through qualified social mobilization staff will assist farmers organize WUAs, and have them registered under "On Farm Water Management & Water Users' Association Ordinance [Act]-1981 (Amended 2001)".[6] The PIO will provide all WUAs training sessions, on such topics as: (i) administrative and financial management of WUA, (ii) conflict management, (iii) introduction of practices and technologies for irrigated agriculture, including water conservation technologies, (iv) soil improvement techniques to eliminate surface soil salinity, and (iv) good practices on asset management, O&M and water management.

6. To increase crop yields and irrigation application efficiency with minimum water wastage,[7] parts of the project area will be levelled (flattened) and high efficiency irrigation systems (HEISs) will be installed. Precision land levelling, flattening the farmland relief within +/- 2 cm, will be provided to about 12,140 ha of the total project area, using laser guided tractors, and HEISs such as drip irrigation system will be installed covering 809 ha with 20 water storage ponds with solar pumping stations. Cost of the precision land levelling and HEIS will be shared between the project and the beneficiary farmers. WUAs and farmers will be trained on the climate-smart irrigation practices covering: using solar pumping stations; precise land levelling and HEISs; scheduling irrigation according to crop water requirements; and other management techniques to maximize water productivity.

7. **Project Output 3: Farm management capacity improved in project areas.** The project will establish a total of 664 agricultural demonstration farms covering 220 ha to be selected, from varying farm sizes, through public invitation and balloting. Farmers with target 6,000 farm households will be provided advisory services and trainings for climate-smart irrigated agriculture practices and more profitable farm management through demonstration activities and farmer field schools. These services and trainings will include cropping pattern for high value crops, selection and adequate use of seeds and fertilizers, soil analysis and soil improvement techniques, and better marketing. The project will (i) organize knowledge sharing events to promote various modern water management and farming technologies; and (ii) provide private agriculture support services which support farmers for marketing and supply chain management of high-value agriculture, and help farmers develop linkages between the growers and the market. Trainings and demonstration activities under outputs 2 and 3 will be conducted in holistic and efficient manners.

[5] The remaining watercourse length will remain unlined as further reduction in water losses beyond 50%–60% lining is minor, compared to the cost of lining.

[6] Government of Punjab. 1981. *On-Farm Water Management and Water Users' Associations Ordinance, 1981.* Lahore.

[7] The field application efficiency is estimated at 75%.

II. IMPLEMENTATION PLANS

A. Project Readiness Activities

8. The ADB loan for the project is expected to become effective in February 2018 and will be implemented over a period of 6 years. To avoid startup delays, key project readiness activities and their timing and responsible agencies have been identified. Some readiness activities were already initiated using the project design advance (PDA) approved in January 2016 with $5 million financing.[8] PID engaged the PDA consultant to undertake the detailed design, update environmental and social safeguards planning documents, prepare bidding documents and support the bidding process, and help in processing the ensuring loan and PC-1 approval. These readiness activities are summarized in Table 1 below.

9. Implementation delays in irrigation projects often take place in land acquisition and preparation of command area development plans. Land acquisition for main irrigation components, particularly main, distributary and minor canals, is already in advanced stage at 40% completed as of August 2017. Consultation with beneficiary farmers in drawing up detailed command area plans, including alignment of water courses with agreement on donation of land, will be initiated in the first year of project implementation period, and work on water courses commencing in the beginning of the third year, when construction of main irrigation system is scheduled to be at peak.

Table 1: Project Readiness Activities

Indicative Activities	2017									2018		Responsibility
	4	5	6	7	8	9	10	11	12	1	2	
Start advertisement and processing to recruit PIC	X											PMO-Canals
Issuance of RFP for PIC				X								PMO- Canals
Completion of Detailed Design				X								PDA Consultant
Draft Bid Document for ICB Civil Works Package					X							PDA Consultant
PC-1 Approval					X							GoP
Loan negotiations							X					ADB-GoP
ADB Board approval								X				ADB
PMO-Canals and key PIO staff								X				PID and PAD
PIC contract									X			PMO-Canals
Completion of PDA									X			
Loan signing									X			ADB-GoP
Government legal opinion provided										X		GoP
Government budget inclusion				X								GoP
Loan effectiveness											X	GoP-ADB

ADB = Asian Development Bank, GoP = Government of Pakistan, ICB = international competitive bidding, PAD = Punjab Agriculture Department, PDA = project design advance, PIC = Project Implementation Consultant, PID = Punjab Irrigation Department, PIO = project implementation office, PMO = project management office, RFP = request for proposals.

[8] ADB. 2016. *Project Design Advance: Jalalpur Irrigation Project.* Manila.

B. Overall Project Implementation Plan

10. The project implementation schedule is shown in Table 2. Some activities such as mobilization of the project implementation consultants and project management will start from January 2018 prior to the expected loan effectiveness in February 2018, and the project's physical completion and loan financial closings are expected on 31 December 2023 and 30 June 2024, respectively.

Table 2: Proposed Overall Project Implementation Schedule

Expected Activities		2017	Year 1 (2018)				Year 2 (2019)				Year 3 (2020)				Year 4 (2021)				Year 5 (2022)				Year 6 (2023)			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
A. DMF																										
Output 1: Jalalpur irrigation distribution system established																										
Activity 1.1	Construct a intake structure, main canal, distributary and minor canals, cross drainage structures, with associated structures																									
Activity 1.2	Construct 18 flood carrier channels																									
Activity 1.3	Develop M&E system for Jalalpur irrigation system										X															
Activity 1.4	Complete training of PID and PAD staff on the use of the M&E system																									
Output 2: Water-use skill improved in project areas																										
Activity 2.1	Establish 485 WUAs																									
Activity 2.2	Construct 485 watercourses with farmers' participation																									
Activity 2.3	Undertake WUAs training for efficient O&M and their organizations																									
Activity 2.4	Laser land levelling covering 12,140 ha of the project area																									
Activity 2.5	Install high efficiency irrigation system covering 809 ha and 20 water storage ponds and solar pumping stations																									
Activity 2.6	Undertake farmers training for climate smart irrigation practices																									
Output 3: Farm management capacity improved in project areas																										
Activity 3.1	Establish 664 demonstration plots covering 220 ha																									
Activity 3.2	Conduct farmer field schools and farmers' training																									
Activity 3.3	Farmer fairs and other knowledge sharing events																									
Activity 3.4	Private agriculture support services																									
B. Management Activities																										
Activity 1	Complete detailed engineering design	X																								
Activity 2	Mobilize project implementation consultant	X																								
Activity 3	Mobilize project support consultant for outputs 2 and 3 activities																									
Activity 4	Initiate bid process of the major civil works contract	X																								
Activity 5	Contracts for the major civil works contract				X																					
Activity 6	Environment management plan key activities																									
Activity 7	Gender action plan key activities																									
Activity 8	Communication strategy key activities																									
Activity 9	Annual and/or midterm review			X				X				X				X				X				X		
Activity 10	Audits									X				X				X				X				X
Activity 11	Project completion report																									X

DMF = design and monitoring framework, M&E = monitoring and evaluation, O&M = operation and maintenance, PAD = Punjab Agriculture Department, PID = Punjab Irrigation Department, WUA = water users' association.
Source: Asian Development Bank estimates.

III. PROJECT MANAGEMENT ARRANGEMENTS

A. Project Implementation Organizations: Roles and Responsibilities

11. Project Steering Committee. The Project Steering Committee (PSC) established during PDA will continue providing oversight and policy guidance for the project, review progress, and make key decisions for the project. The PSC is chaired by the Chairman, Planning and Development Board (P&DB) and include Secretaries of Punjab Irrigation Department (PID), Punjab Agriculture Department (PAD), Punjab Environment Department, and Punjab Finance Department. Member Board of Revenue, the Project Directors of Project Management Unit (PMO) and Project Implementation Office (PIO), and the team leader of the project implementation consultant may also participate in PSC.

12. Executing and Implementing Agencies. PID will be the executing agency (EA) for the project and will be responsible for management and implementation of the entire project, and directly responsible for the project's Output 1 (irrigation system construction). PAD will be the implementing agency, responsible for the Output 2 (command area development) and Output 3 (capacity development for improved on-farm water management practices).

13. **Project Management Unit and Project Implementation Office**. PID will cause the existing project management office for canals (PMO-Canals) to be responsible for the project implementation.[9] [10] The Director of PMO-Canals will manage overall project implementation, coordinate and directly manage implementation of Output 1, and facilitate PSC meetings to report implementation status and seek policy and management guidance for the project. PAD will appoint Director General Agriculture (Water Management) as the project director responsible to oversee the implementation of Output 2 and 3, under the general oversight and coordination by PID's PMO-Canals. Under the supervision of PAD project director, a dedicated project implementation office (PIO) will be established for Output 2 and 3. For close coordination of each activity, the working level coordination committee comprising core staff from PMO-Canals, PIO and the two consultant teams (one for the project implementation consultant under PMO-Canals for Output 1 and another for the project support consultant under PIO for Outputs 2 and 3) will be established and meeting will be held on a monthly basis. Organizational structures of PMO-Canals and PIO are in Figures 1 and 2, respectively.

[9] In September 2017, the PMO-canals was transformed from the project management unit that implemented Loans 2299/2300-PAK for the Lower Bari Doab Canal Improvement Project under the Multitranche Financing Facility for Punjab Irrigated Agriculture Investment Program.

[10] Within PMO-canals, two other projects: Greater Thal Canal Project and Cholistan Water Resources Development Project are expected to be implemented once these are approved by ADB in 2018 and onward.

Figure 1. Organizational Structure of PMO-Canals

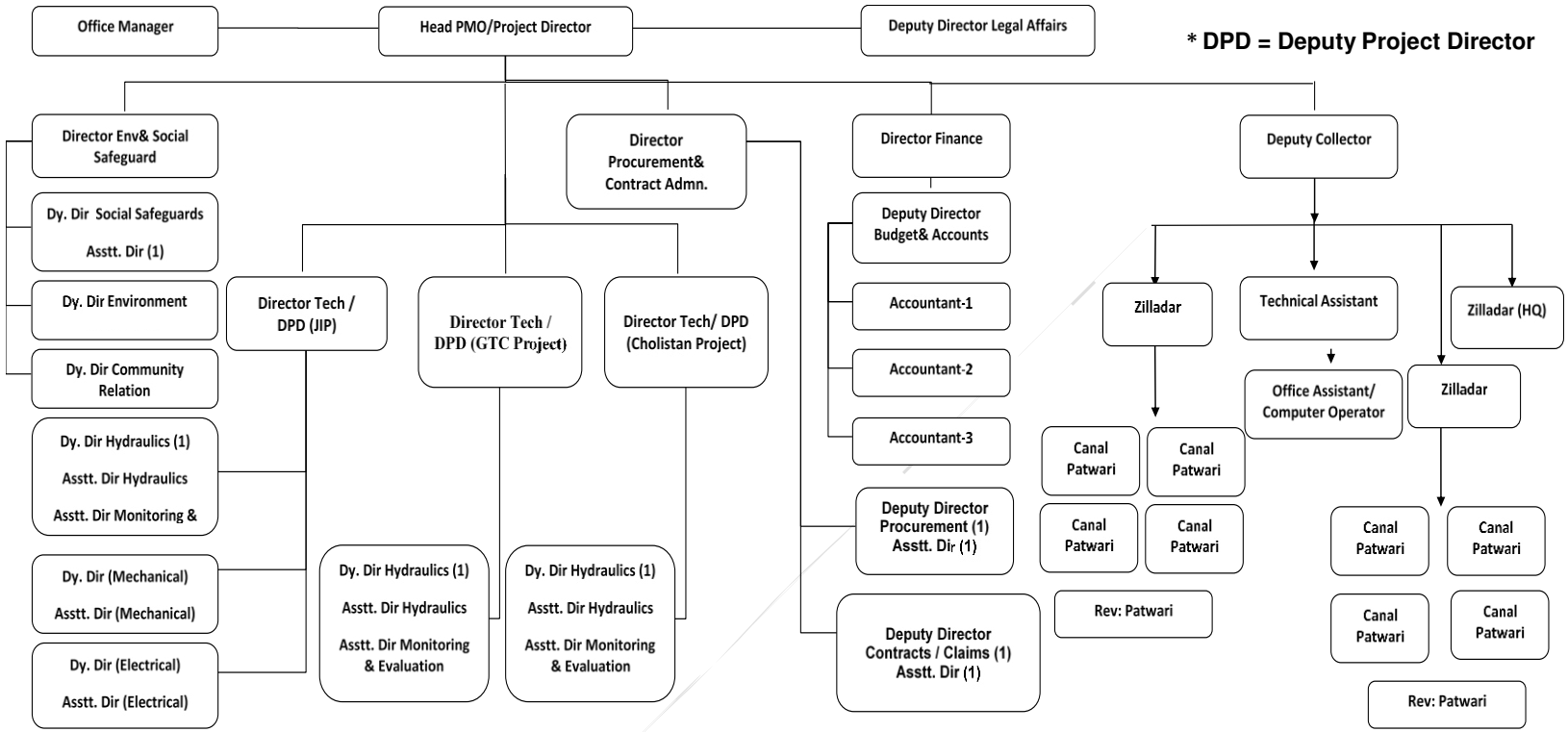
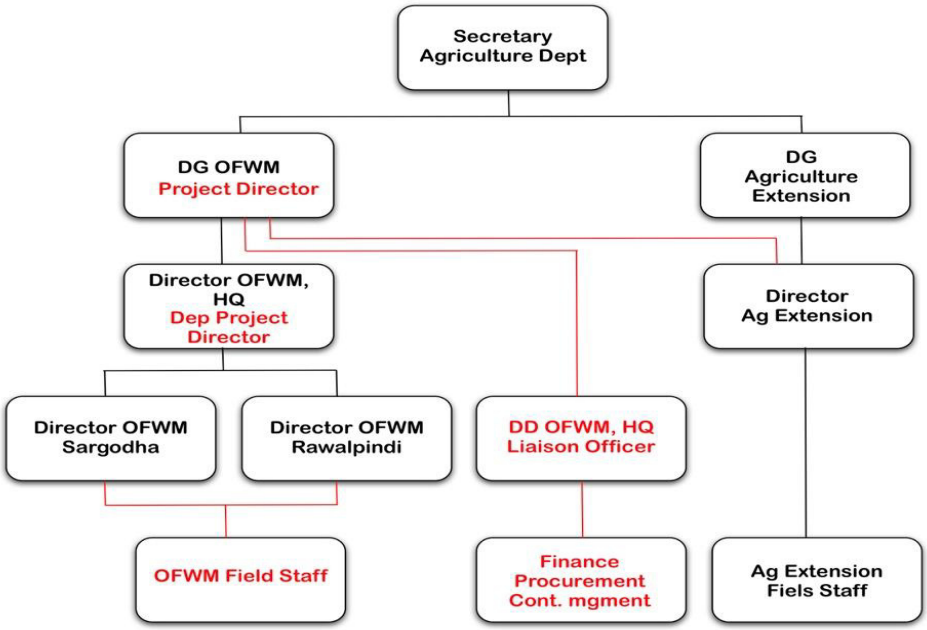


Figure 2. Organizational Structure of PIO



DD = Deputy Director, DG = Director General, HQ = headquarters, OFWM = on-farm water management, PIO = project implementation office.
Source: Asian Development Bank.

14. The detailed role and responsibilities of each organization are provided in Table 3.

Table 3: Roles and Responsibilities of Project Implementation Organizations

Project Implementation Organizations	Management Roles and Responsibilities
PID (executing agency)	• Oversee entire project implementation, and coordinate with PAD; • recruit PMO staff for the project; • ensure adequate and timely provision of counterpart funds; • have project accounts audited in a timely manner, and respond to audit observations and recommendations; • ensure full compliance with relevant loan and project covenants; • monitor the sustained O&M of the project facilities after project completion; and • approve procurement and resolve any finance-related issues.
PMO-Canals	• manage entire project and directly manage Output 1; • facilitate PSC meetings by inviting representatives from the EA, IA and other departments; • coordinate with PIO for consistent implementation in each output and organize working level coordination committee meetings; • undertake timely recruitment of consultants; • review and endorse engineering design, bidding documents, and contract awards; • ensure that final/implementation-ready LARPs are approved and disclosed prior to award of civil works contracts and that civil works commence only after completion of LARP implementation has been verified by an external monitor; • undertake periodic M&E of project activities and outputs, and prepare review reports, including issues and actions taken;

	• maintain advance account; • comply with the project's public disclosure, safeguards monitoring and grievance redress mechanism requirements; • supervise and ensure quality of works and services of consultants and counterpart staff; • maintain adequate strong financial management system and submit withdrawal applications to ADB in a timely manner; and • prepare and submit to ADB periodic progress reports and project completion reports in a timely manner
PAD (implementing agency)	• Coordinate with PID on project implementation; • recruit PIO staff for the project; • ensure adequate and timely provision of counterpart funds; • have project accounts audited in a timely manner, and respond to audit observations and recommendations; • ensure full compliance with relevant loan and project covenants; • monitor the sustained O&M of the project facilities after project completion; and • approve procurement and resolve any finance-related issues
Project Implementation Office	• directly manage Outputs 2 and 3; • undertake periodic M&E of project activities and outputs, and prepare review reports, including issues and actions taken; • maintain advance account; • undertake recruitment of consultants; • supervise and ensure quality of works and services of consultants and counterpart staff; • maintain adequate strong financial management system and submit withdrawal applications to ADB in a timely manner; and • assist PMO-Canals in preparing periodic progress reports and project completion reports in a timely manner
Project steering committee	• oversee the progress of project implementation, and resolve project issues relating to implementation and future O&M
Government of Punjab	• sign the Project Agreement; • ensure transparency in procurement and financial management; • ensure quality and timely completion of the project; • ensure timely allocation and release of counterpart funds, and timely approval of project cost, financing and other documents; • inform ADB major policy changes in the sector that may affect the implementation and future performance of the project; • ensure compliance with the loan covenants and financial audit recommendations; and • ensure compliance with resettlement and environmental safeguard as per EPA rules and regulations and ADB safeguard policy.
Ministry of Finance	• sign the Loan Agreement and allocate and release annual funds; • endorse to ADB the authorized staff with approved signatures for withdrawal applications processing; and • process and submit to ADB any request, when required.
ADB	• assist the EA and PMO in providing timely guidance for smooth implementation of the project in accordance with the agreements; review all the documents that require ADB approval; • conduct periodic loan review missions, a mid-term review, and a project completion mission; • monitor compliance with loan covenants, social and environmental safeguards and technical and financial requirements;

- timely process withdrawal applications and release eligible funds;
- ensure compliance with financial audit recommendations;
- regularly update the project performance review reports with the assistance of the project management office; and
- regularly post on ADB web the updated project information documents for public disclosure, and the safeguards documents as per disclosure provision of the ADB safeguards policy statement.

ADB = Asian Development Bank, EA = executing agency, EPA = Environmental Protection Agency, IA = implementing agency, LARP = land acquisition and resettlement plan, M&E = monitoring and evaluation, O&M = operation and maintenance, PAD = Punjab Agriculture Department, PIO = project implementation office, PMO = project management office, PSC = project steering committee.

B. Key Persons Involved in Implementation

Executing Agency	
Punjab Irrigation Department	Mr. Asad Ullah Secretary, Irrigation Department Government of Punjab, Irrigation Secretariat, Old Anarkali Lahore, Pakistan Telephone: +92 42 9212117-8 E-mail: sec_irr@punjab.net.pk
PMO Canals in Punjab Irrigation Department	Khalid Hussain Qureshi Project Director Telephone: +92 42 99250362 E-mail: pd_lbdcip@yahoo.co.uk
Implementing Agency	
Agriculture Department	Malik Muhammad Akram Director General, OFWM Directorate Agriculture House, 21-Agha Khan (Davis) Road, Lahore Telephone: +92 42 99200703
	Muhammad Zafar Yab Haider Director General, Agriculture Extension Directorate Agriculture House, 21-Agha Khan (Davis) Road, Lahore Telephone: +92 42 99200703
ADB	
Environment, Natural Resources and Agriculture Division	Akmal Siddiq, Director Telephone No. +63 2 632 6748 E-mail: asiddiq@adb.org
Mission Leader	Ryutaro Takaku, Principal Water Resources Specialist Tel (632) 632-5158, Fax (632) 636-2017 Email: rtakaku@adb.org
Resident Mission Focal	Asad A. Zafar, Senior Project Officer (Water Resources), Level 8, North Wing, Serena Business Complex, Khayaban-e-Suhrawardy, G-5, Islamabad, Pakistan Telephone: +92 51 260 0351 to 69, 2087300 Email: azafar@adb.org

C. Key PMO-Canal and PIO Staff

Table 4: Key PMO Staff[a]

Position	Number of Staff	Position	Number of Staff
Head/Project Director	1	DD, Budget and Accounts	1
Deputy Project Director	1	DD, Procurement-1	1
Director, Environment and Social Safeguards	1	DD, Procurement-2	1
Director, Procurement	1	DD, Legal	1
Director, Finance	1	Assistant Directors	9
DD, Social Safeguard	1	Office Manager	1
DD, Environment	1	Accountant	3
DD, Community, Social & Gender	1	Assistant Accountant	3
DD, Hydraulics	1	Deputy Collector	1
DD, Mechanical	1	Zilladar	3
DD, Electrical	1	Technical Assistant	1

DD = deputy director.

[a] Staff listed will be financed by the project.

Table 5: Key PIO Staff[a]

Position	Number of Staff	Position	Number of Staff
Assistant Director, Agriculture (OFWM)	1	Water Management Officers	4
DD, Agriculture (OFWM)	1	Accountant	1
Procurement Specialist	1	Water Management Supervisor	25
Contract Management Specialist	1	Community, Social and Gender Specialist	2
Assistant Director (Technical)	2		

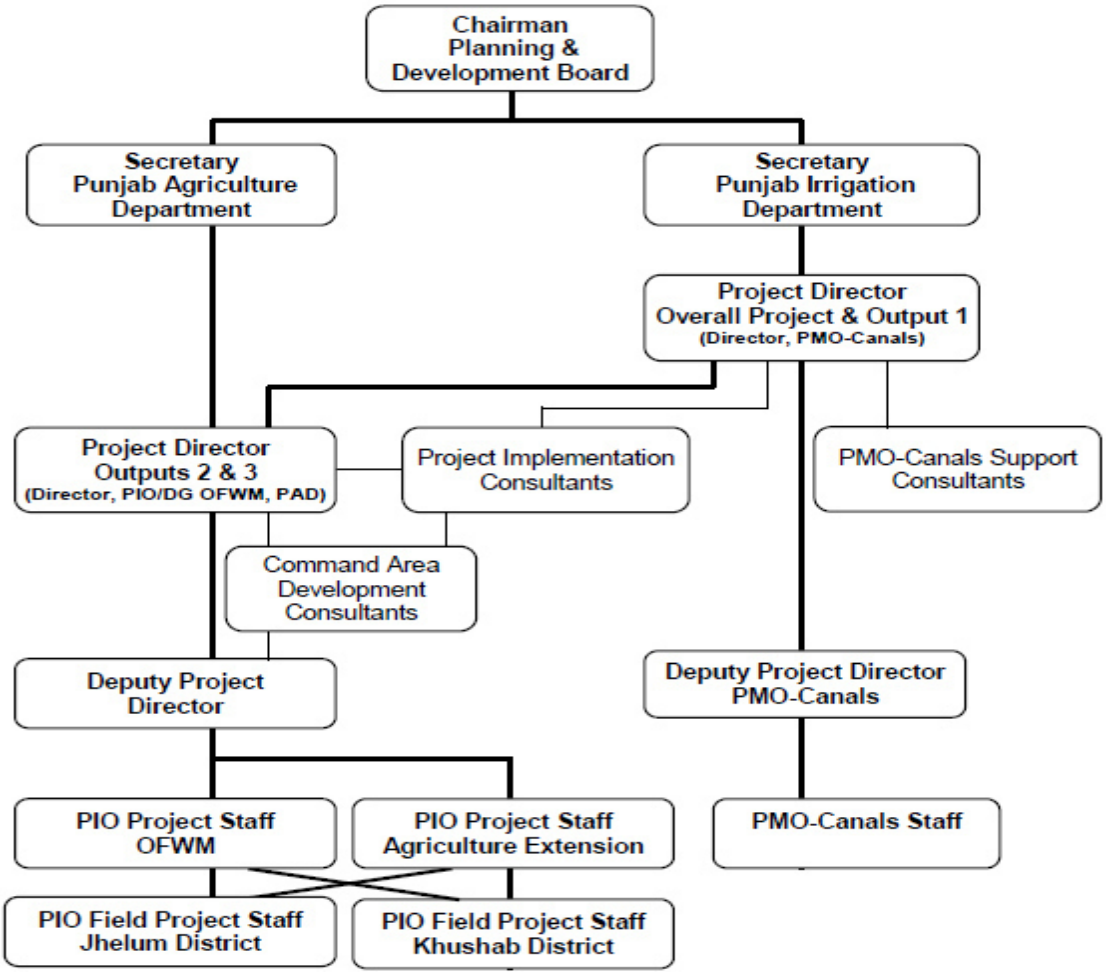
DD = deputy director, OFWM = on-farm water management.

[a] Staff listed will be financed by the project, except for Assistant Director, Agriculture (OFWM). In addition, Staff of Offices of Deputy Director Agriculture and Assistant Director Agriculture (OFWM) Khushab and Deputy Director Agriculture (OFWM) Jhelum with Assistant Director Agriculture (OFWM), Pind Dadan Khan tehsil will serve as PIO staff for implementing project outputs 2 and 3 while these staff will not be financed under the project.

D. Project Organization Structure

15. The reporting lines and essential internal structures of key organizations involved in project implementation are in the organizational chart in Figure 3.

Figure 3: Project Organization Structure



DG: Director General, OFWM = on-farm water management, PAD = Punjab Agriculture Department, PID: Punjab Irrigation Department, PIO = project implementation office, PMO = project management office
Source: Asian Development Bank.

IV. COSTS AND FINANCING

A. Key Assumptions

Table 6: Escalation Rates for Price Contingency Calculation

	2018	2019	2020	2021	2022	2023	2024
Domestic rate of price inflation	0%	6%	13%	21%	29%	37%	46%
Foreign rate of price inflation	0%	1%	3%	5%	6%	8%	9%

B. Detailed Cost Estimates by Expenditure Category

Table 7: Detailed Cost Estimates by Expenditure Category ($ Million)

	Foreign	Local	Total	% of Cost Category
A. Civil works	**20.47**	**185.61**	**206.08**	**68.69%**
a. Main canal	10.65	95.86	106.51	35.50%
b. Disty and minor canals	2.12	19.05	21.17	7.06%
c. Flood channels	5.63	50.68	56.31	18.77%
d. Water Course Construction	2.07	18.64	20.71	6.90%
e. Laser land levelling	0.00	1.37	1.37	0.46%
B. Mechanical and Equipment	**0.42**	**4.47**	**4.90**	**1.63%**
a.Mechanical	0.42	1.27	1.70	0.57%
b.Equipment (Demostration)	0.00	3.20	3.20	1.07%
C. Environemntal Mitigation	**0.00**	**4.00**	**4.00**	**1.33%**
D. Training , Workshops and Demonstrations	**0.00**	**1.71**	**1.71**	**0.57%**
E. Consultants	**1.33**	**17.14**	**18.47**	**6.16%**
a. Project Implementation Consultant (PMO-Canals)	1.33	11.97	13.30	4.43%
b. PMO - Canals Support Consultants	0.00	2.77	2.77	0.92%
c. Individaul consultant	0.00	0.15	0.15	0.05%
d. Consultant (PIO)	0.00	2.25	2.25	0.75%
F. Land acquisition & resettlement	**0.00**	**47.79**	**47.79**	**15.93%**
a. Land acquisition	0.00	40.62	40.62	13.54%
b. Resettlement	0.00	7.17	7.17	2.39%
G. PDA refinancing	**0.00**	**5.25**	**5.25**	**1.75%**
a. PDA refinancing	0.00	5.00	5.00	1.67%
b. PDA Financing Charges	0.00	0.25	0.25	0.08%
H. Project management	**0.00**	**6.65**	**6.65**	**2.22%**
a. PID PMO	**0.00**	**4.24**	**4.24**	**1.41%**
i. Salaries	0.00	2.86	2.86	0.95%
ii. Office spaces / Renovation	0.00	0.10	0.10	0.03%
iii. Vehicles	0.00	0.11	0.11	0.04%
iv. Equipment	0.00	0.01	0.01	0.00%
v. Administration cost	0.00	1.14	1.14	0.38%
b. PAD PIO	**0.00**	**2.41**	**2.41**	**0.80%**
i. Salaries	0.00	1.41	1.41	0.47%
ii. Office spaces	0.00	0.24	0.24	0.08%
iii. Vehicles	0.00	0.24	0.24	0.08%
iv. Equipment	0.00	0.08	0.08	0.03%
v. Administration cost	0.00	0.45	0.45	0.15%
I. Farmer's In-kind Contribution	**0.00**	**5.16**	**5.16**	**1.72%**
TOTAL BASE COST	**22.22**	**277.78**	**300.01**	100.00%
J. CONTINGENCIES	**1.27**	**41.95**	**43.22**	
1. Physical contingencies	0.23	7.34	7.57	
2. Price contingencies	1.05	34.61	35.66	
K. FINANCIAL CHARGES	**17.36**	**0.00**	**17.36**	
1. Interest during construction	16.38	0.00	16.38	
2. Commitment charge	0.98	0.00	0.98	
TOTAL	**40.86**	**319.73**	**360.59**	

Notes: $5.16 million is estimated as farmers' contribution to construct watercourses, installation of high efficiency irrigation systems, laser land levelling, and constructions of ponds with solar powered pumps.
Numbers may not sum precisely because of rounding.

Source: Asian Development Bank estimates.

C. Allocation and Withdrawal of Loan Proceeds

16. The Government of Pakistan has requested a loan of $274.63 million from ADB's ordinary capital resources (OCR) to help finance the project. The loan will have a 20-year term, including a grace period of 5 years, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.15% per year (the interest rate and other charges during construction to be capitalized in the loan), and such other terms and conditions set forth in the draft loan agreement and project agreement.

Table 8: Allocation and Withdrawal of Loan Proceeds

	Category	Amount Allocated for OCR Financing ($)	Percentage and Basis for Withdrawal from the Loan Amount	
1	Civil Works	179,200,000	87%	of total expenditure claimed
2	Mechanical and Equipment			
	a.Mechanical	1,460,000	86%	of total expenditure claimed
	b.Equipment (Demostration)	2,850,000	89%	of total expenditure claimed
3	Environemntal Mitigation	3,230,000	81%	of total expenditure claimed
4	Training , Workshops and Demonstrations	1,710,000	100%	of total expenditure claimed
5	Consultants	14,660,000	79%	of total expenditure claimed
6	PDA refinancing			
	a. PDA refinancing	5,000,000	100%	of total expenditure claimed
	b. PDA Financing Charges	250,000	100%	of total expenditure claimed
7	Project management	6,650,000	100%	of total expenditure claimed
8	Interest and Commitment Charge	17,360,000	100%	of amount due
9	Unallocated	42,260,000		
		274,630,000		

D. Detailed Cost Estimates by Financier

Table 9: Detailed Cost Estimates by Financier

($ million)

	By ADB		By Govt		Total Cost	Tax & duties
	Amount	% of Cost Category	Amount	% of Cost Category		
A. Civil works	**179.20**	87%	**26.88**	13%	**206.08**	**26.88**
a. Main canal	92.62	87%	13.89	13%	106.51	13.89
b. Disty and minor canals	18.41	87%	2.76	13%	21.17	2.76
c. Flood channels	48.97	87%	7.35	13%	56.31	7.35
d. Water Course Construction	18.01	87%	2.70	13%	20.71	2.70
e. Laser land levelling	1.19	87%	0.18	13%	1.37	0.18
B. Mechanical and Equipment	**4.31**	88%	**0.58**	12%	**4.90**	**0.58**
a.Mechanical	1.46	86%	0.23	14%	1.70	0.23
b.Equipment (Demostration)	2.85	89%	0.35	11%	3.20	0.35
C. Environemntal Mitigation	**3.23**	**81%**	**0.77**	**19%**	**4.00**	**0.77**
D. Training , Workshops and Demonstrations	**1.71**	**100%**	**0.00**	**0%**	**1.71**	**0.00**
E. Consultants	**14.66**	79%	**3.81**	21%	**18.47**	**3.81**
a. Project Implementation Consultant (PMO-Canals)	10.56	79%	2.75	21%	13.30	2.75
b. PMO - Canals Support Consultants	2.20	79%	0.57	21%	2.77	0.57
c. Individaul consultant	0.12	79%	0.03	21%	0.15	0.03
d. Consultant (PIO)	1.78	79%	0.46	21%	2.25	0.46
F. Land acquisition & resettlement	**0.00**	0%	**47.79**	100%	**47.79**	**0.00**
a. Land acquisition	0.00	0%	40.62	100%	40.62	
b. Resettlement	0.00	0%	7.17	100%	7.17	
G. PDA refinancing	**5.25**	**100%**	**0.00**	**0%**	**5.25**	**0.00**
a. PDA refinancing	5.00	100%	0.00	0%	5.00	
b. PDA Financing Charges	0.25	100%	0.00	0%	0.25	
H. Project management	**6.65**	100%	**0.00**	0%	**6.65**	
a. PID PMO	**4.24**	100%	**0.00**	0%	**4.24**	
i. Salaries	2.86	100%	0.00	0%	2.86	
ii. Office spaces / Renovation	0.10	100%	0.00	0%	0.10	
iii. Vehicles	0.11	100%	0.00	0%	0.11	
iv. Equipment	0.01	100%	0.00	0%	0.01	
v. Administration cost	1.14	100%	0.00	0%	1.14	
b. PAD PIO	**2.41**	100%	**0.00**	0%	**2.41**	
i. Salaries	1.41	100%	0.00	0%	1.41	
ii. Office spaces	0.24	100%	0.00	0%	0.24	
iii. Vehicles	0.24	100%	0.00	0%	0.24	
iv. Equipment	0.08	100%	0.00	0%	0.08	
v. Administration cost	0.45	100%	0.00	0%	0.45	
I. Farmer In-kind Contribution	0.00	0%	5.16	100%	5.16	
TOTAL BASE COST	**215.00**		**85.00**		**300.01**	**32.05**
J. CONTINGENCIES	**42.26**		**0.96**		**43.22**	**0.96**
1. Physical contingencies	6.61	87%	0.96	13%	7.57	0.96
2. Price contingencies	35.66	100%			35.66	
K. FINANCIAL CHARGES	**17.36**				**17.36**	
1. Interest during construction	16.38	100%			16.38	
2. Commitment charge	0.98	100%			0.98	
TOTAL	**274.63**	76%	**85.96**	24%	**360.59**	**33.01**

Notes: $5.16 million is estimated as farmers' contribution to construct watercourses, installation of high efficiency irrigation systems, laser land levelling and constructions of ponds with solar powered pumps.
Numbers may not sum precisely because of rounding.

Source: Asian Development Bank estimates.

E. Detailed Cost Estimates by Outputs and Components

Table 10: Detailed Cost Estimates by Outputs

($ million)

	Total Cost	Output 1		Output 2		Output 3	
		Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category
A. Civil works	**206.08**	**184.00**	89%	**22.08**	11%		
a. Main canal	106.51	106.51	100%				
b. Disty and minor canals	21.17	21.17	100%				
c. Flood channels	56.31	56.31	100%				
d. Water Course Construction	20.71	0.00		20.71	100%		
e. Laser land levelling	1.37	0.00		1.37	100%		
B. Mechanical and Equipment	**4.90**	**1.70**	35%	**3.20**	65%	**0.00**	0%
a.Mechanical	1.70	1.70	100%	0.00			
b.Equipment (Demostration)	3.20			3.20	100%	0.00	0%
C. Environemntal Mitigation	**4.00**	**4.00**	**100%**				
D. Training , Workshops and Demonstrations	**1.71**			**0.31**	18%	**1.40**	82%
E. Consultants	**18.47**	**16.22**	88%	**1.80**	10%	**0.45**	2%
a. Project Implementation Consultant (PMO-Canals)	13.30	13.30	100%	0.00	0%	0.00	0%
b. PMO - Canals Support Consultants	2.77	2.77	100%				
c. Individaul consultant	0.15	0.15	100%	0.00	0%		
d. Consultant (PIO)	2.25	0.00	0%	1.80	80%	0.45	20%
F. Land acquisition & resettlement	**47.79**	**47.79**					
a. Land acquisition	40.62	40.62	100%				
b. Resettlement	7.17	7.17	100%				
G. PDA refinancing	**5.25**	**5.25**	100%				
a. PDA refinancing	5.00	5.00	100%				
b. PDA Financing Charges	0.25	0.25	100%				
H. Project management	**6.65**	**4.24**	64%	**1.93**	29%	**0.48**	7%
a. PID PMO	**4.24**	**4.24**					
i. Salaries	2.86	2.86	100%				
ii. Office spaces / Renovation	0.10	0.10	100%				
iii. Vehicles	0.11	0.11	100%				
iv. Equipment	0.01	0.01	100%				
v. Administration cost	1.14	1.14	100%				
b. PAD PIO	**2.41**			**1.93**	80%	**0.48**	20%
i. Salaries	1.41			1.13	80%	0.28	20%
ii. Office spaces	0.24			0.19	80%	0.05	20%
iii. Vehicles	0.24			0.19	80%	0.05	20%
iv. Equipment	0.08			0.06	80%	0.02	20%
v. Administration cost	0.45			0.36	80%	0.09	20%
I. Farmer's In-kind Contribution	**5.16**			**5.16**	**100%**		
TOTAL BASE COST	**300.01**	**263.19**		**34.48**		**2.33**	
J. CONTINGENCIES	**43.22**	**38.04**	88%	**4.75**	11%	**0.43**	1%
1. Physical contingencies	7.57	6.66	88%	0.83	11%	0.08	1%
2. Price contingencies	35.66	31.38	88%	3.92	11%	0.36	1%
K. FINANCIAL CHARGES	**17.36**	**15.28**	88%	**1.91**	11%	**0.17**	1%
1. Interest during construction	16.38	14.42	88%	1.80	11%	0.16	1%
2. Commitment charge	0.98	0.86	88%	0.11	11%	0.01	1%
TOTAL	**360.59**	**316.50**	88%	**41.15**	11%	**2.94**	1%

Notes: $5.16 million is estimated as farmers' contribution to construct watercourses, installation of high efficiency irrigation systems, laser land levelling, and constructions of ponds with solar powered pumps.
Numbers may not sum precisely because of rounding.

Source: Asian Development Bank estimates.

F. Detailed Cost Estimates by Year

Table 11: Detailed Cost Estimates by Year
($ million)

Item	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
A. Civil works	**206.08**	**3.31**	**29.81**	**46.30**	**69.20**	**31.17**	**26.28**
a. Main canal	106.51	1.92	17.26	26.63	37.28	12.78	10.65
b. Disty and minor canals	21.17	0.38	3.43	5.29	7.41	2.54	2.12
c. Flood channels	56.31	1.01	9.12	14.08	19.71	6.76	5.63
d. Water Course Construction	20.71	0.00	0.00	0.21	4.48	8.54	7.47
e. Laser land levelling	1.37	0.00	0.00	0.09	0.32	0.55	0.41
B. Mechanical and Equipment	**4.90**	**0.03**	**0.27**	**0.56**	**1.31**	**1.48**	**1.24**
a.Mechanical	1.70	0.03	0.27	0.42	0.59	0.20	0.17
b.Equipment (Demostration)	3.20	0.00	0.00	0.13	0.72	1.28	1.07
C. Environemntal Mitigation	**4.00**	**0.07**	**0.65**	1.00	1.40	0.48	0.40
D. Training , Workshops and Demonstrations	**1.71**	**0.00**	**0.00**	**0.29**	**0.35**	**0.52**	**0.55**
E. Consultants	**18.47**	**0.29**	**2.63**	**4.56**	**6.26**	**2.53**	**2.20**
a. Project Implementation Consultant (PMO-Canals)	13.30	0.24	2.16	3.33	4.66	1.60	1.33
b. PMO - Canals Support Consultants	2.77	0.05	0.45	0.69	0.97	0.33	0.28
c. Individual consultant	0.15	0.00	0.02	0.04	0.05	0.02	0.01
d. Consultant (PIO)	2.25	0.00	0.00	0.51	0.58	0.58	0.58
F. Land acquisition & resettlement	**47.79**	**4.78**	**43.01**	**0.00**	**0.00**	**0.00**	**0.00**
a. Land acquisition	40.62	4.04	36.39	0.00	0.00	0.00	0.00
b. Resettlement	7.17	0.74	6.62	0.00	0.00	0.00	0.00
G. PDA refinancing	**5.25**	**5.25**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
a. PDA refinancing	5.00	5.00	0.00	0.00	0.00	0.00	0.00
b. PDA Financing Charges	0.25	0.25	0.00	0.00	0.00	0.00	0.00
H. Project management	**6.65**	**0.07**	**0.67**	**1.54**	**1.40**	**1.33**	**1.63**
a. PID PMO	**4.24**	**0.07**	**0.67**	**0.77**	**0.82**	**0.74**	**1.15**
i. Salaries	2.86	0.04	0.33	0.52	0.58	0.49	0.91
ii. Office spaces / Renovation	0.10	0.00	0.02	0.02	0.02	0.02	0.02
iii. Vehicles	0.11	0.01	0.10	0.00	0.00	0.00	0.00
iv. Equipment	0.01	0.00	0.01	0.00	0.00	0.00	0.00
v. Administration cost	1.14	0.02	0.21	0.23	0.23	0.23	0.23
b. PAD PIO	**2.41**	**0.00**	**0.00**	**0.77**	**0.58**	**0.59**	**0.48**
i. Salaries	1.41	0.00	0.00	0.34	0.35	0.36	0.36
ii. Office spaces	0.24	0.00	0.00	0.00	0.12	0.12	0.00
iii. Vehicles	0.24	0.00	0.00	0.24	0.00	0.00	0.00
iv. Equipment	0.08	0.00	0.00	0.08	0.00	0.00	0.00
v. Administration cost	0.45	0.00	0.00	0.11	0.11	0.11	0.11
I. Farmer In-kind Contribution	**5.16**	**0.00**	**0.00**	**0.10**	**1.13**	**2.12**	**1.82**
TOTAL BASE COST	**300.01**	**13.81**	**77.04**	**54.35**	**81.06**	**39.62**	**34.12**
J. CONTINGENCIES	**43.22**	**0.12**	**1.05**	**4.60**	**15.09**	**11.29**	**11.09**
1. Physical contingencies	7.57	0.12	1.05	1.41	2.58	1.39	1.02
2. Price contingencies	35.66	0.00	0.00	3.19	12.51	9.90	10.07
K. FINANCIAL CHARGES	**17.36**	**0.08**	**0.73**	**1.78**	**3.44**	**5.14**	**6.19**
1. Interest during construction	16.38	0.04	0.40	1.48	3.25	5.05	6.16
2. Commitment charge	0.98	0.04	0.32	0.30	0.20	0.09	0.03
TOTAL	**360.59**	**14.01**	**78.82**	**60.73**	**99.59**	**56.05**	**51.40**

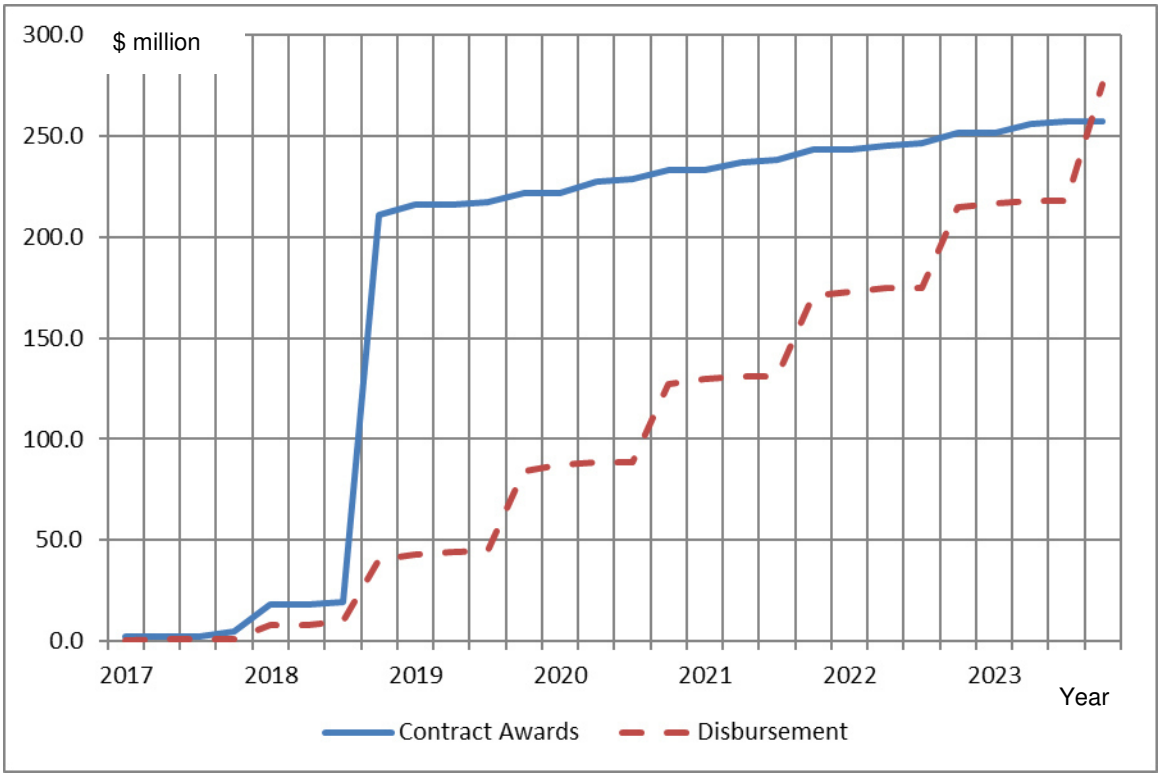
Notes: $5.16 million is estimated as farmers' contribution to construct watercourses, installation of high efficiency irrigation systems, laser land levelling, and constructions of ponds with solar powered pumps.
Numbers may not sum precisely because of rounding.
Source: Asian Development Bank estimates.

G. Contract and Disbursement S-Curve

Ordinary Capital Resources (Loan)
($ million equivalent)

	Projections for Contract Award					Projections for Disbursement				
Year	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2016	0.00	2.11	0.00	0.00	2.11	0.00	0.18	0.02	0.04	0.25
2017	0.00	0.00	0.00	2.89	2.89	0.12	0.42	0.00	0.00	0.55
2018	13.00	0.00	1.33	191.52	205.85	6.95	0.00	2.27	30.06	39.28
2019	5.00	0.00	1.33	4.60	10.93	2.96	0.85	0.85	39.34	44.00
2020	0.00	5.50	1.33	4.60	11.43	3.06	1.68	0.00	38.49	43.22
2021	0.00	4.00	1.33	4.60	9.93	2.21	1.56	0.00	39.82	43.59
2022	0.00	2.27	1.33	4.60	8.20	2.21	1.56	0.00	39.82	43.59
2023	0.00	4.60	1.33	0.00	5.93	2.21	1.56	0.00	57.18	60.95
Total					257.27					274.63

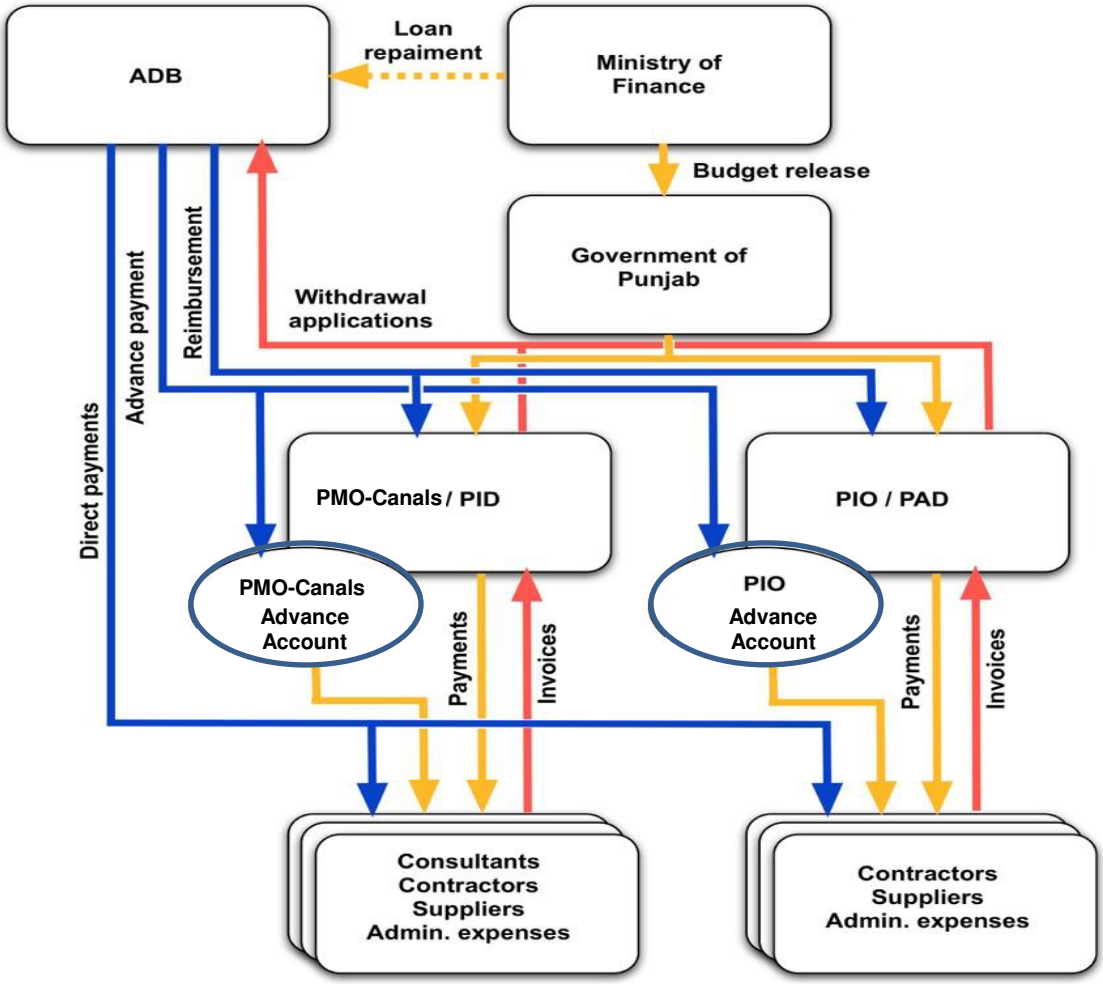
Note: Contract award does not include financing changes amounting to $17.36 million.



H. Fund Flow Diagram

17. Fund flows from ADB to the executing and implementing agencies, and various suppliers and service providers are shown as a schematic diagram in Figure 3.

Figure 3: Fund Flow Diagram



ADB = Asian Development Bank, PAD = Punjab Agriculture Department, PID = Punjab Irrigation Department, PIO = project implementation office, PMO = project management office.
Source: Asian Development Bank.

V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

18. The financial management assessment (FMA) of the executing agency, PID, and the implementing agency, PAD, was conducted in November 2015, and then updated in June 2017, respectively, in accordance with ADB's Guidelines for the Financial Management and Analysis of Projects and the Financial Due Diligence: A Methodology Note. The FMA considered the capacity of the PID and PDA, including funds-flow arrangements, staffing, accounting and financial reporting systems, financial information systems, and internal and external auditing arrangements. Based on the assessment, the key financial management risks identified are lack of internal audit arrangement and shortage of accounting staff for PID and PAD. It is concluded

that the overall premitigation financial management risk of both PID and PAD is substantial.[11] Considering the financial arrangements of PID's current ADB project[12] and PAD's current World Bank project implementation experience, the advance fund limit was set to the advance equivalent to six months forecast or 10% of the loan amount, and the Statement of Expenditure (SOE) single payment ceiling was set to $100,000 and below. These financial arrangements are the same as the ones being applied to the said ADB project currently implemented by PID. The government, PID, and PAD have agreed to implement an action plan as key measures to address the deficiencies. The financial management inherent and control risk assessment and financial management action plan are provided in Table 12 and Table 13, respectively.

Table 12: Financial Management Inherent and Control Assessment

Risk Type	Risk Assessment	Risk Description	Proposed Mitigating Measures
Inherent Risk			
Country Specific	Substantial	Internal audit has not yet been established at the provincial government level.	PID will follow FMM, which includes procedures that gives assurance on intended utilization of loan proceeds. Deputy Director (Audit & Account) in the financial management team of PIO-PAD is responsible for internal audit function.
Country Specific	Moderate	Budget Execution Risk – Actual Expenditure deviates from budget estimates.	Both EA and IA will be required to prepare budget monitoring reports, which will timely highlight any significant deviations for management attention. FMM includes guidance on preparation of budget monitoring reports.
Overall Assessment of Inherent Risk	**Substantial**		
Control Risks			
Funds Flow	Low	There is some risk that adequate counterpart funds will not be provided on timely basis.	Adequate budget will be allocated to ensure timely availability of counterpart funds.
Staffing	Substantial	Execution Risk– PMO-Canals in PID and PIO-PAD may be lack of staff to deal with financial matters/affairs of the project. PIO-PAD may not have a sufficient understanding of ADB's financial management requirements and procedures which contributes to project delay and non-	Additional staff will be hired at PMO-Canals and PIO-PAD. Trainings and technical hand holding will be provided to staff.

[11] The substantial means that the event is unlikely to occur, but will have high impact if occurs (ADB. 2017. *Financial Management Technical Guidance Note*. Manila.)

[12] Punjab Irrigated Agriculture Investment Program (Project No. 37231)

Risk Type	Risk Assessment	Risk Description	Proposed Mitigating Measures
		compliance of requirements.	
Internal Audit	Substantial	Absence of internal audit at provincial departments may affect the effectiveness of risk management, control, and governance processes.	PID and PAD will follow FMM, which includes procedures that gives assurance on intended utilization of loan proceeds. Deputy Director (Audit & Account) in the financial management team of PIO-PAD is responsible for internal audit function.
External Audit	Low	A high-quality external audit is an essential requirement for creating transparency in the use of public funds.	The ADB-funded program will be audited annually in accordance with international standards by the AGP. The audit reports will be submitted to ADB by due dates.
Reporting, Monitoring and Information Systems	Substantial	In the absence of information systems, there is risk of delayed interim financial reporting. Poor project monitoring and accountability will impact on project progress.	PMO-Canals in PID and PIO-PAD will adopt ADB's FMM in preparing financial reports. PIO-PAD ensures that a new financial software will be rolled out for the project financial reporting.
Internal Controls	Substantial	There is some risk that expenditure incurred will not be in accordance with applicable legal framework.	A comprehensive section is included in FMM which describes step-wise guidance on expenditure management defining the service standards and pre-requisite supporting documentation for payment processing. FMM will be adopted by PMO-Canals in PID and PIO-PAD.
Overall Assessment of Control Risk	**Substantial**		
Overall Control Risk	**Substantial**		

ADB = Asian Development Bank, EA = executing agency, FMM = financial management manual, IA = implementing agency, PAD = Punjab Agriculture Department, PID = Punjab irrigation Department, PIO = project implementation office, PMO = project management office.
Source: Asian Development Bank.

Table 13: Financial Management Action Plan

Action	Risk Assessment	Responsibility	Resources	Timeline
1. Adopt Financial Management Manual and tailor it accordingly to the need of the project	Substantial	PMO-Canals/PID and PIO/PAD	Project Director (PMO-Canals) and Director General Agriculture (PIO)	Within 3 months after effectiveness
2. Establish an accountant position and assistant accountant position for	Substantial	PMO-Canals and PIO	Project Director (PMO-Canals) and Director	By loan effectiveness

PMO-Canals/PID and an accountant position for PIO/PAD.			General Agriculture (PIO)	
3. Timely opening of Advance Accounts	Low	PMO-Canals and PIO	Project Director (PMO-Canals) and Director General Agriculture (PIO-PAD)	Start opening procedure upon effectiveness
4. Prepare for retroactive financing arrangement based on the Loan Disbursement Handbook and the Financial Management Manual	Low	PMO-Canals and PIO	Project Director (PMO-Canals)	Ongoing

PAD = Punjab Agriculture Department, PID = Punjab irrigation Department, PIO = project implementation office, PMO = project management office.
Source: Asian Development Bank.

B. Disbursement

1. Disbursement Arrangements for ADB Funds

19. The loan will be disbursed in accordance with ADB's *Loan Disbursement Handbook*[13] (2017, as amended from time to time), and detailed arrangements agreed upon between the government and ADB. Online training for project staff on disbursement policies and procedures is available.[14] PID and PAD will be responsible for (i) preparing disbursement projections; (ii) requesting budgetary allocations for counterpart funds; (iii) collecting supporting documents; and (iv) preparing and sending withdrawal applications to ADB for the respective project activities. No withdrawals shall be made from the Loan Account until a qualified additional staff are hired and deployed at the PID and PAD. Further, prior to the first disbursement, the additional staff of PID and PAD, together with other key PID/PAD staff, will be trained by an ADB individual consultant on: (i) International Public Sector Accounting Standards, (ii) preparation of guidelines on disbursements, (iii) installation of new accounting system, (iii) setting-up books including chart of accounts.

20. **Direct payment.** The procedures will generally be used for civil works contracts and consulting services, subject to the minimum value per withdrawal application.

21. **Advance fund procedure.** Separate advance accounts should be established and maintained by PID and PAD for each funding source at the National Bank of Pakistan. The currency of the advance accounts is in US dollars. The advance accounts are to be used exclusively for ADB's share of eligible expenditures. The PID and PAD are accountable and responsible for proper use of advances to the advance account. The total outstanding advance to the advance accounts should not exceed the estimate of ADB's share of expenditures to be paid through the advance accounts for the forthcoming 6 months or 10% of the loan amount. The PID and PAD may request for initial and additional advances to the advance accounts based on an Estimate of Expenditure Sheet[15] setting out the estimated expenditures to be financed through

[13] Available at: https://www.adb.org/documents/loan-disbursement-handbook.
[14] Disbursement eLearning. http://wpqr4.adb.org/disbursement_elearning
[15] Estimate of Expenditure sheet is available in Appendix 8A of ADB's *Loan Disbursement Handbook* (2017, as amended from time to time).

the accounts for the forthcoming 6 months or 10% of the loan amount, whichever is lower. Supporting documents should be submitted to ADB or retained by the government in accordance with ADB's *Loan Disbursement Handbook* (2017, as amended from time to time) when liquidating or replenishing the advance accounts.

22. **Statement of expenditure (SOE) procedure.**[16] The SOE procedure may be used for reimbursement of eligible expenditures or liquidation of advances to the advance fund(s). The ceiling of the SOE procedure is the equivalent of $100,000 or below per individual payment. Supporting documents and records for the 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 in excess of the SOE ceiling should be supported by full documentation when submitting the withdrawal application to ADB.

23. **Withdrawal application (WA).** Prior to the submission of the first WA, the government should submit to ADB sufficient evidence of the authority of the person(s) who will sign the WAs on behalf of the government, together with the authenticated specimen signatures of each authorized person. The minimum value per WA is stipulated in the *Loan Disbursement Handbook* (2017, as amended from time to time). The borrower should ensure sufficient category and contract balances before requesting disbursements. Individual payments below this amount should be paid (i) by the PID and/or PAD and subsequently claimed to ADB through reimbursement, or (ii) through the advance fund procedure, unless otherwise accepted by ADB. ADB reserves the right not to accept WAs below the minimum amount. WAs and supporting documents will demonstrate, among other things that the goods, and/or services were produced in or from ADB members, and are eligible for ADB financing. Use of ADB's Client Portal for Disbursements system is encouraged for submission of withdrawal applications to ADB.[17]

2. Disbursement Arrangements for Counterpart Fund

24. All disbursements under government financing will be carried out in accordance with regulations of the Islamic Republic of Pakistan relevant to co-financing of the projects financed by the Multilateral Financing Organizations. PID and PAD shall open and maintain the separate advance account for government counterpart funds. The Government will finance local taxes. Value added tax (VAT) will be claimed by the contactors, suppliers, and consultants in his interim payment certificate (IPC), and PMO-Canal will approve the invoices including VAT. PMO canal will pay the claimed VAT to Punjab Revenue Authority (PRA). PMO canal will pay the rest of the amount to the contractors, suppliers and consultants. Income tax will be deducted from the invoice of the contractors, suppliers and consultants. The deducted income tax will be paid by PMO-Canal to the FBR (Federal Board of Revenue). The deducted income tax will be reflected in the income of contractors, suppliers and consultants when submitting their finance balance sheets to PRA.

C. Accounting

25. The PID and PAD will maintain, or cause to be maintained, separate books and records by funding source for all expenditures incurred on the project following International Public Sector

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

[17] The Client Portal for Disbursement facilitates online submission of WA to ADB, resulting in faster disbursement. The forms to be completed by the Borrower are available online at https://www.adb.org/documents/client-portal-disbursements-guide.

Accounting Standard for cash-based accounting The PID and PAD will prepare project financial statements in accordance with the government's accounting laws and regulations which are consistent with international accounting principles and practices.

D. Auditing and Public Disclosure

26. The PID and PAD will cause the project financial statements to be audited in accordance with International Standards on Auditing by an independent auditor acceptable to ADB. The audited project financial statements together with the auditor's opinion will be presented in the English language to ADB within 6 months from the end of the fiscal year by the PID.

27. 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, in accordance with the applicable financial reporting standards; (ii) whether the proceeds of the loan were used only for the purpose(s) of the project; and (iii) whether the borrower or executing agency was in compliance with the financial covenants contained in the legal agreements (where applicable).

28. Compliance with financial reporting and auditing requirements will be monitored by review missions and during normal program supervision, and followed up regularly with all concerned, including the external auditor.

29. The government, PID and PAD have been made aware of ADB's approach to delayed submission, and the requirements for satisfactory and acceptable quality of the audited project financial statements.[18] 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 the share of ADB's financing is used in accordance with ADB's policies and procedures.

30. Public disclosure of the audited project financial statements, including the auditor's opinion on the project financial statements, will be guided by ADB's Public Communications Policy 2011.[19] 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 ADB's website. The management letter and additional auditor's opinions will not be disclosed.[20]

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[18] ADB's approach and procedures regarding delayed submission of audited project financial statements:

(i) When audited project financial statements are not received by the due date, ADB will write to the executing agency advising 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 audited project financial statements are not received 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 (a) inform the executing agency of ADB's actions; and (b) advise that the loan may be suspended if the audit documents are not received within the next 6 months.

(iii) When audited project financial statements are not received within 12 months after the due date, ADB may suspend the loan.

[19] Public Communications Policy: http://www.adb.org/documents/pcp-2011?ref=site/disclosure/publications

[20] This type of information would generally fall under public communications policy exceptions to disclosure. ADB. 2011. *Public Communications Policy*. Paragraph 97(iv) and/or 97(v).

VI. PROCUREMENT AND CONSULTING SERVICES

A. Advance Contracting and Retroactive Financing

31. All packages under advance contracting and retroactive financing will be undertaken in conformity with ADB Procurement Guidelines (2015, as amended from time to time) and ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). Expenditures financed under retroactive financing are incurred prior to loan effective date but no earlier than 12 months before signing of the loan agreement. The issuance of invitations to bids, preparation and use of bidding documents under advance contracting and retroactive financing will be subject to ADB prior review and approval. The borrower, PID and PAD have been advised that approval of advance contracting and retroactive financing does not commit ADB to finance the project.

32. Advance contracting will be used for recruitment of consulting services, goods and civil works. The steps to be concluded in advance includes (i) qualification of contractors, tendering, and bid evaluation for civil works packages, materials and equipment; (ii) evaluation of bids; and (iii) recruitment of consultants. The retroactive financing is envisaged relating to project implementation consultants, PMO support consultants, and command area development consultants. The maximum amount of eligible expenditures up to $56 million, the equivalent of 20% of the total ADB loan, incurred before loan effectiveness, but not more than 12 months before the signing of the loan agreement.

B. Procurement of Goods, Works, and Consulting Services

33. The procurement of goods, works and consultant selection will be carried out in accordance with ADB's Procurement Guidelines (April 2015, as amended from time to time) and the Guidelines on the Use of Consultants (March 2013, as amended from time to time). Major civil works contracts include an intake structure, main canal, distributary and minor canals, flood carrier channels, and associated structures. These will be awarded through ICB procedures through a single bid invitation covering three lots, each estimated between $52–$69 million. Other civil works will be awarded through NCB and shopping.

34. Before the start of any procurement, ADB and the government will review the public procurement laws of the central and state governments to ensure consistency with ADB's Procurement Guidelines (2015, as amended from time to time). An 18-month procurement plan indicating threshold and review procedures, goods, works, and consulting service contract packages and national competitive bidding guidelines is in Section C.

35. A part of the command area development component is watercourse construction. This comprises earthen construction of watercourses, lining in critical sections, and up to 50% of the watercourse length, water control structures, culverts, drop structures, and allied works.[21] The procurement will be carried out through community participation comprising 485 WUAs. This will enhance community mobilization, involvement, ownership, and employment of labor-intensive techniques through cost-sharing mechanism. WUA and PAD will enter an agreement by which WUA will execute the works. WUA will purchase the construction materials through shopping procedures by inviting at least three quotations, preferably from local suppliers. Labor component of the subprojects will be extended by the members of the community, provided adequate expertise exists, who should be reimbursed adequately for the services rendered. In case, WUA

[21] The remaining water course length will remain unlined as further reduction in water losses beyond 50%–60% lining is small, compared to the cost of lining.

cannot identify adequate skilled labor within the community, the work can be let out by inviting quotations from three local contractors. The cost estimates for the works will be based on PAD approved rates (updated from time to time). Command Area Development Consultants will supervise the works with PAD oversight. The details of Community Contracting are given in Annex 2.

36. The command area development includes additional works components; water storage ponds, solar pumping stations, laser land levelling, high efficiency irrigation systems. PAD will prequalify contractors using ADB pre-qualification procedure. PAD will invite application from the beneficiary farm owner(s) and finalize the scope of intervention based on the selection criterion. Once agreement reached between PAD and the beneficiary farm owner(s), PAD will invite price bid proposal from the pre-qualified contractors using ADB Shopping procedures, and evaluate and award the work and inform the farmer. The contractors will execute the works under the supervision of command area development consultants with PAD oversight and in coordination with the farmer.

37. Consulting firms will be engaged using the quality and cost-based selection (QCBS) method with a standard quality cost ratio of 90:10. An estimated 1,233 person-months (30 international, 1,203 national) of consulting services are required to (i) facilitate project management, (ii) command area development, and (iii) strengthen the institutional and operational capacity of the EA and the project management office.

C. Procurement Plan

Basic Data

Project Name: Jalalpur Irrigation Project	
Country: Pakistan	**Executing Agency**: Punjab Irrigation Department
Loan Amount: $274.63 million	**Loan Number**:
Date of First Procurement Plan: 3 August 2017	**Date of this Procurement Plan: 13** October 2017

1. Process Thresholds, Review and 18-Month Procurement Plan

a. Project Procurement Thresholds

38. Except as the Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Procurement of Goods and Works

Method	Threshold
International Competitive Bidding (ICB) for Works	$10,000,000 and above
International Competitive Bidding for Goods	$2,000,000 and above
National Competitive Bidding (NCB) for Works	Beneath that stated for ICB, Works
National Competitive Bidding (NCB) for Works	Beneath that stated for ICB, Goods
Shopping for Works	Below $200,000
Shopping for Goods	Below $200,000

b. ADB Prior or Post Review

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

Procurement Method	Prior or Post	Comments
Procurement of Goods and Works		
ICB Works	Prior	
NCB Works	Post	
Shopping for Goods	Post	
Recruitment of Consulting Firms		
Quality- and Cost-Based Selection (QCBS)	Prior	90:10
Recruitment of Individual Consultants		
Individual Consultants	Post	

2. Goods and Works Contracts Estimated to Cost More than $1 Million

40. The following table lists goods and works contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

Package Number	General Description	Estimated Value ($ M)[a]	Procurement Method	Review	Bidding Procedure	Advertisement Date (quarter/year)	Comments
JIP/ICB-01 (Lot 1)	Civil and Mechanical Works of Intake, Main Canal, Irrigation and Drainage system up to 16 km	55	ICB	Prior	1S2E	Q1/2018	ADB bidding documents for large works
JIP/ICB-02 (Lot 2)	Civil and Mechanical Works of Main Canal, Irrigation and Drainage system from 16 to 69 km	71	ICB	Prior	1S2E	Q1/2018	ADB bidding documents for large works
JIP/ICB-03 (Lot 3)	Civil and Mechanical Works of Main Canal, Irrigation and Drainage system from 69 km to 116 km	58	ICB	Prior	1S2E	Q1/2018	ADB bidding documents for large works

[a] Includes duties and taxes and not include contingencies.

3. Consulting Services Contracts Estimated to Cost More than $100,000

41. The following table lists consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

Package Number	General Description	Estimated Value ($ M) [a]	Recruitment Method	Review	Advertisement Date (quarter/year)	Type of Proposal	Comments
JIP/CSC-01	Project Implementation Consultants	13.3	QCBS (90:10)	Prior	Q2/2017	FTP	International
JIP/CSC-02	PMO Support Consultants	2.77	QCBS (90:10)	Prior	Q1/2018	FTP	National
JIP/CSC-03	Command Area Development Consultants	2.25	QCBS (90:10)	Prior	Q1/2018	FTP	National

[a] Include duties and taxes and not include contingencies.

4. Goods and Works Contracts Estimated to Cost Less than $1 Million and Consulting Services Contracts Less than $100,000

42. The following table groups smaller-value goods, works and consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

Goods and Works

Package Number	General Description	Est. Value ($ M)[a]	Number of Contracts	Procurement Method	Review	Bidding Proce-dure	Advertisement Date (quarter/year)	Comments
JIP/S-01	Office furnishing and equipment	0.09	Multiple	Shopping	Prior review	RFQ	Q3/2018	
JIP/S-02	Vehicles	0.35	3	Shopping	Post review	RFQ	Q3/2018	

[a] Include duties and taxes and not include contingencies.

Consulting Services

Package Number	General Description	Estimated Value ($ M) [a]	Number of Contracts	Recruitment Method	Review	Advertisement Date (quarter/year)	Type of Proposal	Comments
JIP/ICS-01	Social Safeguards Compliance Expert (external monitoring)	0.14	1	ICS	Prior	Q4/2017	NA	National
JIP/ICS-02	Environment Third Party Monitoring and Evaluation Expert	0.04	1	ICS	Prior	Q1/2018	NA	National
JIP/ICS-03	Advisory Consultants	0.15	Multiple	ICS	Prior	Q1/2018	NA	International

[a] Includes duties and taxes and does not include contingencies.

5. Indicative List of Packages Required under the Project

43. The following table provides an indicative list of goods, works and consulting services contracts over the life of the project, other than those mentioned in previous sections (i.e., those expected beyond the current period).

Civil Works and Goods								
Package Number	**General Description**	**Est Value ($ M)** [a]	**Number of Contracts**	**Procurement Method**	**Review**	**Bidding Procedure**	**Advertisement Date** (quarter/year)	**Comments**
JIP/S-03	Water Storage Ponds and Solar Pumping Stations	0.53	Multiple	Shopping[b]	Prior review for first contract	RFQ	Q2/2019	
JIP/S-04	Laser Land Levelling	1.37	Multiple	Shopping[b]	Prior review for first contract	RFQ	Q2/2019	
JIP/S-05	Water Courses Construction	20.7	485	CPP[c]	Prior review for first year	Community Contracting[d]	Q2/2019	
JIP/G-03	Agriculture Equipment	3.2	Multiple	Shopping	Prior review for first contract	RFQ	Q2/2019	

[a] Includes duties and taxes and does not include contingencies.
[b] Request for quotation invited from Punjab Agriculture Department prequalified contractors using ADB guidelines.
[c] Community Participation in Procurement.
[d] The detailed procedure is provided in Annex 2.

D. Consultant's Terms of Reference

44. The outline terms of reference is attached in Annex 1. Key staff of consultant's team are shown in Table 14.

Table 14: Key Staff of the Consultants' Team

Category	Position	Person months
Project Implementation Consultants		
International (18)	External quality auditor/ quality management expert	8
	External hydraulic design engineer	6
	External environmental expert	4
National – Project Office (265)	Project/construction management specialist/ Team Leader	51
	Chief measurement/ contract/ claims	51
	Chief quality auditor/ quality management expert	48
	Principal hydraulic engineer/design team leader	15
	Principal geo- tech engineer	8
	Principal structural engineer	12
	Principal irrigation engineer	12
	Principal agricultural specialist	18
	Principal social safeguard/environment expert	50
National – Field Office (259)	Chief resident engineer/dy. team leader	49
	Resident engineer - mechanical	18
	Resident engineer – barrage	48
	Resident engineer - east	48
	Resident engineer - west	48
	Material/ laboratory/ concrete engineer	48
	Total person months (key staff only) – (A)	**542**

PMO Support Consultants		
National – Project Office (277)	Hydraulics/Irrigation Design Expert	48
	Contract & Claim Expert	48
	Social Safeguards and Environment Expert	48
	Social and Gender Specialist	36
	GIS Specialist	36
	Financial Management Expert	61
	Total person months (key staff only) – (B)	**277**
Command Area Development Consultants		
National – Field Office (372)	Project Manager/ OFWM Specialist	48
	Financial Management Expert	24
	Irrigation Agronomist	48
	Design Engineer	48
	GIS Specialist	24
	M&E Specialist/ Team Leader	48
	Agriculture Economist	48
	Social and Gender Economist	36
	Water Management Specialist	48
	Total person months (key staff only) – (C)	**372**
Individual Consultants		
	Social Safeguards Compliance Expert (National)	24
	Third Party M&E Expert (NGO or External Environmental Monitor)	6
	River Engineering Expert/Advisor (International)	6
	Hydraulics Expert/Advisor (International)	6
	Total person months (key staff only) – (D)	**42**
	Total person months (key staff only) – (A+B+C+D)	**1,233**

VII. SAFEGUARDS

A. Environment

45. The project is classified as Category A. The environmental impact assessment (EIA) has been prepared by PID in accordance with ADB's Safeguard Policy Statement (SPS), 2009.
To ensure compliance with the ADB's SPS, Punjab Environmental Protection Act, 1997 (amended 2012); Pakistan Environmental Protection Agency (Pak-EPA) Regulations, 2000 for review of Initial Environmental Examination (IEE) and EIA, Pakistan EIA procedures, and Sectoral guidelines for environmental reports, PID, through the PMO-Canals, will follow the Environmental Impact Assessment and Environmental Management Plan (EMP). The PIU will ensure that:

(i) the Environmental Impact Assessment report is submitted to the Punjab Environmental Protection Agency and environmental clearance is sought thereof before starting civil works;
(ii) the environmental management plan (EMP) is included in bidding documents for all contracts;
(iii) all contractors prepare, and submit to the PIU for approval at least 10 days before taking possession of any work site, and the site-specific EMPs based on the EMP;
(iv) no access to the site will be allowed until the site specific EMPs is approved by the PMO-Canals;
(v) implementation of the site-specific EMPs is regularly supervised and monitored by the project implementation consultants and ensured by PMO-Canals;
(vi) a non-compliance notice will be issued if the Contractors are not in compliance with requirements of EIA, EMP, and/or environmental provisions of contractual

documents. In case of non-compliance the contractor is required to prepare a corrective action plan, which is to be implemented by a date agreed with the PMO-Canals;
(vii) semi-annual Environmental Monitoring Reports are submitted to ADB for review and disclosure within 1 month after the reporting period, and
(viii) in case of unpredicted environmental impacts occurring during project implementation, the environmental impacts are assessed and corrective action plans are prepared and implemented.

46. CSC's Environmental Expert/Scientist will perform following responsibilities:
(i) Directly reporting to the Resident Engineer;
(ii) Preparing training materials and implementing programs in environmental management;
(iii) Ensure the implementation of the mitigation measures suggested in EMP;
(iv) To supervise and monitor environmental activities being performed at site;
(v) To organize periodic environmental training programs and workshops for the consultant's and contractor's staff;
(vi) Periodic reporting as mentioned in EMP; and
(vii) Suggest any additional mitigation measures if required.

47. The 3rd Party Monitoring & Evaluation shall be responsible to:
(i) Ensure that all the contractual obligations related to the environmental and social compliance are met;
(ii) Monitor the progress regarding implementation of environmental safeguard as provided in EMP;
(iii) Oversee the compliance of all the monitoring programs as given in EMP;
(iv) Check randomly whether monitoring of the environmental aspects of the project during construction phase is being properly carried out;
(v) Document and disclose monitoring results and identify necessary corrective and preventive actions in the periodic monitoring reports (bi-annual reporting), and make follow-up on these actions to ensure progress toward the desired outcomes;
(vi) Make sure that the Contractor is implementing the additional measures suggested by the M&E Contractor; and
(vii) Report the status of EMP compliance to PID.

48. ADB will ensure that:
(i) monitoring and supervision of the project is carried out on an ongoing basis until a project completion report is issued;
(ii) project review missions regularly visit project sites to ascertain the status of implementing the EMP with detailed review by ADB's safeguard specialists, officers and/or consultants
(iii) semi-annual EMRs are timely reviewed to disclosed on the ADB web-site.

B. Land Acquisition and Resettlement

49. The project is categorized as A for Involuntary Resettlement. The government through PID, and PMO-Canal shall ensure that the design of the Jalalpur Irrigation System minimizes land acquisition and resettlement impacts by exploring design alternatives and all other activities under the project are carried out in full compliance with all applicable laws and regulations of Pakistan, ADB's SPS (2009), and the approved LARP. PID and PMO-Canal shall ensure that:

(i) the final and implementation-ready package-wise LARPs following the detailed design and notification of Section 4 of the LAA is submitted to ADB for review prior to awarding of civil works contracts;
(ii) the final and implementation ready package-wise LARPs duly endorsed by PID are disclosed to displaced persons (DPs) in their local language in accordance with the ADB's SPS (2009);
(iii) a qualified and experienced external resettlement monitor, acceptable to ADB, is timely recruited to verify LARP implementation progress and recommend issuance of no-objection by ADB to commencing of civil works;
(iv) handling over of site/commencing of civil works in the civil work packages is made only upon completion of the package-wise LARP implementation as verified by an external monitor;
(v) all land and rights of way required by the project shall be cleared and made available in a timely manner (in accordance with the schedule as agreed in the relevant civil works contract);
(vi) LARP implementation shall be monitored internally by PMO-Canal with support of PIC following monitoring parameters specified in the LARPs. The PMO-Canal Social and Environment Unit assisted by PIC will conduct day to day internal supervision and monitoring of LARP implementation progress to ensure compliance with the provisions of the LARPs for work package. The LARP implementation progress shall be consolidated into semi-annual internal resettlement monitoring reports to be shared with ADB for review. While bi-annual monitoring and evaluation reports prepared by an external monitor will be submitted to ADB for review and clearance throughout project implementation period. Upon clearance of bi-annual monitoring reports by ADB, these will be disclosed by uploading on PID and ADB websites;
(vii) without limiting the application of the Involuntary Resettlement Safeguards or the LARP, PID and PMO-Canal shall ensure that no land shall be acquired for the purpose of the project under the emergency acquisition provisions of Pakistan's Land Acquisition Act (1894), as amended from time to time;
(viii) the activities of the civil works contractor for the project are in compliance with the approved LARP and no physical displacement or economic displacement shall occur and section or part of a section is handed over to the civil works contractor until: (a) compensation at full replacement cost has been paid to all affected persons in accordance with the final LARP for relevant civil works contract packages or sections that are ready to be constructed; (b) other entitlements listed in the updated and final LARP have been provided to affected persons; and (c) LARP implementation report is submitted to ADB and determined as satisfactory; and
(ix) Continued efforts shall be made to link DPs, especially those who are severely affected and vulnerable, to access project-related jobs, other livelihood opportunities and available livelihood support programs and training in the project area.

50. Any unanticipated LAR impacts encountered during implementation of project will be dealt in accordance with the ADB approved LARP and ADB's SPS 2009 requirements. However, change to the scope, location or alignment of the project shall be avoided and if during the implementation of the project, any such change to the scope, location or alignment of the project is identified, it shall not be made without prior approval of ADB. Any new LAR-related impacts as a result of changing in project scope, location or alignment will require a new LARP or LARP addendum which should be submitted to ADB for its approval. The additional plan should be prepared following ADB's SPS and its required guidelines. No construction activities shall be commenced in the sections with new/additional LAR impacts before full implementation of ADB approved LARP is confirmed and cleared by ADB.

51. Under Output 2 of the Project, a total of 485 farm-level field channel (watercourses) will be constructed, along with over 18,910 small farm turnout structures to distribute irrigation water over 68,263 ha of farmland during a period between April and October. Watercourses will be planned, designed, and constructed through close consultation with, and participation by the beneficiary farmers, who will be organized into water users' associations (WUAs). Construction materials (particularly pre-cast parabolic concrete flumes), will be provided by the project to cover 50% of the length of each watercourse. WUAs will be responsible for O&M of watercourses and associated structures. The formation of WUAs will be guided and the capacity of WUAs will be strengthened by trainings under technical supervision and guidance by PAD. The land is provided by the farmer beneficiaries and local communities as counterpart support including other assets such as trees and labor, therefore involuntary resettlement is not involved. As a safeguard measure, PAD and PIO, with support from the PMC shall undertake the following:

(i) Early screening of the watercourse development will be undertaken to fully determine the impacts, including the land requirements. Consultations with local communities will be undertaken throughout the screening, planning and implementation phases of each project. Consultations will be recorded in detail and will include all discussions in relation to the donation of land, if applicable.
(ii) Where land donation is required, written agreements between the parties will be obtained.
(iii) Donated lands for the watercourse will be legally transferred to the WUA. Only watercourse alignment where there is written confirmation of agreement among all concerned landowners/farmers will be included under the Project.
(iv) A grievance redress mechanism will be put in place under the PAD and PIO, with representation of the farmer beneficiaries, and local government. A grievance log will be established prior to project implementation and will be available for inspection and reporting by project monitors.

52. **Grievance Redress**: PID and PMO-Canal shall ensure (i) efficient grievance redress mechanisms are in place and functional prior starting LARP implementation and contractor's mobilization to assist DPs resolve queries and complaints, if any, in a timely manner; (ii) all complaints are registered, investigated and resolved in a manner consistent with the provisions of Grievance Redress Mechanism as agreed in the ADB approved LARP, (iii) the Complainants/aggrieved persons are kept informed about status of their grievances and remedies available to them; and (iv) adequate staff and resources are available for supervising and monitoring the implementation progress of the LARP. Similarly, PAD and PIO will set up an efficient grievance redress mechanism prior to mobilization of farmers and WUAs under Output 2 and 3 of the Project to ensure that disputes and concerns among farmer beneficiaries are acted upon and resolved timely, including issues related to land donations and other contributions.

53. **Information Disclosure and Stakeholder Participation**: PID and PMO-Canal shall ensure that the resettlement plan and monitoring reports are disclosed by: (i) uploading the draft and ADB approved final LARP on PID and ADB websites, (ii) placing hard copies of approved resettlement plan translated into Urdu in the offices of PMO-Canal, District Revenue Department, PIC and representatives of DPs, and (iii) translating the executive summary of ADB approved resettlement plans, bearing information on project impacts, asset valuation, entitlements, compensation budget and provisions with institutional arrangements in place and providing to the affected community. PMO-Canal, with support from the PIC shall: (i) conduct additional consultations and regular field visits during updating and implementation of the LARPs; (ii) inform DPs about: (a) resettlement impacts, asset valuation, entitlements and compensation payment modalities with timelines, (b) rehabilitation and income restoration measures suggested for the

DPs; and (iii) hold regular meetings with surrounding communities and DPs including women and vulnerable groups to share project related information during project implementation period.

C. Indigenous Peoples

54. The project is screened as category C project for Indigenous peoples planning requirement under SPS 2009 as there are no known IP communities within the project area. And if during implementation, any change to the scope, location or alignment of the canal IPs are identified and found to be affected by the project, PID shall take all steps required to ensure that the Project complies with the applicable laws and regulations of Pakistan and the ADB's Safeguard Policy Statement 2009.

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

VIII. GENDER AND SOCIAL DIMENSIONS

56. The proposed project will benefit more than 225,000 rural people living in about 80 villages, whose main sources of livelihood are agriculture and livestock rearing which are declining. Agriculture lands are turning barren due to salinity of underground water which ultimately reduce crop production and lead to increasing poverty in the region. As women perform a large proportion of agriculture and livestock related activities, they are gravely affected. Women also exclusively perform household tasks that require water, such as preparing food, washing clothes and dishes, and cleaning the house.

57. Through irrigation supplies, agricultural support services, stabilized crop yield, and training in irrigated agriculture use and related skills, the project will directly farmers. Non-farming communities will also benefit from increased economic activities and employment opportunities. The irrigated agriculture will create job opportunities for on-farm and off-farm laborers. The communities will also benefit from reliable supply of irrigation water, as well as improved skills in using and managing water resources.

58. The project is classified as Effective Gender Mainstreaming (EGM) and will address the gender issues identified through the following measures: (i) installation of washing points, cattle ghats, fencing, and crossing points in strategic places of the irrigation system, (ii) encouraging women's participation in WUAs, (iii) training women in water-use skills, (iv) conducting training needs analysis of WUAs and rural women to identify how to increase women's participation, (v) ensuring women farmers' participation in trainings on irrigated agricultural practices and profitable farming systems, (vi) ensuring women farmers' participation in cross-farm visits, farm fairs, and other knowledge events, and (vii) documenting lessons learned in implementing farmer training programs and ensuring women's full participation. Implementation details of these activities are detailed in the gender action plan, below. The PID-PMO as well as the PAD-PIO with the gender implementation consultant will oversee the implementation of the gender action plan.

GENDER ACTION PLAN

Activity	Performance Targets/ Indicators	Responsibility	Timeframe
Output 1. Jalalpur irrigation distribution system established			
1.1 Install water supply outlets for household use, as well as crossing points / bridges for easy access, in strategic areas of the irrigation tributary system	• 17 water supply outlets installed in strategic spots of the irrigation tributary system • Households in 17 water-scarce villages benefitted from water supply outlets installed • Crossing points installed in strategic areas	PMO-canals	Q3 2018 – Q2 2022
1.2 Construct cattle baths for easy access to water by livestock often cared for by women in rural households	• 30 cattle baths constructed in specific spots along selected areas of the irrigation tributary system	PMO-canals	Q3 2018 – Q2 2022
1.3 Install safety fencing in strategic areas of the irrigation tributary system	• Irrigation fences installed in strategic points in 7 locations to ensure children's safety: Jalalpur, Thill Sharief, Chakri, Nathwal, Pipli, Ratwa, Dheri	PMO-canals	Q3 2018 – Q2 2022
1.4 Include provisions in labor contracting provisions that encourage the employment of women in civil works	• Labor contracting documents include specific provisions encouraging the hiring of local labor and women workers • Local labor engaged in civil works, including women workers, as feasible	PMO-canals	Q3 2018 – Q2 2022
Output 2. Water use skill improved in the project area			
2.1 Encourage women's participation in WUAs	• 5% of the 485 WUAs established, have women members (Baseline 2017: 0 WUAs in project area) • All female heads of households with farmlands registered in their names, are members of WUAs • All WUAs conduct women-only discussions with women members and wives of members, which would then be fed into bigger WUA meetings • Women's participation in WUA meetings recorded in the minutes of the meeting	PAD-PIO with gender implementation consultant	Q3 2018 – Q1 2023
2.2 Organize community-based groups of women to include women farmers who are not members of WUAs[a]	• At least 2 women-only meetings held per year • Minutes of meetings with consolidated views of women farmers, are considered by WUAs during their meetings	PAD-PIO with gender implementation consultant	Q3 2018 – Q1 2023
2.3 Conduct training needs analysis of WUAs, with specific attention to the	• TNA report includes a specific section highlighting the needs and concerns of women water users	PAD-PIO with gender implementation consultant	Q3 2018 – Q1 2023

Activity	Performance Targets/ Indicators	Responsibility	Timeframe
training needs of women water users	• Gender-sensitivity training is included in the training program of WUAs		
2.4 Develop and conduct training programs on water-use skills	• At least 2 detailed training programs designed to address the specific needs of women water users, including leadership trainings to increase the number of women participating in the WUAs • At least 2 WUA management trainings on topics such as financial management, budgeting and organizing with 5% women's participation. • 6000 households trained in improved water-use skills, with 30% women's participation	PAD-PIO with gender implementation consultant	Q3 2018 – Q1 2023
Output 3. Farm management capacity improved in project areas			
3.1 Conduct training on irrigated agricultural practices	• 6000 households trained on irrigated agricultural practices • 30% of total trainees are women	PAD-PIO with gender implementation consultant	Q2 2021–Q3 2023
3.2 Conduct training on profitable farming systems	• 6000 households trained on profitable farming system • 30% of total trainees are women	PAD-PIO with gender implementation consultant	Q2 2021–Q3 2023
3.3 Conduct cross-farm visits, farmer fairs, or other knowledge sharing events to enhance learning and exchange of good practices among farms	• 30% women's participation in the knowledge sharing events	PAD-PIO with gender implementation consultant	Q2 2021–Q3 2023
3.4 Establish demonstration plots managed by women	• At least 100 of the 664 demonstration plots are managed by women	PAD-PIO with gender implementation consultant	Q2 2021–Q3 2023
3.5 Provide private agricultural support services to women farmers	• At least 30% of farmers provided with agricultural support services are women		
3.6 Document experiences and lessons learned in implementing farmer training programs and ensuring women's full participation	• Report on good practices and lessons learned in ensuring women's full participation in farming training programs	PAD-PIO with gender implementation consultant	Q2 2021–Q3 2023
3.7 Hire women social mobilizers	• At least 10% of social mobilizers are women	PAD-PIO	Q2 2021–Q3 2023

PAD = Punjab Agriculture Department, PIO = project implementation office, PMO = project management office, TNA = training needs analysis, WUA = water users' association.

[a] This is an informal group of women who are neither landowners, nor wives of landowners, but women who provide farming services to landowners, as needed.

IX. PERFORMANCE MONITORING, EVALUATION, REPORTING, AND COMMUNICATION

A. Project Design and Monitoring Framework

Impact(s) the Project is Aligned with Growth of agriculture sector enhanced and food security ensured (Punjab Growth Strategy 2018)[a]			
Results Chain	**Performance Indicators with Targets and Baselines**	**Data Sources and Reporting**	**Risks**
Outcome Increased agricultural production in the project area	By 2024: a. Cropping intensity during Kharif season increased to 90% (baseline: 13% in 2008-2014 average) in the project area of 68,263 ha b. Crop yield during Kharif season increased by 141% (cotton), 12% (maize), 17% (rice), 29% (veg [tinda]), 45% (fodder [sorghum]), and 66% (wheat) (2008-2014 baseline)[b] in the project area c. Coverage of high saline top soil reduced to 10,239 ha (2015 baseline: 20,478 ha)	a–b. PAD's crop reporting services through PMO-Canals complemented by M&E systems c. PMO-Canals and PID data	Shortage in water diversion from the Jhelum River due to competition with other irrigation schemes, or erratic river flows, reducing agricultural benefits
Outputs 1. Jalalpur irrigation distribution system established	By 2022: 1a. An intake structure with a design discharge capacity of 38.2 m^3/s, 117-km long main canal, 23 distributaries, 10 minor canals, 72 cross drainage structures, 18 flood carrier channels, and over 250 associated structures for Kharif season irrigation constructed (2017 baseline: 0) 1b. A guideline and sustainable O&M plan for Jalalpur irrigation distribution system approved by PID (2017 baseline: 0) 1c. A flood disaster risk management plan approved by PID (2017 baseline: 0) 1d. M&E system using satellite remote-sensing technology to assess irrigation efficiency, crop growing and abiana certified as fully functional by PID (2017 baseline: 0)	1a–d. PMO-Canals and PID data	Extreme weather events cause hill torrent floods above design discharges, damaging irrigation system, farm land and properties

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
2. Water-use capacity improved in the project area	By 2023: 2a. 485 watercourses covering all project area for Kharif season constructed (2017 baseline: 0) 2b. 485 WUAs formed and their capacities improved for sustainable O&M of watercourses and efficient water use during Kharif season (2017 baseline: 0) 2c. 12,140 ha of the project area flattened (2017 baseline: 0) 2d. HEISs installed covering 809 ha of the project area (2017 baseline: 0) 2e. Over 6,000 households (about 20% of total estimated number of beneficial households) improved water-use skills with at least 30% women participations (2017 baseline: 0)	2a–e. PAD and PIO data through PMO-Canals	
3. Farm management capacity improved in project areas	By 2023: 3a. Over 6,000 households (about 20% of total estimated number of beneficial households) improved their capacities on irrigated agriculture practices with at least 30% women beneficiaries (2017 baseline: 0) 3b. Over 6,000 households (about 20% of total estimated number of beneficial households) improved their capacities on profitable farming system with at least 30% women beneficiaries (2014 baseline: 0) 3c. Over 6,000 farmers accessed private agriculture support services in the project area (2017 baseline: 0)	3a–c. PAD and PIO data through PMO-Canals	

Key Activities with Milestones
1. Jalalpur irrigation distribution system established 1.1 Construct Jalalpur irrigation distribution structures (Q3 2018–Q2 2022). 1.2 Develop M&E system for Jalalpur irrigation system (Q2 2020). 1.3 Complete training of PID and PAD staff on the use of the M&E system (Q2 2022). 1.4 Develop guideline and sustainable O&M plan and flood disaster risk management plan (Q1 2011–Q4 2021). 1.5 Complete training of PID staff on the use of the plans (Q2 2022). **2. Water-use skill improved in project areas** 2.1 Establish 485 WUAs (Q3 2018–Q1 2023). 2.2 Construct 485 watercourses with farmers' participation (Q1 2019–Q2 2023). 2.3 Undertake WUAs training for efficient O&M and their organizations (Q2 2021–Q3 2023). 2.4 Undertake precision land levelling of 12,140 ha of the project area (Q1 2019–Q4 2023). 2.5 Install HEISs (e.g. drip irrigation) covering 809 ha and 20 water storage ponds with solar pumping stations (Q1 2019-Q4 2023). 2.6 Undertake farmers training for climate smart irrigation practices (Q2 202–Q3 2023). **3. Farm management capacity improved in project areas** 3.1 Establish 664 demonstration plots covering 220 ha (Q2 2021–Q3 2023). 3.2 Conduct farmer field schools and farmers' training (Q2 2021–Q3 2023). 3.3 Farmer fairs and other knowledge sharing events (Q2 2021–Q3 2023). 3.4 Private agriculture support services (Q2 2021–Q3 2023). **Procurement management activities** Complete detailed engineering design (Q3 2017). Mobilize project implementation consultant (Q4 2017). Mobilize project support consultant for outputs 2 and 3 activities (Q1 2018–Q3 2028). Initiate bid process of the major civil works contract (Q3 2017). Award major civil works contract (Q3 2018).
Inputs ADB: $274.63 million Government: $80.80 million Beneficiaries: $5.16 million

HEIS = high efficiency irrigation system, M&E = monitoring and evaluation, O&M = operation and monitoring, PAD: Punjab Agriculture Department, PID: Punjab Irrigation Department, PIO = project implementation office, PMO = project management unit, WUA = water users' association.

[a] Government of Punjab, Planning & Development Department. 2015. *Punjab Growth Strategy 2018*. Lahore.

[b] Cotton (0.58 t/ha), maize (6.95 t/ha), rice (1.66 t/ha), vegetable (tinda) (7.56 t/ha), fodder (sorghum) (7.95 t/ha), wheat (1.66 t/ha for *rab*i season) in the average 2008–2014.
Source: Asian Development Bank.

B. Monitoring

59. **Project Performance Monitoring.** EA will develop comprehensive project performance monitoring system and closely monitor the progress of project activities, outputs, and outcomes based on the project performance monitoring system in accordance with the DMF. In particular, the project performance monitoring system will assess the following outputs and indicators (i) progress of planned activities according to the milestones; (i) progress in achieving each project output and project outcome according to the performance targets and indicators indicated in DMF, and (iii) social and economic benefits with focus on the poor and women.

60. Information and data gathered during project implementation period will be analyzed and measured against the targets, and published regularly on the project website.

(i) Submit quarterly progress reports, covering progress and achievements during the

period against millstones and indicators in the DMF; and

(ii) Produce a project completion report at the last year of project implementation, outlining the achievements and lessons learned.

61. All project assurances including policy, legal, financial, economic, physical, environmental, gender, and other safeguard measures will be monitored through a quarterly progress reports, and twice a year, during ADB loan review missions.

62. ADB will also monitor the progress of achievement of each output and outcome based on performance indicators with targets, and each activity based on milestones indicated in the DMF through a project management information system (i.e., e-Ops).

63. **Compliance monitoring.** All project assurances including policy, legal, financial, economic, physical, environmental, gender, and other safeguard measures will be monitored through quarterly progress reports and twice a year during ADB loan review missions.

64. **Safeguards monitoring.** PMO-Canals will submit to ADB an Environmental monitoring report that will provide an overview of the implementation of EMP and the Site-Specific EMP. PMO-Canals environment specialist will prepare the biannual environmental monitoring report with the assistance of the national and international Environmental Specialists of the project implementation consultants. The consultants will supervise functioning of the project's Environmental Management System including implementation of EMP and inputs into quarterly progress reports that will be submitted to ADB. The contractor's environment specialist will be responsible for the day to day implementation of EMP and the Site Specific EMP in the field, the contractor will prepare monthly environmental reports for submission to PMO-Canals environment specialist.

65. PMO-Canals resettlement specialist will oversee the internal resettlement monitoring of LARP implementation, with support from the consultant safeguards team. External resettlement monitoring and compliance reporting will be conducted by an independent external monitoring agency (EMA) or individual external monitor to be hired by PMO-Canals. Internal and external resettlement monitoring reports will be submitted on a semi-annual basis to ADB for review and disclosure. All monitoring reports will also be disclosed to the displaced persons including the preparation of corrective action plan (s). As a condition for ADB no-objection in handing over of site for commencing civil works for civil works packages with LAR issues, an internal and external resettlement report confirming completion of compensation activities, provision of transition/rehabilitation allowances and fulfilment of all LAA requirements for land award will be submitted to ADB for review.

66. **Gender and social dimensions monitoring.** The gender and social specialist in PMO-Canals will be responsible for monitoring the implementation of the gender action plan and for the preparation of the semi-annual monitoring reports that will be submitted to ADB.

C. Evaluation

67. **Inception Mission.** ADB will conduct an inception mission within three months of loan signing to assess project readiness and implementation arrangements including establishment of PMO, PIOs, opening of an advance account, progress of recruitment of three consulting services, status of the development of the project performance monitoring system, and progress of advance procurement actions.

68. **Review Mission.** ADB will field review missions at least once a year to (i) assess the progress of project activities and outputs and effectiveness of implementation arrangements, (ii) monitor the implementation of GAP and safeguard compliance with ADB Safeguard Policy Statement (2009), (iii) review compliance with loan agreements and related matters, (iv) follow up on decisions and actions agreed during previous review missions, and (v) resolve any project implementation issues that may arise.

69. **Midterm Review Mission.** ADB will conduct a midterm review in the third year of project implementation. The midterm review will (i) assess the project performance and achievement against targets and milestones in the DMF; (ii) review the initial outcomes, benefits, and impact of the project, and (iii) identify gaps, if any, and recommend necessary changes to strengthen implementation arrangements or modify project design.

70. **Project Completion Review Mission.** ADB will field a project completion review mission upon physical completion of the project to commence preparation of ADB's project completion report. The mission will (i) assess the project performance against all targets, indicators, and benchmarks (including any revised at the midterm review); (ii) evaluate initial benefits and outcome of the project across outputs, and (iii) identify any incomplete activities and agree on the necessary actions.

D. Reporting

71. PID, through PMO-Canals will submit to ADB with the following reports: (i) quarterly progress reports in a format consistent with ADB's standards; (ii) consolidated annual reports including (a) progress achieved by each of Outputs 1, 2 and 3, as measured through the indicator's performance targets, (b) key implementation issues and solutions, (c) updated procurement plan, (d) progress of the gender action plan; (e) issues concerning environment and social safeguards; and (f) updated implementation plan for the next 12 months. PAD, through PIO shall submit necessary information to PMO-Canals for PMO-Canals' developing consolidated reports.

72. PID, through PMO-Canals shall submit a government's project completion report within 6 months of physical completion of the project. The government's project completion report will evaluate the performance and achievements of the project against the indicators, expected benefits, and outcome, and should include information on (i) project implementation, and (ii) the use of loan fund to ADB.[22] PAD, through PIO shall submit necessary information to PMO-Canals for PMO-Canals' developing consolidated project completion report.

E. Stakeholder Communication Strategy

73. Project information will be strategically disseminated through media at main milestones including loan signing, contract awards and project completion. Grievance redress mechanism will be established at the PMO-Canals, by phone and email, and through public consultation events. The documents to be disclosed are in the Table 15.

[22] Project completion report format is available at: http://www.adb.org/Consulting/consultants-toolkits/PCR-Public-Sector-Landscape.rar.

Table 15: ADB Public Communications Strategy

Project Documents	Means of Communication	Responsible Party	Frequency	Audience(s)
Project data sheet (PDS)	ADB's website	ADB	Initial PDS posted on the website no later than two weeks after approval of the concept paper; updated at least twice a year	General Public
Environmental Impact Assessment	ADB's website	ADB	Post fact-finding mission and 120 days before Board Approval of the project	General Public, project-affected people in particular
Draft Land Acquisition and Resettlement Plan	ADB's website brochures	ADB	Post fact-finding mission	General Public, project-affected people in particular
Final Land Acquisition and Resettlement Plan	ADB's website brochures	ADB PID	After detailed design and approval by ADB	General Public Project-affected people
Reports and Recommendations of the President	ADB's website	ADB	Posted on the website within two weeks of Board approval of the loan	General Public
Legal Agreement	ADB's website	ADB	Within two weeks of loan signing (early disclosure unless Borrower agrees to)	General Public
Initial Poverty and Social Assessment	ADB's website	ADB	within 2 weeks of approval of Concept Paper	General Public
Summary of Poverty Reduction and Social Strategy	ADB's website	ADB	Within two weeks of loan signing (early disclosure unless Borrower agrees to)	General Public
Project Administration Memorandum	ADB's website	ADB	Posted on the website within two weeks of Board approval of the loan	General Public
Social and Environmental Safeguard Monitoring Reports	ADB's website	ADB	Within 1 month after each 6 month monitoring period	General Public, project-affected people in particular
Audited project financial statements and the auditors' report	ADB's website	ADB	No later than 14 calendar days of ADB's confirmation of their acceptability	General Public
Project Completion Report	ADB's website	ADB	Within two weeks of circulation to the Board for information	General Public
Evaluation Report	ADB's website	ADB	Within two weeks of circulation to Management and the Board	General Public

Source: Asian Development Bank.

X. GUIDANCE NOTE TO DEVELOP PLAN FOR SUSTAINABLE O&M OF JALALPUR IRRIGATION SYSTEM

A. O&M and Financial Sustainability Issue in Punjab Irrigation Systems

74. **O&M Norms and *Abiana*.** Historically, the development of the canal irrigation schemes of the Indus Basin was based on full O&M cost recovery, and there was even an element of capital cost recovery in the *abiana* (irrigation water rate) that was paid by the farmers. Prior to the 1970s, irrigation and drainage systems in Pakistan were financially self-sufficient and, in fact, were profit-making endeavours. Until the 1960s, PID was one of the major revenue-earning agencies of the provincial government.

75. With the commissioning of tube wells under Salinity Control and Reclamation Project approved for the World Bank financing in 1977, PID was faced with the additional financial burden of meeting the increasing O&M expenditure of these tube wells, mainly due to rising energy costs. As budget allocations for O&M did not keep pace with requirements and staff had to be paid, PID went into deficit in the 1970s.

76. The socio-political situation did not allow a proportional increase in *abiana*. Revisions in the *abiana* have been sporadic and insufficient as they were only revised three times in the 1970s and 1980s. The increases in the *abiana* outpaced inflation in the sixties and the years following 1992-93. Between 1975 and 2000, however, the price level in the country increased by 641% while in comparison the increase in the *abiana* was only 439%. The latest revision of the *abiana* was in 2003. At present, farmers in the Punjab have to pay an annual flat rate of Rs 135 per acre as *abiana* (Rs 50/acre for Rabi crops and Rs 85/acre for Kharif crops).

77. Furthermore, the collections level of *abiana* in Punjab dropped from 71% in 1997-98 to only 56% of the assessed amounts in 2003-04. Together with relatively low *abiana,* the shortfall between O&M expenditure and the revenue actually collected was 72% for Pakistan and 68% for Punjab Province during the 1990s. These low levels of cost recovery made the irrigation and drainage system highly dependent on Government subsidy. It should be also noted that the revenues collected through *abiana* has been transferring to the Provincial Finance Departments and not to PID, and a connection between paid *abiana* and funding for the O&M of the irrigation and drainage systems did not exist.[23]

78. **O&M Authority.** Currently two modes of irrigation system O&M are in vogue in Punjab: (i) PID managing the whole canal and related distribution system up to watercourse outlets while the system from watercourse outlets is managed by farmers; (ii) Farmer-managed, financially autonomous farmer organizations (FOs) manage the operation of the canal (distributary level) with supervision of Area Water Board (AWB) and, with Punjab Irrigation and Drainage Authority (PIDA) as regulator to monitor the performance. PID managed system is the system that has been run traditionally in Pakistan since independence. FOs' managed system has been primarily introduced in the country with the recommendation of World Bank under the agenda of the reform of the irrigation subsector.

79. **Reform of Irrigation Subsector.** The irrigation reform process started with the promulgation of the PIDA Act in 1997 enacted by the Punjab Government. Other major

[23] Government of Pakistan, Ministry of Water and Power. 2002. *Pakistan Water Sector Strategy-Detailed Strategy Formulation*. Islamabad.

achievements of the irrigation reforms in the irrigation sector include the establishment of PIDA, issues of AWB and FO Rules and Regulations, introduction of flat rate for *abiana*, formation of six AWBs together with about 400 FOs, and signing of irrigation management transfer agreements with the newly constituted FOs. The irrigation reform process in the Punjab was supported by international development partners including ADB and World Bank through the implementation of a number of projects/programmes.

80. At present, each of the six AWBs established covers the following main canal systems: (i) Lower Chenab Canal (LCC) (East) in Faisalabad Canal Circle with the cultivable command area (CCA) of 0.75 million ha; (ii) LCC (West) in Faisalabad Canal Circle with CCA of 0.49 million ha; (iii) Lower Jhelum Canal (LJC) in Sargodha Canal Circle with CCA of 0.59 million ha; (iv) Lower Bari Doab Canal (LBDC) in Sahiwal Canal Circle with CCA of 0.68 million ha; (v) Bahawalnagar Canal in Bahawalnagar Canal Circle with CCA of 0.89 million ha; and (vi) Dera Jat Canal (DJC) in Dera Ghazi Khan Canal Circle with CCA of 0.28 million ha.[24] Total coverage areas of 3.68 million ha managed by the six AWBs account for 43% of the irrigated areas in Punjab.

81. While the ongoing reforms achieved some outputs, the number of issues have been identified as follows: (i) significant decline in *abiana* collection by FOs compared with non-FO areas; (ii) inability of FOs to deal effectively with water theft and defaulters; (iii) weak institutional capacity of FOs in maintaining accounts and records; (iv) increasing inequity and elite capture; and (v) general absence of FOs' recognition by the local administration system.

82. Among others, significant decline in *abiana* collection by FOs compared with non-FO areas is serious concern. In irrigation systems managed by PID, 93% of all assessed *abiana* was collected through the Revenue Department during the 2012-2013 fiscal year. On the other hand, the *abiana* recovery rates in the six irrigation systems managed by AWBs and FOs are significantly lower as follows: 94% in LJC; 74% in Bahawalnagar Canal; 67% in LCC (East), 66% in LCC (West), 55% in LBDC and only 4% in DJC.

83. According to a performance evaluation ranking undertaken by PID for 16 Irrigation Canal Circles during the 2014 Kharif season, 25% of the top half are schemes managed by FOs against 50% of the bottom half.

84. Considering the situations as stated above, it was assessed that the efforts of irrigation reforms were not fully successful, and it was decided that the sector reforms, and related plans and actions would be further reviewed and integrated as appropriate into the transformation process of PID into a Water Resources Department under ADB technical assistance: Institutional Transformation of the Punjab Irrigation Department to a Water Resources Department.[25]

85. **O&M Balance.** PID manages, operates and maintains a large contiguous canal irrigation system comprising 23,184 miles (37,326 km) of canals in addition to thousands of km of drains. About 43% of the irrigated area is managed by PIDA (Area Water boards) as described in para 7 above. The management and O&M follows proven national and international practices, is conducted by a team of dedicated full time experts and skilled staff, and is supported by funds. The main requirements of the management and O&M are as follows: (i) operation: data collection, water measurement, operation of structures, inspections, preparation and implementation of water distribution plan; (ii) routine maintenance: cleaning, painting, weed control, safety

[24] Websites from PIDA and PID. CCA of 0.28 million ha in DJC is estimated from available source in PIDs' website.
[25] ADB. 2016. Islamic Republic of Pakistan: Institutional Transformation of the Punjab Irrigation Department to a Water Resources Department. Manila.

measures; (iii) periodic maintenance: repairs, silt removal, restoration of embankments; and (iv) salaries and wages of support staff, administration, taxes, compensation payments.

86. The required O&M of Punjab irrigation systems is estimated at $51.3/ha in 2016.[26] The estimate largely concurs with $65/ha estimated for O&M requirement in Pakistan irrigation systems by the Food and Agriculture Organization in its Water Reports 37.[27]

87. On an average, Punjab allocates $158.353 million equivalents for the management and O&M every year. In fiscal year 2016-2017, The Government of Punjab allocated $176.98 million equivalent for the management and O&M ($18.63/ha). Annual allocation for the management and O&M and last three years, actual expenditures are in Table 15. The current allocation is based on estimates in 2004-2006 under Development Policy Loan from the World Bank and has been updated twice in 2010 and 2012 and updated in 2014.

Table 15: Punjab's Budget and actual Expenses for Management and O&M of Irrigation Systems

Year	Allocation	Expenditure
	(Million Rs.)	(Million Rs.)
2013-14	16,943.590	15,718.727
2014-15	12,823.451	12,823.451
2015-16	18,158.664	17,039.255
2016-17	18,582.439	18,582.439
Average	**16,627.036**	**16,040.968**

88. In addition to the routine maintenance requirement, the allocated budget pooling offers flexibility to support to the emergency works on priority basis, if needed. Additional financial support is also made available on need basis. The O&M manual is periodically updated and so is the management and O&M budget. The O&M manual has recently been updated in 2017. The Manual provides comprehensive guidance to the officials for inspection and evaluation and record keeping. Independent auditors audit the annual management and O&M budget and financial audit report is prepared and shared with the competent authority.

89. Since 2003, the flat *abiana* rate for Rabi crops is set at Rs 50/acre ($1.23/ha) and for Kharif crops at Rs 85/acre ($2.1/ha) (see para.3). In 2011, a surcharge of Rs 0.5 (US$ 0.005)/acre or Rs1.2 (US$ 0.011)/ha is levied from 2011 onwards as a financial contribution towards the works of IRSA.[28] In addition, special water charges (tawan) are applicable for sanctioned gardens, sugarcane, paddocks and supply of water to fish farms. Even if all assessed *abiana* could be collected, the recovered amount would cover only 15% to 20% of the estimated O&M cost requirement. The present level of *abiana* collection is about 50% of the assessed abiana. A number of reforms have been made in the rules which aim at improving *abiana* collection and therefore it is expected that *abiana* collection should improve in the coming year.

90. As discussed in preceding paragraph, the *abiana*, even if collected fully, will amount for a fraction of the overall O&M requirement. To account for this shortfall, the government provides

[26] Estimated by the consultant for ADB Loan 6006-PAK: Project Design Advance for Jalalpur Irrigation Project approved in 2016.

[27] Food and Agriculture Organization. 2012. *Irrigation in Southern and Eastern Asia in figures (AQUASTAT Survey – 2011)*. Rome.

[28] Notification # SO(Rev)IRRI/3-98/11 dated 22 August 2011

budget from its Annual Development Program for the irrigation sector, which is utilized in operation and maintenance of the irrigation system as per its requirements.

B. Guidance Note to Develop Plan for Sustainable O&M of Jalalpur Irrigation System

91. As discussed in the section of O&M Authority, the two modes of irrigation system O&M differ in institutional aspects of operation as to who will operate, maintain the system and who will collect *abiana.* However, the main operational requirements for the successful implementation of the irrigation project remain the same. The main operational constraints facing O&M of water resources infrastructure in Punjab are associated with lack of funding, inadequate cost recovery, capacity constraints, limited stakeholder participation, poor awareness and information.

92. **Proposed O&M Authority.** The Jalalpur irrigation system is proposed to be operated and maintained by PID considering the following: (i) the efforts of irrigation reforms by ADB and other development partners were not fully successful therefore, it was decided that the sector reforms, and related plans and actions would be further reviewed and integrated as appropriate into the transformation process of PID into a Water Resources Department under ADB technical assistance; (ii) the proposed JIP will be a non-perennial irrigation system covering only Kharif irrigation season, and therefore the sustainable O&M under self-accounting mechanism under sector reform agenda is unlikely; and (iii) the Government of Punjab assured sufficient budget allocation to PID for O&M of the Jalalpur irrigation system with the guideline and sustainable O&M plan incorporating improved asset management and irrigation service delivery to be developed under the proposed project.

93. **Required Assets to be operated and maintained.** The system includes a head regulator at the right bank of the Jhelum River at Rasul barrage, with a design discharge capacity of 38.23 m^3/s (1,350 ft^3/s), 117-km long main unlined canal except for concrete lining canal at some critical sections, 23 distributaries and 10 minor canals with combined total length of 210 km. The system will require routine maintenance and inspection of the canal and associated structures. In addition, the system includes 72 cross drainage structures for safe passage of floods across the main canal, 18 flood carrier channels to drain saline flood water to the Jhelum River, 253 various associated structures, including 42 flow regulators and drops across main, distributary, and minor canals, 16 railway and road bridges, 15 foot bridges, 2 escapes, and 485 irrigation and 17 drinking water supply outlets. Proper inspection and maintenance of these structures, and the assessments of the Jalalpur irrigation system, agriculture production and *abiana* in the system will need to be carried out based on the proper asset inventory and sustainable O&M plan and its guideline, and the M&E system using satellite remote sensing technology, all of which will be developed under the proposed project.

94. **O&M Standard.** Based on experience of PDA consultants, following maintenance standards are recommended.

Embankment Inspection	1.	Replace 5 inch of material along Road 5 percent of Total length each year
	2.	Grade road surface 6 times per year
	3.	Prohibit public access to non-paved inspection roads (the Highway Department must provide alternate roads or take over maintenance)
	1.	Replace 5 inch of material along Road 5 percent of Total length each year
	2.	Repair 15 rain cuts per Canal Mile

Embankment Slope, Outside (includes 4 feet of road shoulders)	3.	Remove all trees and bushes, establish turfing where feasible and control weed growth to facilitate inspection of seepage on outside slopes.
Embankment Slope, Outside Inside	1.	Cut weeds as necessary to allow visual inspection of canal prism
	2.	Remove all trees and bushes interfering the waterway
	3.	Provide 50 feet of Killa bushing per mile per year to correct and prevent erosion where necessary for canals above 200 cfs.
Gates, Hoists & Mechanical Parts of Structures	1.	Inspect all gates, gate hoists and steel accessories annually and repaint, repair or replace as needed during the canal closure period.
Bed Level Control	1.	Remove an average of 6 inches of silt annually from 30 percent of the length of distributaries and minors with discharge upto 200 cfs.
Lined Canals	1.	Repair 20 percent of total area each year
Bed Level Control	1.	Remove an average of 6 inches of silt annually from 30 percent of the length of distributaries and minors with discharge upto 200 cfs..
Structure/Cross Drainage	1.	Inspect all cross-drainage points and irrigation network during canal closure and before the arrival of flood season. Repair damaged stone apron, check drainage culverts and remove obstructions where required.
Flood Fighting	1.	Flood Fighting by Appropriate means along the reach parallel to river Jhelum.

95. **O&M Requirement.** Based on the recommended maintenance standard, estimated cost of required management and O&M of $51.6/ha, and the command area of the 68,263 ha, required annual management and O&M budget for Jalalpur irrigation system is estimated at $3.52 million. The Government of Punjab committed to ensure that adequate O&M budget amounting to $1.76 million (50% of full requirement of $3.52 million) is provided one year after the physical completion of Jalalpur irrigation distribution system and associate facilities (i.e. from the fiscal year 2023), with reflecting price escalation rate from 2017 and onward, for the completed facilities.[29]

96. **Staff Requirement.** PID also committed to assign adequate, qualified and dedicated staff as listed in Table 16 below.

Table 16: Staffing Requirement for MOM for Jalalpur Irrigation Project

Staff Position	No	Remarks
Chief Engineer (Head)	-	Existing as Chief Engineer Sarghoda Zone
Superintending Engineer	-	Existing as S.E. Upper Jhelum Canal
Executive Engineer	1	New position
Sub Divisional Officer	2	New position

[29] The construction of the Jalalpur irrigation system will be completed in 2022 and the required O&M one year from the completion will be covered by the contractors under the defect reliability mechanism.

Technical Support (deputy collector, accounts officer, draftsman, revenue branch staff etc.)	38	New position
Non-Technical Support Staff (baildaar, driver, plumber, office boy, electrician, etc.)	251	New position
Total Additional Staff	292	

97. ***Abiana* Assessment.** As the Jalalpur irrigation system will be a non-perennial irrigation system, the annual amount of *abiana* to be collected will be Rs85.5/acre ($2.1/ha). The recovered amount is significantly less than the estimated O&M cost requirement. It is obvious that the collection of US$ 2.10 per ha as abiana will be insufficient. It may be noted that the *abiana* collection and the funding for O&M of the Jalalpur irrigation system is not connected as the revenues collected through *abiana* will be transferred to the Provincial Finance Departments and not to PID. An M&E system using satellite remote sensing technology will be developed to assess *abiana* objectively as well as irrigation efficiency, crop-growing, and water productivity under Output 1 of the proposed project.

XI. ANTICORRUPTION POLICY

98. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the project.[30] All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agency and all project contractors, suppliers, consultants, and other service providers. Individuals and/or entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contracts under the project.[31]

99. To support these efforts, relevant provisions are included in the loan agreement and the bidding documents for the project. The Government will comply with, and will ensure that PID complies with, ADB's Anticorruption Policy (1998, as amended to date). The Government, consistent with its commitment to good governance, accountability and transparency, agrees (a) that ADB has the right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive or coercive practices relating to the project; and (b) to cooperate fully with any such investigation and to extend all necessary assistance, including providing access to all relevant books and records, as may be necessary for the satisfactory completion of any such investigation. In addition, the Government will (a) conduct periodic inspections on the contractors' activities related to fund withdrawals and settlements; (b) ensure that all contracts financed by ADB in connection with the project include provisions specifying the right of ADB to audit and examine the records and accounts of all contractors, suppliers, consultants, and other service providers as they relate to the project; and (c) the project implementation consultant shall verify the contractors' invoices in accordance with working drawings and contract specifications.

XII. ACCOUNTABILITY MECHANISM

100. People who are, or may in the future be, adversely affected by the 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 projects can voice, and seek a resolution of 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

[30] Anticorruption Policy: http://www.adb.org/Documents/Policies/Anticorruption-Integrity/Policies-Strategies.pdf
[31] ADB's Integrity Office web site: http://www.adb.org/integrity/unit.asp

with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.[32]

XIII. RECORD OF CHANGES TO THE PROJECT ADMINISTRATION MANUAL

101. Record of revisions and/or updates during the course of implementation is in the Table 17 below.

Table 17: Record of PAM Revisions and Updates

	Date	Revisions and updates
1.	August 2017	Original PAM prepared.

[32] Accountability Mechanism. http://www.adb.org/Accountability-Mechanism/default.asp.

Project Implementation Consultants

Terms of Reference

I. OBJECTIVES OF THE ASSIGNMENT

1. The following are the objectives for hiring the consultancy services:

   i. To ensure construction of a reliable and sustainable irrigation system of specified quality, in accordance with the physical works contract. In this regard the hired consultants are expected to perform all necessary services required to attain the objectives.
   ii. To delegate necessary powers to the supervisory consultants to supervise the construction of the irrigation system as quantified in scope of works, on specified quality standards, within stipulated time.
   iii. To shift the responsibility of design and construction drawings to the consultants, with a view that the consultants will be solely responsible for visualization and realization of design, by performing the design review or redesign where necessary and review of the construction drawings.
   iv. To make consultant's role proactive and not limited to watch and see or monitor and report, by leading all activities for execution of the physical works, forewarning the contractor and informing the Client regarding all coming challenges.
   v. To hold the consultants wholly responsible for production rate of the physical works, control of works cost, and quality of the construction.
   vi. To deliver the services with professional commitment, by applying knowledge of management of integration, cost, scope, time, quality, procurement, communication, human resource, stakeholder, and risk in using the current day practices of project management, for execution, monitoring & control, and closing of project.

II. SCOPE OF SERVICES

2. The consultants will be overall responsible for all pertinent functions involved for the assignment of construction supervision, to produce a work result of quality, acting in accordance with standard international practices of the engineering profession. In relation to the mentioned service delivery, the consultants will perform various functions, like project management; design of command area development, contract packaging, preparation of bidding documents, participation in tendering process, and award of work contracts; design review of irrigation system, its barrage interface, cross drainage works, flood carrying channel, and flood management system etc.; survey and investigation; construction surveillance & supervision; contract administration; value engineering etc. The consultants will deliver the services, in accordance with relevant guidelines and standard procedures of ADB and according to instructions of the Employer.

3. One of the major responsibility will be to perform the function of "the Engineer" while supervising the works and administrating the work contracts executed between the Employer and the Contractor(s). The work contract(s) will be based on ADB Standard Bidding Documents and FIDIC Conditions of Contract Harmonized with ADB guidelines and procedures. The works may be awarded to the contractor(s) in single-stage-two–envelope procedure for selection of contractors. The consultants will also provide advice and assistance on all matters relating to the project implementation, construction issues, and audit para/issues pointed out by the Authorities, whenever these will be raised.

4. The specific scope for the consulting services will include but not limited to the text that is presented in the sections that follows.

A. Project Management

a. Pre-Contract Services

5. In case the consultants are requested to participate in award of any works contract, perform all pre-contract services including but not limiting to following:

i. Pre-qualification or post-qualification of contractors for each contract package;
ii. Review of Engineer's Estimates for each contract package;
iii. Assist Client in preparation of all documents required for obtaining ADB approval for procurement of all contracts;
iv. Assist Client in all procurement processes of all contract packages, from drafting advertisement for calling tenders, bid opening, prepare bid evaluation report, to make recommendation for award, all in accordance with ADB Guidelines; and
v. Attend all meetings in relation to award of contracts.

b. General Functions

i. Attend all meetings convened by the Client or Government or ADB and make necessary presentations and minutes of meetings. Keep record of such meetings;
ii. Prepare all documentation for approval of Government or ADB or any other agency;
iii. Monitor, track, and follow up project plan preferably using latest version of Primavera or equivalent for all project activities/tasks. To measure project progress on performance baselines for time, cost, and other project constrains;
iv. To generate progress reports using 'earned value' analysis;
v. Make systematic record storage, cataloging of all project documentation, files, correspondence, and devise a quick retrieval system;
vi. Assist project management office (PMO)/executing agency (EA) in planning, execution, control & monitoring, and closeout of the project;
vii. Provide necessary support to the Panel of Experts (POE) for review of project design and on-construction related issues;
viii. Review, approve the contractor's programme, update accordingly project schedule, and inform Client deviance from the base lines, if any;
ix. Prepare monthly and quarterly progress reports on approved format and include all features of the project, for each contract, like schedule, quality, procurement, risk, communications, cost and others, as required by the Client;
x. Assist PMO in maintaining detailed financial accounts and other project records, and prepare other documentation as may be required by the Punjab Irrigation Department (PID)/PMO or ADB;
xi. Provide technical support to PMO as required specially in submitting withdrawal applications to ADB for direct payment to the contractor;

xii. Keep the Employer informed of the engineering, technical, settlement, social and environment issues and progress of all contractual works both by direct communication and through discussions or correspondence; and

xiii. Prepare a comprehensive Construction Completion Report on completion of the contract, on the format acceptable to the Client and inclusive of all information required by the Client. The report preparation should start at an appropriate time so as to issue the report on schedule.

c. Other Obligations

i. Review & approve Site Specific Environmental Management Plan (SSEMP) prepared by the contractor based on the Environmental Management Plan (EMP), review & supervise implementation of the environmental mitigation measures and monitoring & control of plan in line with ADB's Safeguard Policy Statement (2009);

ii. Prepare/update Environment and Health Safety Plan, Gender Action Plan (GAP) and Resettlement Plans (RPs) for all locations where project civil works involve land acquisition and/or livelihood disruption on rights of way;

iii. Monitor and carry out activities related to implementation of Environmental Management, GAP, and RPs in line with relevant ADB guidelines. In this respect, the consultant will ensure that all project components design reviewed and supervised by the consultants are implemented in an environment friendly manner and by taking adequate mitigation measures wherever necessary;

iv. Prepare responses to audit observations and paras. in respect of payments certified by the consultant and assist the Employer in getting them resolved during and after completion of the project; and

v. Assist PMO/EA in implementation of land acquisition and resettlement plan (LARP).

B. Design and Review of Design

i. Examine and ensure adequacy of the hydraulic, structural, and geotechnical design criteria; and make modifications where necessary;

ii. Review, exam, and ensure the water requirement and canal capacity and other water related feature;

iii. Review, exam, and ensure the hydraulic, geotechnical, and structural adequacy of canal and allied system, with special consideration to cross drainage due to hill torrents;

iv. Review and analyze design options for all engineering works with a view to ensure cost effective construction, including but not limited to structural design and hydraulic optimization of the structure;

v. Exam and review the design and construction details of canal lining and suggest any change for improvement of achieving objective of lining and ease of construction;

vi. Perform updating of design, by adding new works with the approval of Client, if necessary;

vii. Review and approve design calculations and shop drawings submitted by the contractors;

viii. Revise Construction Drawings on the basis of design review. The construction drawing shall not be less than the size of A2. However, for allied drawings for

detailing A3 size may be used. Separate drawing will be produced for each structure, except out-lets;

ix. Continue Design Review and revision of construction drawings, and provide technical and design support throughout the currency of the construction;

x. Prepare Design Review report by way of updating the design report for the Project giving in sufficient details, the additional investigations to be carried out, additional design analyses, applied results of significant additional computation besides review of design criteria and parameters;

xi. Prepare and supply ten (10) copies of above Design Review Report as well as one (1) soft copy to the Client for record and future references;

xii. Incorporate changes in the design and construction drawings as and when required, throughout currency of Consultancy Contract; and

xiii. Revise/amend PC-1 for approval as and when required.

C. Construction Supervision and Contract Administration

i. Undertake full administration of construction contracts and supervise construction works (including barrage, irrigation system, command area development in civil, electrical, and mechanical discipline), during Construction Period, assuming the role of "the Engineer" and undertake all tasks as per Multilateral Development Bank Harmonized Edition of FIDIC General Conditions of Contract for Construction. This shall include on-Site supervision of the contractors' works for compliance with the specifications, review of Contractor's submittals, verification of executed works, issuance of interim payment certification, checking and approving the quality assurance procedures, and all other submittals prepared by the contractors;

ii. Analyze and approve the contractor's staff and labor proposals and work programme;

iii. Review and approve appropriate changes to the contractor's construction schedule and programme, and inform the Client on the impact on the project completion date and other mile stones;

iv. Put in place a comprehensive quality control program including detailed methodology for inspection, sampling, and testing; and confirm its adequacy in the field and ensure satisfactory employment at site;

v. Establish a comprehensive program for setting out, surveying, and measurement; and ensure its implementation throughout the contract period;

vi. Inspect and witness tests when necessary during manufacture of electrical and mechanical materials and machinery for compliance with specifications;

vii. Witness any acceptance test and advise the Employer whether the works or any part thereof have been completed as per specifications and certify outcome of acceptance test in support of provisional acceptance certificate of completion;

viii. Carry out joint measurements and verification of executed works as basis for certification of interim payments;

ix. Prepare Appropriate Request after performing necessary check on all variation request and make recommendation to the Employer for issuance of Variation Order in accordance with contract;

x. Analyze and check contractor's claims for time extension and payments as per conditions of contract and advise the Employer accordingly;

xi. Prepare all supporting documents and provide contract-related support to the Employer for contractual disputes, between the Employer and the Contractor, in Dispute Resolution Boards and Arbitration and during amicable settlement

process;

xii. Verify and certify contractors statement of accounts for interim payments on the basis of quality control and quantity survey and measurement of data ensuring that quantitative progress reporting is adequate to support the contractor's requests for payments;

xiii. Perform determination, value engineering, engineer's decision, dispute resolution as per provisions in the conditions of contract, when necessary, in the capacity of the Engineer;

xiv. As instructed by the Client, supervise engineering or other studies associated with the project and its components undertaken by the contractor or any other agency as appointed by the Client;

xv. Testing of material at site, off-site testing and inspection of goods and materials in the factory or elsewhere, if needed;

xvi. Supervise fabrication and installation of mechanical and electrical works in a satisfactory and safe manner in accordance with the specifications and contract requirements;

xvii. Testing and commissioning of Electrical & Mechanical equipment in association with the Client; and

xviii. Assist the Employer in taking over the contract works and prepare list of components of work to be completed by the Contractor during Defects Notification Period (DNP); also, prepare inventory of all Client's assets.

D. Survey, Investigation, Monitoring and Evaluation, and Planning

i. Perform joint survey in collaboration with the Contractor(s) and Employer;

ii. Carry out/ check all surveys and setting out necessary for proper supervision of the works;

iii. Check all TBMs installed by the contractor(s);

iv. Develop (a) a monitoring and evaluation (M&E) system using satellite remote sensing technology to assess irrigation efficiency, crop-growing, water productivity, and abiana, and (b) develop a training program for staff from PID and PAD to use the system;

v. Develop a guideline and sustainable plan of Jalalpur irrigation system O&M with improved asset management and irrigation service delivery;

vi. Develop a flood disaster risk management plan to address potential risks against extreme torrents from the hilly terrain and floods from the Jhelum River at the initial reach of the main canal; and

vii. Plan and execute additional surveys, geotechnical investigations and other such activities where necessary to provide a basis for both design modifications and subsequent changes in the construction drawings. The consultants shall hire, with prior approval of the Client, any additional services of such other agencies responsible for carrying out the aforesaid investigations and model studies etc.

III. JOB DESCRIPTION AND QUALIFICATIONS OF CONSULTANTS' STAFF

6. The detailed job description of Consultant's key staff is as shown below:

a. External Quality Auditor / Quality Management Expert (International, 8 person-months): Responsibilities of External Quality Auditor/ Quality Management Expert will but include not limited to the following:

i. Reports to Team Leader but have direct access to ADB and members of BOM of the Consultants;
ii. In his first visit he should apprise himself about the prevailing quality environment and propose measure to improve the quality environment at project, prepare a report in this regard and then endeavor by audit to improve & maintain it to high class international standards;
iii. Share his international experience and quality climate with the delivery team, to set quality goals and targets, and to motivate the delivery team;
iv. Check and audit that QA/QC is being performed regularly by the design team. Do they have any QA group in place at deign office and reports & other generated material is being quality checked before release;
v. Organize and supervise preparation of an appropriate Quality Management Manual for design activities and construction supervision of the Project. The Manual will describe the philosophy of quality management, the quality requirements, and how to achieve them. Manual will describe in depth and detail, the testing requirements, frequency, responsibility, and actions in case of non-conformity;
vi. Be aware of proceeds at the project, even when not on visit to Pakistan, on regular basis. In this regard, Team Leader ensures that all relevant information is dispatched to him periodically. Team Leader is obliged to provided more information if required;
vii. Ensure by audit that all QC procedures and tools are working properly and on time. Considering the feedback from filed propose improvement wherever required;
viii. Conduct a training session at site for Client, Consultants and Contractor staff, to enforce quality regime and fill gaps in current system;
ix. Develop an effective and efficient QA/QC system, continue to monitor it through reporting from the project and keep on adding small improvements whenever required on continuous basis;
x. Advise a system to eliminate repeat non-conformities;
xi. Conduct regular quality audits twice a year, and if need arises with higher frequency. Prepare reports of such audits with copy to ADB, BOM of the Consultants and Team Leader;
xii. Check quality, perform audit of prior, during and post- construction activities;
xiii. Guide to devise and develop check-lists for various construction activities and check/ audit the conformance by the supervision team;
xiv. Guide on consistent supply of suitable construction materials approved to be used in construction;
xv. Establish and oversee appropriate standards and quality control procedures;
xvi. Review contractors' quality control manual before approval by the Engineer; and
xvii. Site visit to the site will be an essential component of audit efforts.

b. External Hydraulic Design Expert (International, 6 person-months): Responsibilities of the Principal Hydraulic Design Engineer will include but not limited to the following:

i. Ensure design review to be performed on merit and review team output at intervals; and ensure design review is being performed accordingly;
ii. Guide the design/design review team in setting out design review strategy, design parameters and criteria and schedule;

iii. Review all relevant documents and exam design parameters and design criteria against the Client requirement;
iv. Review and finalize the requests for more survey & leveling, testing and investigation works, if required, at site;
v. Perform design review of critical works of the irrigation system, essential the initially the initial reach of the canal or any work referred to him by the Team Leader;
vi. Ensure holistically that the complete design of the project is in instrumental in realizing the objective of the Project to develop a new irrigation system;
vii. Guide the delivery team in production of specification of any additional material to be consumed in the project;
viii. Develop a flood disaster risk management plan to address potential risks against extreme torrents from the hilly terrain and floods from the Jhelum River at the initial reach of the main canal;
ix. Propose any innovative solutions to the issue to be resolved; and
x. Review Design review report prior to issuance.

c. External Environmentalist (International, 4 person-months): Responsibilities will include but not limited to the following:

i. Guide the delivery team in delivering prescribed services and dealing with Environmental Issues;
ii. Review all relevant documents, particularly the Environmental Impact Assessment study;
iii. Guide in Preparing/updating a cost effective environmental management and monitoring plan for the Project, in line with initial environmental examination (IEE)/EMP recommendations so as to ensure minimal environmental effects both during and following the construction period;
iv. High level review of the SSEMP;
v. Advise in preparation of required appropriate actions to mitigate any negative environmental impacts associated with construction activities in collaboration with PMO and all concerned stakeholders, and monitor its implementation;
vi. Review the training materials for PID and PMO staff, prepared by delivery team, to support environmental protection measures and to monitor and mitigate potential environmental impacts;
vii. Ensure that any environmental impact assessments, if required, fully comply with ADB Guidelines Safeguards Policy Statement (2009) and ensure that all required mitigation measures are identified and acceptable. Ensure that the environmental management and monitoring plans reflecting full details regarding the estimated mitigation costs are in place through the SSEMP, develop check list to monitor compliance with ADB Guidelines;
viii. Critically study and review first four biannual environmental monitoring report before issuance; and
ix. Prepare and distribute to Client and ADB a very brief high level report on environmental implementation compliance, after each of his visit to Pakistan.

d. Project/Construction Management Specialist/Team Leader/ (National, 51 person-months): Responsibilities of the Team Leader “The Engineer” will include but not limited to the following:

i. Over all responsible for delivery of services;

ii. performance of Consultancy Contract. Build, lead Upfront and motivate team members and prepare and train for a daunting task, and continue to do so throughout the project;
iii. Develop, organize and manage the Consultants team, for design review and construction supervision;
iv. Responsible for project management, construction supervision, contract administration, monitoring & control and closeout of project, in the capacity of the Engineer in the FIDIC environ of Multilateral Harmonized Condition of Contract;
v. Responsible for development, organization, building and motivation of consultant's team in proactive role, so that the consultants will lead the project upfront, ahead of PMO and Contractor(s);
vi. Assist the PMO in Project implementation;
vii. Assume full responsibility for the consultant's team and performance of services under the consultancy contract;
viii. Ensure that the design review team undertakes comprehensive review of the detailed designs and specifications which were prepared by the detailed design consultants;
ix. Ensure that the field team undertakes comprehensive construction supervision and contract administration of the civil works for the development of the Project in the capacity of "the Engineer" and undertake all tasks as defined under FIDIC General Conditions of Contract for Construction;
x. Oversee the consultants' team's activities ensuring compliance to details provided in the construction drawings and strict adherence to construction specifications;
xi. Ensure preparation of detailed and quantitative progress reports to support the contractor's requests for progress payments;
xii. Coordinate between Consultants' design review team and construction supervision team, to augment each other functions, for a better work result;
xiii. Keep the Employer informed of technical issues and progress of all works both by informal and formal meetings and correspondence and assist in any project issue which the Employer may require;
xiv. Take overall responsibility for preparation of the guideline and sustainable plan of Jalalpur irrigation system O&M with improved asset management and irrigation service delivery, reviewing the draft in detail with PMO and PID prior to finalization;
xv. Take overall responsibility for developing (a) the M&E system using satellite remote sensing technology to assess irrigation efficiency, crop-growing, water productivity, and abiana, and (b) develop a training program for staff from PID and PAD to use the system;
xvi. Participate in the Dispute Board meetings to explain and discuss issues raised by the Contractor/ Employer or ADB;
xvii. Assist the Employer in preparing responses to audit objections and quarries of the financiers or other Government Authorities; and
xviii. Coordinate with all concerned Employer's organizations on project issues; and
xix. At the end of the construction activities, guide and ensure that the team prepares a comprehensive Construction Completion Report inclusive of as-built drawings" as appropriate.

e. Chief Resident Engineer/Deputy Team Leader (National, 49 person-months): Responsibilities of the Chief Resident Engineer will include but not limited to the following:

i. Building, upfront leading and motivating construction supervision team and prepare and train for a daunting task, and continue to do so throughout the project;
ii. Assist the Team Leader in carrying out all aspects of his terms of reference and Act as the Team Leader during the absence of Team Leader;
iii. Assist the Team leader in ensuring that the team undertakes and carries out construction supervision and contract administration of the civil works for the Project assuming the role of "the Engineer" and undertake all tasks as defined under FIDIC General Conditions of Contract for Construction;
iv. Assist the Team Leader in overseeing the consultants' team's activities ensuring compliance to detail provided in the construction drawings and strict adherence to construction specifications;
v. Assist the Team Leader in overseeing quality control methodology put in place, confirming its adequacy and ensuring that its implementation is satisfactorily being carried out;
vi. Assume the responsibility for effective supervision and contract administration of all civil, mechanical and electrical works during the period of construction supervision;
vii. Oversee activities of the teams under his/ her control related to supervision of construction works ensuring compliance to detail provided in the construction drawings and strict adherence to construction specifications;
viii. Ensure preparation of detailed and quantitative progress reports to support the contractor's requests for progress payments;
ix. Prepare a comprehensive Construction Completion Report including as-built drawings as appropriate;
x. Ensure that the contractor follows the implementation schedule;
xi. Review the plan for execution of critical activities and arrange timely completion of these activities; and
xii. Ensure effective implementation of EMP.

f. Chief Measurement/Contract/Claims Engineer (National, 51 person-months): Responsibilities of the Contracts/claims Specialist will include but not limited to the following:

i. Lead procurement, contract and claims response team;
ii. Render necessary advice and assist the Team Leader in contract administration and procurement issues / assignments/ contractual claims;
iii. Determine extension of time for completion and other claims in accordance with the conditions of contract in consultation with the Team Leader and Chief Resident Engineer;
iv. Provide assistance to the Employer in dispute resolution as per provisions in the conditions of contract;
v. Assist the Team Leader in keeping the Employer informed of contractual and claims issues;
vi. Assist the Team Leader in holding meetings with the Contractor on contract and claims issues;

vii. Assist the team leader in preparing a comprehensive Project Completion Report (PCR), the guideline and sustainable plan of Jalalpur irrigation system O&M with improved asset management and irrigation service delivery, and any other duty/ assignment the Team Leader may entrust;
viii. Advise PMO on all contractual matters;
ix. Render necessary advice and assist the Project management team in contract administration and procurement issues / assignments;
x. Assist the Team Leader in resolving any contractual issue which the Team Leader may refer; and
xi. Provide assistance to the Employer in dispute resolution as per provisions in the conditions of contract;

g. Chief Quality Auditor / Quality Management Expert (National, 48 person-months): Responsibilities will include but not limited to the following:

i. Build, lead and motivate quality audit team and prepare and train for a daunting task, and continue to do so throughout the project;
ii. Prepare an appropriate Quality Management Manual for design review and construction supervision (independent volumes for supervision and design) of the Project. The Manual will describe the philosophy of quality management, the quality requirements, and how to achieve them. Manual will describe in depth and detail, the testing requirements, frequency, responsibility, and actions in case of non-conformity;
iii. Check and audit the QA/QC is being performed regularly by the design team. Do they have any QA group in place at deign office to quality ensure reports and other generated material before release;
iv. Training of all the field staff, for effective quality control of the Project and control over construction activities;
v. Conduct surprise visit to the Site, during and prior to construction activities, and conformance with the quality requirement;
vi. Check quality, perform audit of prior, during and post- construction activities;
vii. Devise and develop check-lists for various construction activities and check/ audit the conformance by the supervision team;
viii. Take all possible actions; motivate supervision team to generate a product of required quality;
ix. Advise on suitability of various construction materials proposed to be used in construction;
x. Bring all major nonconformities, repeat nonconformities to the knowledge of the Team Leader/ CRE for taking actions to improve the situation;
xi. Evaluate contractor's proposal for establishment of field laboratory and approve other laboratories for testing;
xii. Facilitate audit by External Quality Auditor and ensure to remove the non-conformities as soon as practicable and prepare a check list for monitoring by focusing on these non-conformities not to happen again;
xiii. Establish and oversee appropriate standards and quality control procedures;
xiv. Approve contractors' quality control manual;
xv. Ascertain that construction supervision team is on toes and continuously in high alert condition and cognizant of all required sampling and testing procedures; and
xvi. Motivate construction supervision teams by providing necessary advice and impart knowledge and describing project objectives.

h. Principal Hydraulic Engineer / Design Team Leader (National, 15 person-months): Responsibilities of the Principal Hydraulic Design Engineer will include but not limited to the following:

i. Lead design review team, coordinate all specialties and ensure design review to be performed on schedule;
ii. Review all relevant documents and exam design parameters and design criteria against the Client requirement;
iii. Decide the size of construction drawing with other specialties and check whether it is in line with Client requirements;
iv. Request, promptly and as per schedule, Team Leader if any input is required from the field;
v. Perform design review and timely generate construction drawings to facilitate construction supervision team and contractor to perform works on schedule;
vi. Request, supervise and witness a test to check the stability of the slope in the hill cut section of canal alignment;
vii. Provide requirements, plan and schedule for topographic surveys and any other investigations required to provide necessary input for design;
viii. Coordinate and supervise detailed design of all hydraulic aspects of the works including preparation of relevant additional construction drawings and specifications which may be required;
ix. Draft relevant portions of the guideline and sustainable plan of Jalalpur irrigation system O&M with improved asset management and irrigation service delivery, according to requirement of the Client;
x. Prepare TOC of Design Review report and circulate well before the issuance deadline;
xi. Coordinate and generate comprehensive detailed design review report, by compiling input from all specialties; and
xii. Generate monthly progress report, describing the input and utilization of all specialties and output / works results.

i. Principal Geo-tech Engineer (National, 8 person-months): Responsibilities include but not limited to the following:

i. Lead Geo-technical team;
ii. Review all relevant technical documents;
iii. Carry out (organize and oversee) comprehensive review of foundation conditions at each structure ensuring long-term integrity of the Project components;
iv. Design pile load testing, review the field feedback and make necessary changes in the design, if necessary;
v. Review stability of slopes, and make necessary changes where required for improvement of design;
vi. Review of design of filter material to be laid underneath the canal lining, to ensure stability of slopes and membrane, and continue checking the field performance of the design. Provided input during construction, where necessary;
vii. During the construction phase, investigate and evaluate any unexpected foundation conditions encountered and recommend alternative treatment as appropriate;

viii. Request, supervise and witness a test to check the stability of the slope design in the hill cut canal alignment and change design if necessary after the test;
ix. Propose immediate solution to encounter any construction issue at site;
x. Train the construction supervision staff, for construction supervision of piling, device necessary documentation like check list for execution and quality control; and
xi. Prepare, respective portion of design review report.

j. Principal Structural Engineer (National, 12 person-months): Responsibilities of the Structural Design Engineer will include but not limited to the following:

i. Lead structural design team;
ii. Review all relevant technical documents; design parameters & criteria. Review design calculations and check for accuracy and to see that appropriate standard was adopted. If case of disagreement, refresh and update design;
iii. Organize, supervise and carry-out any additional investigations deemed necessary for structural aspects of any feature to be included in the Project;
iv. Request, supervise and witness a test to check the performance of lining and change design if necessary after the test. Provide assistance to other specialties during the test;
v. Continue cognizance of field performance of the design, especially of piling and canal lining. Make necessary changes if required;
vi. Analyze structural design options where changes are required; and
vii. Assist in drafting relevant portions of the guideline and sustainable plan of Jalalpur irrigation system O&M with improved asset management and irrigation service delivery with emphasis on procedures/ practices to ensure long term structural stability of structures.

k. Principal Irrigation Engineer (National, 12 person-months): His/her duties will include but not limited to the following:

i. Review the design by considering current and future cropping patterns, and determining the crop water requirements for each crop included and based on current and improved future conveyance efficiencies, review the irrigation requirements of each branch system, all distributary/minor canal and the watercourse heads;
ii. Comprehensive review the plans for construction of branch, distributary and minor canals including control structures and required supporting infrastructure including emergency escape etc. for the command of project area;
iii. Propose any innovation into the command area designs that will improve irrigation efficiency and delivery flexibility and ensure equitable distribution of surface water throughout the command. Incorporate such innovation in the design after approval of the Client;
iv. In consultation with the hydraulic and structural Engineer, review both functional and structural requirements of distribution system structures;
v. Recommend any supply arrangements from the distributary and minor canals to watercourses to improve either efficiency or equity of distribution;

vi. Ensure that adequate flow measurement sites are provided throughout the system to facilitate both system management and monitoring of system performance;
vii. Use focus groups and stakeholder consultation to develop a construction process for distributary and minor canals that fully involves farmers in general in both the design review and implementation of the system improvement;
viii. Develop/review operation and maintenance strategies for the irrigation infrastructure by PID; and
ix. Develop monitoring and evaluation parameters for the project and identify related research needs to ensure achievement of project objectives.

l. Principal Agricultural Specialist (National, 18 person-months): Responsibilities of the incumbent will include but not limited to the following:

i. Work in coordination with Principal Irrigation Engineer;
ii. Coordinate with PIO on Command Area Development;
iii. Assist PIO in reviewing design of Command Area Development, as necessary;
iv. Coordinate with PIO on sharing information about the outlet on which the command development work is to be carried out, the important information required are chakbandi map, farmers list in that command, alignments of field channel to reach each farm land;
v. Perform detailing of chakbandi, confirm suitability of chakbandi plan and make changes in it, if required;
vi. Assist in designing precise alignment and leveling of water courses;
vii. Provide support to Construction Supervision team, guide them and facilitate their efforts to produce a quality construction product. Timely and continuous contribution to supervise laser leveling and water course alignment and construction;
viii. Top supervise the construction supervision efforts. Provide assistance and support to the construction supervision team, when and where required;
ix. Contribute in writing the guideline and sustainable plan of Jalalpur irrigation system O&M with improved asset management and irrigation service delivery;
x. Contribute in preparation of updated PC-1; and
xi. Participate in facilitating OFWM authorities for providing any desired information.

m. Principal Social Safeguards /Environmental Expert (National, 50 person months): Responsibilities will include but not limited to the following:

i. Lead environmental and resettlement team;
ii. Review all documents relevant to the Project;
iii. Assist Team Leader and work with the resettlement expert within PMO in developing and monitoring of implementation of resettlement plans;
iv. Assist PMO in complying with ADBs Guidelines on Involuntary Resettlement in accordance with ADB's Safeguards Policy Statement (2009);
v. Training of selected PID staff with a view to strengthening the PID's capacity to adequately oversee resettlement activities;
vi. Prepare internal monitoring reports on implementation of safeguards as per SPS (2009);

vii. Review all relevant documents, particularly the Environmental Impact Assessment study;
viii. Prepare/ update a cost effective environmental management and monitoring plan for the project which is in line with IEE/ EMP recommendations so as to ensure minimal environmental effects both during and following the construction period;
ix. Review the site specific environmental management plan (SSEMP) for each contract and ensure its effective implementation;
x. Prepare and execute required appropriate actions to mitigate any negative environmental impacts associated with construction activities in collaboration with PMO and all concerned stakeholders;
xi. Prepare a detailed reforestation plan for the Project and supervise its implementation during construction process as required in the IEE/ EMP;
xii. Develop training materials for PID staff to support environmental protection measures and to monitor and mitigate potential environmental impacts;
xiii. Ensure that any environmental impact assessments, if required, fully comply with ADB Guidelines Safeguards Policy Statement (SPS, 2009) and ensure that all required mitigation measures are identified and acceptable. Ensure that the environmental management and monitoring plans reflecting full details regarding the estimated mitigation costs through the SSEMP; and
xiv. Besides assisting in finalizing the biannual environmental monitoring report, he/ she will also assist the PMO in finalization of quarterly progress report, annual progress report, Completion report and any specific report asked by the PMO.

n. Resident Engineers (National, 4-positions, 162 person-months): Responsibilities of the Resident Engineer (Civil & Mechanical) will include but not limited to the following:

i. Resident Engineer will be responsible for setting out, leveling, inspection, witnessing, testing, verification and interim verification of works for an individual Contract, under his control;
ii. Assist the Chief Resident Engineer in carrying out all aspects of his TOR relating to civil, electrical and mechanical works component;
iii. Carry out effective supervision and contract administration of the civil works during the period of construction supervision;
iv. Ensure that the consulting team under his/ her control undertakes comprehensive construction supervision and contract administration of the works required to be carried out by the Consultant, as defined under ADB Harmonized Condition of Contract;
v. Participate in preparation of Quality Manual;
vi. Identify and formulate all control points in construction process. Categorize control points into report, witness and certification points, as described in Quality Manual;
vii. Ensure effective control over production and quality of concrete, coordinate with material engineer in this regard. Devise a protocol and design a Check Lists to ensure the compliance of the witness and certification points;
viii. Oversee the activities of the teams under his/ her control related to supervising construction works ensuring compliance to detail provided in the construction drawings and strict adherence to construction specifications;
ix. Ensure that the quality control methodology is strictly followed and prepare

response in the form of rework or rectify the nonconformities pointed out by the Quality Audit Team;

x. Ensure preparation of detailed and quantitative progress reports to support the contractor's requests for progress payments;
xi. Prepare a comprehensive Construction Completion Report including as-built drawings as appropriate;
xii. Ensure that the contractor follows the implementation schedule;
xiii. Review the plan for execution of critical activities and arrange timely completion of these activities;
xiv. Ensure effective implementation of EMP; and
xv. RE – Mechanical will be responsible for supervision of works at fabrication shop and installation at site, welding tests of qualified welder, performance of x-ray or other test, approval of weld quality, recommendation for approval of contractor's submission and to oversee that works are being carried out according to relevant standards.

o. Material/Laboratory/Concrete Engineer (National, 48 person-months): Responsibilities will include but not limited to the following:

i. Advise on suitability and consistent availability of various construction materials proposed to be used in construction;
ii. Assist Team Leader and CRE in approval of source and origin of construction materials;
iii. Ensure that the Quality Control Manual is strictly followed by the Project team and bring out all deficiencies to the notice of the Team Leader/ Deputy Team Leader/ Resident Engineer promptly;
iv. Perform good control of batching plant operations. In this regard formulate SOPs with the approval of CRE, to be followed by the Contractors;
v. Identify witness and certification point in material supply, staking, storage and operation of batching plants;
vi. Confirm sufficient availability of all materials before commencement of a concrete operation, in coloration with respective Resident Engineer;
vii. Evaluate contractor's proposal for establishment of field laboratory(s) and approve other laboratories for testing;
viii. Ensure that the routine detailed and quantitative progress reporting is adequate to support the contractor's requests for progress;
ix. Establish and oversee appropriate standards and quality control procedures; and
x. Ascertain that construction inspectors are fully cognizant of all required density testing requirement during construction and the methodology there of.

7. The detailed job description of Consultant's key staff is as shown below

a. Office Engineer (National, 49 person-months): Responsibilities will include but not limited to the following:

i. Perform all administrative functions assigned to Team Leader for day to day operation of the all the Consultants offices;
ii. Head logistics team for running, operation and maintenance of all vehicles and equipment. Maintain log of all vehicles and equipment;

iii. Provide support during mobilization stage to establish offices of the Consultants;
iv. Perform cataloguing and file designation for all correspondence, for convenient storage and retrieval;
v. Maintain full record of construction drawings, shop drawings and as- built drawings;
vi. Assist in the collection of weekly and monthly progress data from the field offices and promptly hand over to Reporting Section and ensure timely issuance of all deliverable;
vii. Develop and accomplish check lists and call up cards for each piece of equipment, under use of the consultant;
viii. Hand over all equipment, with maintenance record and other documentation to the Client at close-out, in good working condition; and
ix. Hand over necessary project documentation to the Client at close out.

b. Senior Quality Auditors (National, 48 person-months): Responsibilities will include but not limited to the following:

i. Participate in preparation of an appropriate Quality Management Manual for construction supervision of the Project. The Manual will describe the philosophy of quality management, the quality requirements, and how to achieve them. Manual will describe in depth and detail, the testing requirements, frequency, responsibility, and actions in case of non-conformity by the supervision team;
ii. Report to Chief Quality Auditor all snap, spot, surprise, routine, periodical and scheduled surprise checks;
iii. Assist Chief Quality Auditor in all task he is or will be entrusted with;
iv. Participate in imparting Training of all the field staff, for effective quality control of the Project and control over construction activities;
v. Conduct surprise visit to the job site, during and prior to construction activities, and conformance with the quality requirement;
vi. Check quality audit pre, during and post construction activities;
vii. Participate in devising and developing check-lists for various construction activities and to check/ audit the conformance by the supervision team;
viii. Take all possible actions, motivate supervision team to generate a product of required quality;
ix. Advise on suitability of various construction materials proposed to be used in construction;
x. Bring all major nonconformities, repeat nonconformities to the knowledge of the Chief Auditor for taking actions to improve the situation;
xi. Participate in evaluation of contractor's proposal for establishment of field laboratory and approve other laboratories for testing;
xii. Participate in establishing appropriate standards and quality control procedures;
xiii. Participate in approve contractors' quality control manual;
xiv. Ascertain that construction supervision team is on toe and continuously alert and cognizant of all required sampling and testing procedures; and
xv. Motivate construction supervision team by providing necessary advice and impart knowledge.

c. Senior Planning, Scheduling, Reporting & Document Controlling Engineer (National, 49 person-months): Responsibilities will include but not limited to the following:

i. Take the overall responsibilities for project planning, scheduling, reporting;
ii. Prepare filling list and document cataloguing and establish a library of all necessary document and files for the project;
iii. Develop a system to ensure that the construction is being done on the latest revision and correct version of the construction drawings;
iv. Issue construction drawings to field offices promptly and correctly;
v. Ensure that all filing and documents are being catalogued and stored according to settled procedure;
vi. Participation in preparation of versions PC-I;
vii. Analysis and approval of Tender Schedule, Baseline Schedule, Revised Baseline Schedule and Recovery Schedule submitted by the contractor on computerized Primavera latest version;
viii. Assist the Team Leader, CRE and Contract and Claim Specialist in determining the extension of time for completion from the Contractor's Work Schedule;
ix. Furnished progress schedules and Earned Value Reports to the Team Leader;
x. Instrumental in monitoring of contractor schedule performance and intimate the Team Leader regarding status of all activities and forewarn on critical activities. Provide a weekly status to PM in this regard;
xi. Monitor that the Contractor adheres to the contractual requirements of Construction Schedule mentioned in the Special Provisions;
xii. Monitoring of various activities shown on the Baseline schedule;
xiii. Issue TOC and dead line for submission of inputs, of all progress and completion reports and manage to gather write-ups and input from all concerned in time; and
xiv. Generate progress, completion reports and serve as end controller before issuance of all documents, correspondence, reports drawing etc.

d. Senior Electrical/ Instrumentation Engineer (National, 6 person-months): Responsibilities are included but not limited to the following:

i. Review and update complete electrical design & automation plans prepared by detailed design consultants;
ii. Prepare specifications of additional instrumentation, if required;
iii. Provide technical assistance to construction supervision team for installation and commissioning of the instruments;
iv. Prepare a program for monitoring various types of instruments;
v. Review shop drawings for motorization of gates and other electronic works prepared by the Contractor;
vi. Conduct a detailed check of As-built Drawings of Motorization / Electronic/ Electrical works prepared by the Contractor; and
vii. Participate in the preparation of the guideline and sustainable plan of Jalalpur irrigation system O&M with improved asset management and irrigation service delivery for Motorization / Electronic/ Electrical works.

e. Senior Mechanical/ Gates& Gearing Engineer (National, 6 person months): Responsibilities will include but not limited to the following:

i. Review gate system design carried out by the detailed design consultants and suggest any improvements/ changes required for proper functioning of gates;
ii. Review design calculations and shop drawings prepared and submitted by the contractor;
iii. Pay periodical visits to sites for overseeing the installation and testing processes and brief the Chief Resident Engineers and Resident Engineers;
iv. Review testing standards, testing process and results thereof and brief the Chief Resident Engineers and Resident Engineers accordingly;
v. Advise and render any relevant assistance required by the Team Leader; and
vi. Contribute in preparation of the guideline and sustainable plan of Jalalpur irrigation system O&M with improved asset management and irrigation service delivery for gates and hoisting arrangements.

f. Senior Social Safeguard (National, 48 person months): Responsibilities of the Social Safeguards Specialist will include but not limited to the following:

i. Review all documents relevant to the Project;
ii. Assist the Team Leader and CRE and work with the resettlement unit within PMO in developing and monitoring of implementation of resettlement plans; provide assistance in resolution of any dispute;
iii. Assist PMO in complying with ADBs Guidelines on Involuntary Resettlement in accordance with ADB's Safeguards Policy Statement (SPS; 2009);
iv. Prepare internal monitoring reports on implementation of safeguards as per SPS (2009); and
v. Participate in progress report drafting.

g. Senior Environmentalist (National, 24 person-months): Responsibilities will include but not limited to the following:

i. Review all relevant environmental safeguards documents, particularly the Environmental Impact Assessment prior to construction;
ii. Review, endorse and submit for approval to ESMMC the site specific environmental management plans (SSEMPs) prepared by the Contractors for each sub-project prior to commencement of the construction;
iii. Supervise and monitor implementation of the SSEPMs by the Contractors through periodic site visits, reviewing contractors environmental monitoring reports, visual and instrumental monitoring of project's environmental aspects, reviewing grievances from affected persons, participating in public consultations, etc.;
iv. In case of non-compliances, develop and implement, in coordination with the PMO, an appropriate corrective action plans (CAPs) to rectify unsatisfactory safeguard compliance. The CAP for major non-compliances should be agreed upon with both PMO and ADB;
v. In case of any unanticipated environmental or social impacts, immediately notify the PMO ESMMC's Director and (a) assess the significance of such unanticipated impacts; (b) evaluate the options available to address them; and (c) prepare or update the EIA, prepare environmental monitoring reports, provide inputs on implementation of environmental safeguards to quarterly and annual progress reports;

vi. Develop training materials and conduct trainings for PID and PMO staff to support environmental protection measures and to monitor and mitigate potential environmental impacts; and
vii. Prepare the semiannual environmental monitoring reports, quarterly progress report, annual progress report and any specific report asked by the PMO.

h. PMO Staff - Procurement/Contracts Engineer (National, 51 person-months): Responsibilities are included but not limited to the following:

i. Provide capacity support to the PMO in all procurement activities regarding goods, works and services;
ii. Assist the PMO in preparing/ up-dating procurement plans;
iii. Oversee the working of Consultants and Contractors engaged by PMO in contract management/ administration;
iv. Assist the PMO in reviewing and determining contractor's claims; and
v. Assist and render advice to the PMO in any contractual issue that may arise.

i. PMO Staff - Project Coordinator (National, 51 person-months): Responsibilities includes but not limited to the following functions:

i. Working in PMO for coordinating between Consultants and PMO
ii. Preparation of updates and progress reports about the Project required by PMO;
iii. Establish and maintain a library of Project Documents and reports, like Planning Report, Feasibility Report, Design Report, Design Review Report, bidding documents, progress reports and others;
iv. Keep all ADB Guideline for different aspect of project procurement in library for quick and easy access of PMO staff;
v. Establish performance indicators and monitoring project performance accordingly;
vi. Perform EVM regularly to achieve confidence about the performance;
vii. Keep follow up and tracking of all critical issues on the project;
viii. Keep an eye on all activities on the Critical Path, forecast and warn in advance regarding progress of such activities such activities;
ix. Devise a system to monitor the project in scope, time, and quality management aspects.
x. Check what and how Consultants has planned managing and mitigating risk on the projects. Review Risk Response and any fallout or contingency plan;
xi. Review Consultants Risk Register and provide input for improvement;
xii. Impart training to staff of Consultants and Contractors, regarding undertaking in a befitting manner, project of such size and magnitude, by imparting knowledge of appropriate project management tool and techniques;
xiii. Provide advice to PMO in project management issues;
xiv. Prepare any reports and presentations required by the PMO;
xv. Perform all assignments required by PMO, from time to time;
xvi. Prepare procurement documentation, like request for expression of interest, bidding documents, RFP etc. when required by the PMO; and
xvii. Develop business plans / concept paper for any other ensuing project and finally prepare PC-I.

j. PMO Staff - Monitoring and Evaluation Expert (National; 49 person-months): Responsibilities of the Monitoring and Evaluation Expert will include but not limited to the following:

i. Review all documents relevant to the Project;
ii. Assist the PMO in the development and establishment of an appropriate monitoring and evaluation strategy and plan, including input, progress, output and impact indicators;
iii. Assist the PMO in computerizing the monitoring and evaluation system so that it is compatible with and forms a part of the Management Information System;
iv. Supervise baseline, intermediate and end of project socio-economic surveys;
v. Develop appropriate analytical methodology for the socio-economic impact assessment;
vi. Assist the PMO in supervising work of those ones conducting field surveys and analyzing assessment results; Review and assist PMO in updating/ finalizing the LARP prepared during project preparation based on detailed design, and in preparing LARP to meet ADB requirements for any other area affecting more than 200 persons. Also, scrutinize the aforementioned resettlement plans for developing vetted resettlement plans;
vii. Monitor that all project components reviewed and supervised by the consultants are implemented in an environmentally friendly manner and where necessary adequate mitigation measures are taken; and
viii. Review and Assist the PMO in finalizing PPMS Baseline (Baseline / Benchmark) Report for the Project.

k. PMO Staff - Resettlement Expert (National, 48 person-months): Responsibilities of the Resettlement Specialist will include but not limited to the following:

i. Working for PMO to assist in monitoring and carrying out activities related to implementation of resettlement plans in line with ADB guidelines. The consultant will ensure that all project components are designed and supervised by them as per ADB guidelines for resettlement and adequate mitigation measures also taken wherever necessary;
ii. Assist PMO in revising and updating the Draft Resettlement Framework and Draft Resettlement Plan prepared during detail design stage, if necessary;
iii. Assist the PMO in preparing Resettlement Plans (RPs) for all locations where civil works will involve land acquisition and/ or livelihood disruption on Rights of Way;
iv. Ensure that LARP complies with requirements and procedures in ADB 2009 Safeguard Policy Statement (SPS) on Involuntary Resettlement and the Indigenous People, Land Acquisition and Resettlement Framework (LARF) and Project Administration Manual (PAM);
v. Collaborate with relevant agencies in preparing other necessary safeguard documents, assist the PMO in establishing relevant committees and institutions as required by the LARF and serve as the internal monitor during implementation of the safeguards as required (LARF);
vi. Ensure that provisions of social safeguard compliance and procedures

included in contract are followed; prepare internal monitoring reports and provide information to external monitors;

vii. Assist the PMO is in complying with *SPS 2009 Guidelines for* Involuntary Resettlement for cases where resettlement or temporary disruption of production cannot be avoided;

viii. Identify and prepare, in accordance with the resettlement framework, any amendments necessary to the existing resettlement plans and/ or prepare additional plans and support their implementation by the relevant Government agencies, if so required; and

ix. Review Government resettlement policies and practices, recommend improvements and, if necessary, provide draft guidelines for Government's consideration.

Project Management Office (PMO) Support Consultants

Terms of Reference

A. Scope of work

1. The firm will provide technical and professional support in the field of design, construction contract administration & claims, GIS and finance. The proposed SC personnel will provide expert input for JIP for providing (i) a vigilant effort to review and visualize the design exercise being carried out by Supervision Consultants (ii) a watch on the Client interest in handling of construction claims and represent the Client on DRB meeting (iii) a holistic view of the whole irrigation system with different presentations on GIS (iv) assistance in establishing a interlinked system for financial management at PMU/PMO and at field offices and monitor & tracking of all financial aspects (v) to watch that LARP is being carried out in accordance with the project documents.

2. The Support Consultants will generally and specifically watch that all activities of the project are being carried out in accordance with ADB guidelines and Government requirements. In addition to foregoing, Support Consultants will also provide small amount of input for proposed ensuing projects with proposed financing by ADB.

3. **Detailed Terms of Reference**. The schedule of indicative consulting service inputs is in Table 1 below.

a. **Hydraulics/Irrigation Design Expert (national; 48 person-months).** He will perform generally: (i) Develop a holistic view in respect of design of the whole and total irrigation system, indicate any design gaps and propose refinements; (ii) Critically review any special aspect of design with consideration to modern technology or river morphology etc.; (iii) Review critical Contractors'' design submittals; (iv) Review all relevant documents and exam design parameters and design criteria against the Client requirement; (v) Review adequacy of all hydraulic aspects of the works relevant construction drawings and specifications; (vi) Comprehensive review the plans for construction of branch, distributary and minor canals including control structures and required supporting infrastructure including emergency escape etc. for the command of project area; (vii) Ensure that adequate flow measurement sites are provided throughout the system to facilitate both system management and monitoring of system performance; (viii) Review operation and maintenance strategies for the irrigation infrastructure by PID; (ix) Review detailed design review report; and (x) Monitor and track performance of design services on time baseline.

b. **Contract & Claim Expert (National; 48 person-months).** He will generally perform: (i) Assist PMU/PMO in all contract administration matters referred to him; (ii) Advise PMO on application of procedures and requirements related to bid opening, evaluation, and award of contracts; (iii) Interprets various contract provisions and represent in meetings, as desired by Client; (iv) Keep a vigilant watch on procurement risk register for forewarn PMU/PMO of any risk repose; (v) Keep vigilant watch on all procurements and payments that these are being made according to ADB's requirement and Government procedures and nothing will be rendered as mis-procurement or ineligible; (vi) Quick review of all procurement/bidding documents; (vii) Prepare case and represent PMU/PMO in all DRB meeting while

watching the interest of the Employer, in accordance with the Contract documents; and (viii) Keep vigilant watch on all payments made to the contractors.

c. **Social Safeguard & Environment Expert (National; 48 person-months).** Lead environmental and resettlement team. (i) Assist PMO in complying with ADBs Guidelines on Involuntary Resettlement in accordance with ADB's Safeguards Policy Statement (SPS; 2009); (ii) Training of selected PID staff with a view to strengthening the PID's capacity to adequately oversee resettlement activities; (iii) Review all relevant documents, particularly the Environmental Impact Assessment study ; (iv) Review the site specific environmental management plan (SSEMP) for each contract and establish system to ensure its effective implementation; (v) Review and monitor required appropriate actions to mitigate any negative environmental impacts associated with construction activities; (vi) Review detailed reforestation plan for the Project and supervise its implementation during construction process as required in the IEE/ EMP; (vii) Ensure that any environmental impact assessments, fully comply with ADB Guidelines Safeguards Policy Statement (SPS, 2009) and ensure that all required mitigation measures are identified and acceptable. Ensure that the environmental management and monitoring plans reflecting full details regarding the estimated mitigation costs through the SSEMP; (viii) Review biannual environmental monitoring report and other consultants' and contractors' submittals.

d. **Social and Gender Specialist (National; 36 person-months).** His/her main tasks will be**;** (i) **r**eview or join the community consultation process in implementation, and report that outreach, participation, and communication activities are adequately carried out especially for women and vulnerable stakeholders; (ii) monitor and evaluate project impact to the social, poverty, and gender, (iii) implement GAP, (iv) provide relevant inputs to project reports

e. **GIS Specialist (National; 36 person-months).** He will generally perform: (i) Utilizes Geographic Information System techniques to provide a better understanding of certain variables in a given geographic location of project. (ii) Extracts data from GIS software and uses varying analysis methods to arrive at results. (iii) Recommends appropriate reactionary strategies in response to GIS analysis. (iv) Provides maps and data sets to clients to supplement analysis. (v) Knowledgeable of GIS software and technology. (vi) Works in conjunction with AutoCAD drafters. (vii) Generate mapping of the project area by superimposing design data to represent engineering proposal in most comprehensive and pleasing manner. (ix) make presentations when and where required by the client.

f. **Financial Management Expert (National; 61 person-months).** He will generally perform: (i) review all documents relevant with the project including those prepared by any consultant; (ii) Establish separate accounts for the project in accordance with Finance Department procedures and ADB guidelines; (iii) Maintain separate project accounts under a comprehensive computerized financial management system adequate to reflect all procurements, payments, source of funding, reimbursements etc.; (iv) Coordinate all audits perform by any illegible agency; (v) Develop and put in place an appropriate MIS system for implementation of the project(s); and (vi) Assist PMU/PMO in setting up and operating the imprest and other accounts for ADB loan funds and Government sourcing in manner acceptable to ADB and Finance Department.

Command Area Development Consultants

Terms of Reference

I. Scope of Work

1. It is planned to recruit/ engage Project Implementation Supervision Consultants (PISCs) for command area development activities under JIP for implementation supervision and third party validation of project activities. The consultant's main responsibilities would be design review/approval, construction supervision, quality assurance, technical assistance, and overall coordination of project execution. The consultants' team will primarily report to the Director General Agriculture (Water Management)/ Project Director. The Consultant Selection Committee (CSC) will recruit the consultants in accordance with ADB guidelines for selection of consultants using the Quality and Cost Based Selection (QCBS) method at 80:20 quality-cost ratio.

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

i. Prepare standards and specifications for watercourse construction works, LASER land leveling etc.
ii. Draft technical documents/agreements/formats for Supply and Services Companies (SSCs) including contract conditions, specifications for design, materials and installation of equipment, itemized list of typical items etc.
iii. Provide support in procurement process e.g. pre-qualification, advertising invitations to bid, evaluation of bids and make recommendations as well as prepare all relevant documents for award of contracts.
iv. Provide project management support services to the DGA (WM)/ PD.
v. Assist in mobilization and screening of farmers for watercourse development/LASER land levelling as per criteria.
vi. Facilitate in finalization of rates for various items and services.
vii. Provide resident supervision on PCPS yards through deployment of Engineers/ Sub-engineers.
viii. Inspect and advise on standards, specifications, and criteria for construction materials/equipment etc.
ix. Review and approve plans, designs, cost estimates for watercourses, LASER land leveling, Water Storage Ponds and Solar Pumping Stations etc.
x. Facilitate timely completion of works and recommend onsite design modifications.
xi. Spot check for quality of works during construction of a minimum of one third by their number.
xii. Certify quantities and quality of completed works and delivered equipment for watercourse improvement, Water Storage Ponds and Solar Pumping Stations and LASER land leveling.
xiii. Verify financial resource transfer applications.
xiv. Notify the DGA (WM)/ PD of compliance / non-compliance of works with agreed criteria and standards.

xv. Submit monthly, quarterly, and annual reports for proposed project activities besides other periodic reports as per requirements of project management.
xvi. Provide technical support for training of stakeholders in all project interventions, particularly relating to new water management techniques and technologies.
xvii. Develop online database and its management for all project interventions for efficient project management.
xviii. Responsible for submission of reconciled physical and financial reports for its onward submission to the donor/ ADB and government.
xix. Liaise with provincial, divisional, and district project management for smooth execution of field activities.
xx. Extend technical support to maintain a website containing information on facilities and services, applications, procedures etc.
xxi. support in project management based on modern concepts, implementation of works, including social and environmental management program, implementation of the communication strategy and plan, including support to Director General Agriculture (WM) Punjab for preparation of project implementation plans, expenditure planning, budgeting and financing forecast and work plans, as required by the government and financing agency(s) of the project as well as assistance in developing the procurement plans, contract management, and financial management.

3. The consultants will provide support to Director General Agriculture (Water Management)/ PD in overall project management activities such as preparation of project implementation plans, expenditure planning, budgeting and financing forecast and plans, monthly, quarterly and annual progress reports or work programs as required by the Government of Punjab and financiers of the project. They will also help in developing the procurement plans, contract management, and financial management. The plans will be updated on a regular basis as required by Client.

II. Specific Scope of Services

a. Watercourse Development and Construction

i. Review the already developed standards and specifications for civil works on watercourses and improve the same as per latest requirements to assure compliance with agreed criteria.
ii. Assist in mobilization of water users' associations (WUAs) and selection of watercourses as per criteria.
iii. Facilitate in finalization of rates for construction materials.
iv. Verify rate assessment of construction materials to be procured by the procurement committee for civil work.
v. Check surveys carried out by the OFWM staff.
vi. Review and approve plans, designs, cost estimates for watercourses.
vii. Check for quality of works during construction according to the agreed quality assurance plan, facilitate timely completion of civil works and recommend onsite design modifications.
viii. Recommend financial transactions/ funds transfer to WUA/ SSCs as per approved criteria.
ix. Certify quality and quantity of completed civil works.

b. Water Storage Ponds and Solar Pumping Stations

i. Review the designs of the systems.
ii. Provide technical assistance in preparation of the design and specification, and cost estimation of the schemes, prepare guidelines, standardized criteria etc.
iii. Prepare technical documents/agreement for SSCs including contract conditions, specifications for design, materials and installation of equipment, itemized list of typical items etc.
iv. Assist in evaluation of the technical and financial proposals of SSCs.
v. Assist in mobilization and screening of farmers.
vi. Facilitate in finalization of rates for various items and services required for system installation.
vii. Review and approve plans, designs, cost estimates prepared by the SSCs.
viii. Check quality of material delivered at the site by SSCs, conformity with specified standards and quantities based on an agreed quality assurance plan.
ix. Certify quantities and quality of all completed works for payments of systems cost to SSCs.
x. Prepare completion certificates, measurements of the works, and disbursement applications for the GoPunjab and the financier of the Project.
xi. Provide technical support for training of OFWM staff, WUAs, and farmers in water storage ponds and solar pumping stations.
xii. Review and advise on standards, specifications and criteria for water storage ponds and solar pumping stations best suited to local conditions.
xiii. Facilitate timely completion of intended works and recommend onsite design modifications.
xiv. Check for quality of works during installation based on agreed quality assurance plan.
xv. Verify financial resource transfer applications at various stages of works execution.
xvi. Prepare operation, maintenance and management manuals for water storage ponds and solar pumping stations.

c. LASER land Leveling

i. Assist in prequalification/shortlisting of service providers for LASER land leveling services.
ii. Assist in evaluation of the bids and award of contracts during prequalification/ bidding process of service providers to ensure selection of competent firms and quality services.
iii. Assist in short listing of applicants for LASER land levelling.
iv. Certify quantities and quality of LASER land levelling conformity with specified standards and quantities for payments to service provider.
v. Provide technical support for training of farmers/service providers in LASER land levelling.
vi. Prepare operation, maintenance and management manuals farm layout planning and LASER land levelling.

d. Monitoring and Evaluation

i. Provide technical assistance to DGA (WM)/ PD for achievement of project development objectives.
ii. Develop the overall framework of monitoring and evaluation plan including collecting, analysing, and reporting sex-disaggregated project data for continual effective tracking of project development objectives.
iii. Work on formulated set of key performance indicators, including gender indicators, and means of assessment against these indicators for project activities to be implemented.
iv. Monitor and evaluate the implementation of project activities and their outcomes and impacts on socio-economic welfare of farming community in project areas.
v. Propose recommendations about project modalities to ensure achievement of envisaged development objectives.
vi. Contribute in development of annual work plan, ensuring alignment with project strategy, agreement on annual targets and inclusion of M&E activities in the work plan.
vii. Oversee and execute M&E activities of water management practices and techniques with focus on results and impacts as well as in lesson learning.
viii. Any other duty assigned by the project management.

e. Social Mobilization, Awareness, Training and Capacity Building

i. Develop the overall framework of Social mobilization, awareness, training and capacity building, that is gender-responsive
ii. monitoring and evaluation plan including collecting, analysing, and reporting project data for continual effective tracking of project development objectives.
iii. Social mobilization of farmers, community and WUAs, including women farmers.
iv. Training and capacity Building of farmers, community and WUAs, with separate training for women farmers.
v. Coordination with PID, PAD, PIC, farmers, community and WUAs for command area development.

III. Team Composition & Qualification Requirements for the Experts

4. The consultants will be encouraged to use the expertise available in Pakistan to the extent possible. However, international experience and experience with the ADB financed projects are necessary to carry out the assignment. The consultants are free to propose a staffing plan and skill mix in order to ensure that necessary requisite objectives and scope of services are achieved. If all the required skills are not available within the consulting firms, they are encouraged to make joint ventures with other firms. The detail of consulting service inputs is given in Table below.

Position/ Expert	Person-month
Key Experts	
Project Manager/ OFWM Specialist (Team Leader)	48
Financial Management Expert	24
Irrigation Agronomist	48
Design Engineer	48
GIS Specialist	24
M&E Specialist	48
Agriculture Economist	48
Social and Gender Specialist	36
Water Management Specialist	48
Sub-Total	**372**
Non-Key Experts	
Field Engineers/Support Staff	300
Field Engineers In-charge / Field Coordinator	48
Field Engineers	240
Social Mobilizers	200
Sub-Total	788
Total	**1,160**

A. Key Experts

5. **Project Manager / OFWM Specialist (National, 48 person-months, one position):** The Team Leader will possess a Master's degree or its equivalent in Agricultural Engineering / Water Resources Engineering / Irrigation Engineering after B.Sc. Agri. Engineering with 15 years' experience including implementation of multi sectoral projects preferably ADB financed and involving social mobilization. A minimum of 10 years of experience will be required in the management of similar consultancy services with demonstrated ability to work with government officials, technical field staff, NGO representatives, and farmers. In addition, the Team Leader would be required to have familiarity with the principles and practices of participatory community development, irrigated agriculture, water management related issues, and knowledge of project management information systems besides having fluency in spoken and written English. Responsibilities of the Project Manager/ OFWM Specialist will be, but not limited, to the following:

i. Report to the Client/ DGA (WM)/ PD;
ii. Assume overall responsibility for management of the supervision team;
iii. Work as the "the Engineer" as per Client's agreement with the Water Users Associations (WUAs)/ beneficiary farmers/ service providers to supervise construction/installation/equipment delivery etc. with the best professional and consulting standards to ensure that the scheme/task is completed satisfactorily;
iv. Keep the Client informed of technical issues and the progress of all works both by direct contacts and through discussions or correspondence;
v. Attend, at Project level, all meetings as required and keep a record of all such meetings;
vi. Assist the Client in any project issue which the Employer may require;

vii. Ensure preparation of a project completion report (PCR);
viii. Assist the Client in preparing the response to Audit Objections;
ix. Assist the Client in preparing response to financiers or other authority's queries, observations, requirements etc.;
x. Provide technical input in smooth implementation of planed activities; and
xi. Coordinate with all related Client's organizations for project issues.

6. **Financial Management Specialist (National, 24 person-months, one position):** Qualifications: The Financial Management Specialist (FMS) should have degree of Chartered Accountant or ACMA/ACCA with at least five (5) years of work experience in financial management in public sector organization preferably under a donor assisted project. Financial Management Specialist will be responsible for provision of technical guidance and expertise in the financial management activities under the project within the framework of prescribed policies and guidelines of the government and the ADB. The FMS will provide comprehensive support to the Directorate General Agriculture (WM) regarding establishment and maintenance of finance and accounting systems, processes and procedures, and ensuring adherence to the same. Major responsibilities of the consultant will include, interalia, the followings.

i. Provide technical assistance to Director General Agriculture (WM) for financial management activities;
ii. Ensure strategic guidance about overall operations of the project;
iii. Assist in managing all accounts, budget and audit matters;
iv. Supervise in preparing cash flows, their planning, and management;
v. Support in dealing with the Bank on financial management issues;
vi. Monitor the financial resources and accounting to ensure accuracy and reliability of financial reports;
vii. Establish an efficient, accurate and updated reporting mechanism, preferably a real-time transaction recording and reporting system including asset register management, receipt book and cash book keeping, invoice register management, contract register, contract ledger management etc.;
viii. Consolidate the periodic financial progress reports and submission to the DGA (WM) for review/approval and/or all stakeholders in accordance with the prescribed requirements;
ix. Prepare and coordinate various financial reports as may be required by any government agency;
x. Organize cash management processes, including liquidity management, recommendation about imprest level, risk assessment, bank relationship management, timely accounting and reconciliation of all transactions, security for cash assets on site etc.;
xi. Carry out capacity building of the provincial, regional and district level finance & accounts teams;
xii. Ensure carrying out internal and external audits timely and regularly to improve financial process as well as suggest corrective actions on all recommendations/ observations;
xiii. Help in securing approvals of competent authority regarding budget allocations and release of funds; and
xiv. Any other relevant duties assigned by the Director General Agriculture (WM)

7. **Irrigation Agronomist (National, 48 person-months, one position):** The Irrigation Agronomist should possess a Master's degree in Agriculture/ Agricultural Engineering or similar

degree with specialization in Irrigation Agronomy and 10 years work experience including at least three (3) year work experience in related field under the water management projects. Work experience in related computer tools, good communication skills, fluency in English and proven satisfactory record of similar consultancies would be preferred.

i. Assist the project management in implementation of project activities;
ii. Develop guidelines and technical manuals about agronomy of different crops sown under drip/sprinkler irrigation for professionals and farmers for successful crop production;
iii. Prepare and implement plans for devising crop production technology including land preparation, planting, irrigation scheduling, inter-culture, fertigation, harvesting, processing and marketing;
iv. Estimate crop water requirements (CWR) by using climatic data (rainfall, sunshine, humidity, wind speed, temperature etc.) for soil moisture monitoring and proper irrigation scheduling;
v. Supervise demonstration and evaluation of modern irrigation techniques;
vi. Assist in preparation of cropping patterns based on the water availability;
vii. Compile and analyze the reports on agronomic aspects of crop and water management for proposing recommendations;
viii. Participate in field visits & provide necessary input for crop and irrigation management;
ix. Prepare training curriculum and carryout capacity building programs for technical staff and farmers about irrigation agronomy; and
x. Any other relevant duties assigned by the project management.

8. **Design Engineer (National, 48 person-months, one position):** The Design Engineer should possess a Master's degree in Irrigation Engineering/Agricultural Engineering/ Civil Engineering/ Water Resources Engineering after B.Sc. Agricultural Engineering with 10 years' work experience including at least three (3) years' experience in on farm water management under the irrigated agriculture development projects. Work experience in related computer tools, good communication skills, fluency in English and proven satisfactory record of similar consultancies would be preferred. Responsibilities of the Design Engineer/ Field Engineer In-charge will be but not limited to the following:

i. Supervise the designs of envisaged interventions and provide technical assistance/ backstopping;
ii. Monitor the designing process carried out by the supply & service companies/ service providers to ensure economic designs in accordance with the prescribed standards, specifications, and parameters;
iii. Carry out continuous monitoring of the designing plans and maintain liaison with implementation staff/ other stakeholders;
iv. Assist in reviewing and modifying the designs for cost effectiveness and technical suitability;
v. Develop designs for showcasing modern water management technologies and practices at farmers' fields;
vi. Coordinate for ensuring adoption of international/ national standards for designs; and
vii. Perform other duties as assigned by the project management/ client.

9. **GIS Specialist (National, 24 person-months, one positions):** GIS Specialist should possess Master degree in Remote Sensing & GIS with at least 5 years of work experience in GIS

applications in public/ private sector organization preferably under a donor assisted project. GIS Specialist would be responsible for provision of technical guidance and expertise in the development and management of GIS database of all project activities. He/she will provide comprehensive support to the client regarding database maintenance, data verification, updating of information, upgradation of system for use of data for planning and monitoring activities. Major responsibilities of the consultant will include, interalia, the followings.

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

10. **M&E Specialist (National, 48 person-months, one position):** The M&E Specialist will possess a Master's degree or its equivalent in Agricultural Engineering / Water Resources / Irrigation Engineering after B.Sc. Agri. Engineering with 15 years' experience including monitoring and evaluation of modern water management interventions of multi sectoral projects preferably ADB financed. A minimum of 10 years of experience will be required for promoting on farm water management interventions with demonstrated ability to work with government officials, technical field staff, NGO representatives, and farmers will be preferred. Responsibilities of the M&E Specialist/ Team Leader will be but not limited to the following:

i. Provision of technical assistance to Director General Agriculture (WM/ PD/ Client in monitoring and evaluation of project activities and impacts and Team Leader;
ii. Supervise implementation of overall monitoring and evaluation plan including collecting, analyzing, and reporting sex-disaggregated project data for continual effective tracking of project objectives;
iii. Carry out impact evaluation of project activities to assess the project benefits
iv. Monitor the process of watercourse improvement, installation of water storage ponds and solar pumping stations, and LASER land levelling to ensure implementation of project activities in accordance with the prescribed standards, specifications, and parameters;
v. Carry out continuous monitoring of the designing plans and maintain liaison with implementation staff/ other stakeholders;
vi. Assist in reviewing and modifying the project activities for cost effectiveness and technical suitability;
vii. Ensure adoption of international/ national standards for monitoring of project activities; and
viii. Perform other duties as assigned by the Client.

11. **Agricultural Economist (National, 48 person-months, one position):** The Agricultural Economist will possess a Master's degree in Economics/ Agricultural Economics/ Development

Economics with specialization preferably in Monitoring & Evaluation and 15 years of work experience including at least 10 years in implementation of water management projects at field level in agricultural and rural development sectors. The work experience in a developed country in related field particularly in irrigated agriculture and demonstrated ability to work with government officials, technical field staff, NGO representatives, and farmers would be preferred. Work experience in related computer tools, ADB rules/procedures, good communication skills, fluency in English, and proven satisfactory record of similar consultancies would be preferred. Responsibilities of the Training Specialist will be but not limited to the following:

i. Prepare/refine log frames/ formats for baseline and periodic surveys for establishing pre-project dataset as well as for capturing temporal changes;
ii. Lead the field staff in collection of periodic/seasonal data planning field activities, project review, impact assessment etc.;
iii. Collect, compile and analyze the data regarding different components/activities against envisaged project objectives;
iv. Assist in modification of project implementation plans on the basis of the information collected from the field on different aspects;
v. Establish a framework for involving beneficiary communities in the M&E process and internalizing beneficiary feedback in project implementation path;
vi. Provide leadership in developing monitoring mechanisms/systems for quality control of civil works;
vii. Impart guidance and training on M&E concepts and tools to project stakeholders;
viii. Lead surveys/information collection for impact assessment of project activities;
ix. Supervise M&E staff for inspection of field activities for ensuring adoption of specified standards and specifications; and
x. Any other relevant duties assigned by the project management.

12. **Social and Gender Specialist (National; 36 person-months).** The specialist will be a graduate in sociology, development studies, anthropology or a closely related social sciences field. Master's degree will be preferred in relevant field. Professional experience of at least 7 years is required in social safeguards impact assessment, resettlement monitoring, participatory planning, implementation, gender action plans. In-depth knowledge for similar water resources development project environment and experience of Punjab will be an advantage. His/her main tasks will be;

i. Ensure the equitable participation of women, including women landless farmers in community consultations, and report on the outreach, participation, and communication activities that have been carried out especially for women and vulnerable stakeholders;
ii. Organize women farmers, including the landless women farmers into community-based groups; ensure their regular meetings; ensure that the groups' discussions are recorded in the minutes; and inform and feed these group discussions into WUA meetings, as relevant
iii. monitor and evaluate project impact to the social, poverty, and gender;
iv. implement GAP;
v. provide gender updates to project quarterly reports

13. **Water Management Specialist (National, 48 person-months, one position):** The Water Management Specialist (WMS) will be responsible for providing guidance and direction to all the team members for providing technical assistance about appropriate water management interventions and will provide requisite technical support in their adoption. The WMS will possess a

Master's degree or its equivalent in Agricultural Engineering / Water Resources / Irrigation Engineering after B.Sc. Agri. Engineering with 10 years' experience including evaluation of modern water management interventions of multi sectoral projects preferably ADB financed. A minimum of 5 years of experience will be required for promoting water management interventions in a developed country on successful model with demonstrated ability to work with government officials, technical field staff, NGO representatives, and farmers will be preferred. In addition, the WMS would be required to have familiarity with the principles and practices of participatory community development, irrigated agriculture, water management related issues, besides, having fluency in spoken and written English. Responsibilities of the Water Management Specialist will be but not limited to the following:

i. Identify the most suitable new water management interventions from all over the World replicable in the Punjab/ project area;
ii. Provide assistance in preparation of implementation plans for execution of envisaged project activities;
iii. Assist in establishment of Irrigation Demonstration Sites (IDSs) for showcasing improved water management and conservation techniques/technologies;
iv. Identify the most efficient and cost effective tools and techniques for planning irrigation scheduling at the farmers' field;
v. Provide technical assistance in estimating crop water requirements of major crops and compare those with water availability for planning what to grow and how;
vi. Design sustainable irrigation water management packages at the farm level and facilitate their demonstrations;
vii. Guide the OFWM staff in identification and selection of appropriate irrigation methods for various areas;
viii. Prepare technical reports, guidelines and training manuals to disseminate the latest OFWM information among stakeholders for adoption/promotion of improved water management interventions;
ix. Support in training of technical staff and master trainers involved in promotion of water management technologies;
x. Carry out monitoring and evaluation of improved water management practices and techniques for their performance assessment as well as propose measures for improving their efficiency;
xi. Locate successful models of water management in developed countries and arrange technology transfer;
xii. Provide technical assistance to field staff for extending back up support to farmers about new water management interventions;
xiii. Address issues and suggest solution to the problems related to engineering aspects of irrigation methods as confronted by the farmers;
xiv. Prepare/review the capacity building plans for farmers and recommendation for their improvements;
xv. Lead for demonstration, evaluation and indigenization of improved water management techniques/technologies under local conditions for their adoption by the farmer; and
xvi. Any other relevant duties assigned by the project management.

B. Non-Key Experts:

14. **Field Engineers (300 person months, about 10 positions):** RE will possess B.Sc. Agricultural Engineering degree and would be responsible for provision of resident supervision in fabrication of Pre-cast Concrete Parabolic Segments (PCPS) in yards for watercourse lining.

15. **Field Engineer In-charge/ Field Coordinator (National, 48 person-months, one position):** The Field Engineer In-charge/ Field Coordinator should possess a Bachelor degree in Agricultural Engineering/ Civil Engineering or related field with 10 years' work experience including at least five (5) years' experience in on farm water management under the irrigated agriculture development projects. Work experience in related computer tools, coordination, good communication skills, fluency in English and proven satisfactory record of similar consultancies would be preferred. Responsibilities of the Field Engineer In-charge/ Field Coordinator will be but not limited to the following:

i. Lead the Field Engineers team and coordinate project activities amongst various stakeholders;
ii. Assist the Project Manager in project implementation supervision activities;
iii. Attend all meetings as required and keep a record of all such meetings;
iv. Supervise checking and approval of field survey, design and cost estimates;
v. Coordinate and monitor/ supervise all project activities undertaken in the field and ensure quality as well as quantity of envisaged works;
vi. Develop close liaison with project stakeholders including project management, private sector service providers, farmers etc.; and
vii. Undertake any other relevant duties assigned by the Client/project management.

16. **Field Engineer (National, 240 person-months, 5 positions):** The Field Engineer should possess a Bachelor degree in Agricultural Engineering and five (5) years work experience including at least three (3) years in on farm water management projects. Work experience in related computer tools, good communication skills, fluency in English and proven satisfactory record of similar consultancies would be preferred. Responsibilities of the Field Engineer will be but not limited to the following:

i Coordinate and supervise the construction/installation activities;
ii Ensure quality as well as quantity of works by spot-checking;
iii Certify release of funds for ongoing as well as completed works;
iv Bring any deficiency into the notice of the controlling officers of district and provincial governments;
v Develop close liaison with project stakeholders including project management, SSCs and farmers; and
vi Any other relevant duties assigned by the project management.

17. **Social Mobilizers (National, 200 person-months):** The Social Mobilizers should possess a Bachelor's degree in related discipline and five (5) years work experience preferably with similar projects. At least 10% of Social Mobilizers should be women. Responsibilities will be, but not limited to, the following:

i Develop the overall framework of social mobilization, awareness, training and capacity building;
ii Monitor and evaluate plan including collecting, analyzing, and reporting sex-disaggregated project data for continual effective tracking of project development objectives;
iii Social mobilization of farmers, communities, and WUAs, including women-only community-based groups;
iv Training and capacity building of farmers, communities, including women farmers, and WUAs; and

- Coordination with PID, PAD, PIC, farmers, communities, and WUAs for command area development.

Individual Consultants

Terms of Reference

1. **Social Safeguards Compliance Expert (National, 24 person months):** The expert will perform the following key tasks:

a. Support PMO independently in monitoring and carrying out activities related to implementation of resettlement plans in line with ADB guidelines and ensure that all project components are designed and supervised by the EA as per ADB guidelines for resettlement and adequate mitigation measures also taken wherever necessary.

b. Review and guide the EA in updating all documents concerning LARP, if necessary.

c. Develop a system to ensure that implementation of LARP complies with requirements and procedures in ADB 2009 Safeguard Policy Statement (SPS) on Involuntary Resettlement and the Indigenous People, Land Acquisition and Resettlement Framework (LARF) and Project Administration Manual (PAM) and monitor all aspect therein.

d. Collaborate with the EA and PIC in implementation of LARP and suggest amendments and changes where required during implementation to ensure compliance with ADB's guidelines.

2. **Third Party Monitoring and Evaluation Expert (NGO or External Environmental Monitor) (National, 6 person months):** The expert will be engaged in verification of environmental monitoring information. Responsibilities will include, but are not limited to the following:

a. Monitor and verify implementation of the SSEPMs by the Contractors through periodic site visits, reviewing contractors environmental monitoring reports, visual and instrumental monitoring of project's environmental aspects, reviewing grievances from affected persons, participating in public consultations, etc.
b. Prepare 3-rd party semiannual environmental monitoring reports and submit them to the PMO.
c. In case if any unanticipated environmental or social impacts will be identified, immediately notify the PMO ESMMC's Director.

3. **River Engineering Expert (International, 6 person months):** The expert will:

a. Review river hydraulics, sediment transport, river morphology, and river engineering of Jehlum river downstream of barrage in the first critical section (parallel to proposed JIP main canal) in its present condition, flow variations, flood events, barrage operations, topography of the river bed, protection and training works.

b. Review physical modelling study at Nandipur, numerical solutions and mathematical/theoretical modelling used for designing the flows downstream of barrage in the critical section (parallel to the JIP main canal).

c. Advise on the design of JIP main canal, barrage operations for guiding downstream river flow for river channelization, bed regulation, discharge and water level control, protection and training works.

4. **Hydraulics Expert (International, 6 person months):** The expert will

a. Review adequacy of hydraulics for:

i. JIP irrigation system from intake structure up to each outlet including main canal, distributary and minor canals including control structures and required supporting infrastructure including emergency escape etc. for the command of project area;

ii. flood channels; and

iii. flow measurement sites for system management and monitoring of system performance;

b. Review operation and maintenance strategies for the irrigation infrastructure by PID.

c. Review and advise adequacy of detail engineering design, drawings, and field control points to ensure main civil works construction and command area development could be executed in parallel and free of risk that may occur due to faulty design or mismatch between hydraulic design conditions.

Community Participation
Watercourse Construction in Jalalpur Irrigation Project

1. **Introduction:** This component directly addresses the needs of the communities in developing tertiary level irrigation network.[1] Experience has shown that active and dedicated participation of the key stakeholders in the design and implementation of projects, especially those at the grass-roots level, contribute significantly to the sustainability of developmental activities, through increased ownership and more effective use of grass roots level inputs. The additional benefits are; (i) more appropriate intervention; (ii) better implementation and sustainability; (iii) better utilization and increased ownership; (iv) greater efficiency and better planning; (v) greater transparency and accountability; and more importantly (vi) increased equity and empowerment through greater involvement of the poor, women, and other disadvantaged groups.

2. **Selection criterion:** Following is considered for selection of works for community participation:

a. Water User Associations (WUAs) will be established at each canal outlet and will be registered under the "On Farm Water Management & Water Users Association Ordinance [Act]-1981 (Amended 2001)";
b. the estimated cost of each subproject should be less than $200,000;
c. due consideration should be given to locating, designing, implementing, and operating the subproject in order to minimize any adverse impacts on the environment;
d. no resettlement should be necessary. However, if absolutely necessary, suitable safeguards in accordance with ADB's Safeguard Policy Statement (2009);
e. WUAs will enter a participation agreement with PIO as attached (Attachment 1) and will agree that all sub-projects will be designed and supervised by PIO through Command Area Development Consultants (CADC) assistance and in consultation with WUA;
f. entire watercourse development will be carried out and 50% of total length will be lined including critical reaches for efficient water conveyance to the farmer fields;
g. community will preferably engage local labor and should indicate willingness to participate with counterpart funds and in kind, such as labor and should provide undertaking for recurrent operation and maintenance (O&M) works;

3. **Implementation Arrangements:** The Punjab Agriculture Department is the implementing agency (IA) and will implement the command area development through Project Implementation Office (PIO). The WUA will be the institution for watercourse development and each watercourse in Jalalpur canal command will serve about 350 acres (average) by over 50 farmers. The key responsibilities of WUA is (i) providing right of way for earthen construction of watercourse; (ii) arrange counterpart funds and share of skilled and unskilled labor required for works; (iii) procure construction materials and labor for carrying out civil works; (iv) resolve disputes amongst the water users typically in respect of channel alignment and fixation of water control structures; (v) carry out civil works in accordance with standards and specifications under the supervision of PIO and CADC; and (vi) agree to undertake regular O&M of improved watercourses.

[1] This includes primarily development of earthen channel, installation of water control structures, lining of critical reaches, construction of culverts, animal wallow, drop structures, earth filling and associated works.

4. The PIO will coordinate with Punjab Irrigation Department which is the executing agency (EA) through Project Management Office Canal (PMO Canals) in development of engineering and revenue *chakbandi*.[2] This information will deliver final map of each watercourse command, channel layout and delineation, farm turnouts, land ownership data and lists of water users. The PIO will (i) ensure social mobilization of the water users for their active participation at all stages of works including organization and registration of shareholders into 485 WUAs;[3] (ii) design and provide cost estimation for system; (iii) collection of farmers' share as their contribution in sub-projects; (iv) allocate and release funds to WUA as per stage-wise completion; (v) provide regular progress reports; (vi) prepare statements of expenditures, maintain proper accounts, and conduct audits; and (vii) construction supervision and monitoring through CADC assistance.

5. Procurement: The WUAs will be responsible for procurement at the watercourse level. The WUAs will purchase the construction materials such as cement, pre-case concrete parabolic segments (PCPS), bricks and sand in through shopping procedures by inviting at least three quotations preferably from local suppliers. However, precast pre-cast concrete parabolic segments (PCPS) will be procured through shopping from PIO approved and prequalified firms only.[4] Labor component of the subprojects can be extended by the members of the community, provided adequate expertise exists, who should be reimbursed adequately for the services rendered. It should be ensured that children are not employed for the works. In case the WUA cannot identify adequate skilled labor within the community, the work can be let out by inviting quotations from three local contractors. Here also, to the extent possible, members of the local community should be employed by the contractors as labor. The contract should be in the local language and simple adequately addressing the main issues such as scope of work, date of start, completion period, payment terms, progress and quality review, defect-liability period, responsibilities of the WUA and contractor, including review, inspection, payment procedures and contract termination.

6. **Project Implementation:** The WUA shall be responsible for the implementation of the works while the PIO will supervise the works and certify the quantity and its conformity with design and specifications, duly verified by CADC. The following procedure will follow. The process map is attached (Attachment 2)

a. the WUA will open a joint account to be operated by its Chairman and Treasurer in a commercial bank. The WUA will provide bank statement along with the specimen signatures of Chairman and Treasurer to Assistant Director Agriculture On farm water Management (OFWM) who will forward the same to Deputy Director Agriculture (OFWM);

b. the WUA will execute an output-based agreement with Deputy Director Agriculture (OFWM) wherein, roles and obligations of both the parties will be defined. The

[2] The engineering *Chakbandi* of a canal system involves division of its command area into various segments and attachment of each segment to a particular outlet at the parent channel (distributary/minor) on the basis of topography for delivering irrigation water. The revenue *Chakbandi* of an outlet involves on-site verification of the proposed command area, physical demarcation of the boundaries, mapping of land ownership, and preparation of lists of shareholders/water users.

[3] Social mobilization may include intensive publicity campaign to reach out to the target communities through direct mail, press releases, signage, media advertising, workshops and meetings. The IA district and tehsil offices will extend their services especially in areas from which response is low, and provide training and other assistance to such people to support capacity-building. The IA may engage social mobilizers in CADC to undertake, among other activities, mobilization of community groups, skills training and establishment of participatory planning processes at the village or community level.

[4] The Precast Concrete Parabolic Segment (PCPS) lining has been approved as alternate lining technique being hydraulically more efficient, durable and quick in installation than rectangular shaped brick lined channel.

agreement will be based on lump-sum contracts with payments linked with achievement of physical milestones as defined in agreement;

c. the PIO staff in the project tehsils will conduct engineering surveys of the watercourse command area and prepare design and cost estimates in consultation with WUA that will be checked and verified by the CADC;

d. the WUA will carry out earthen construction of proposed length under the supervision of OFWM field staff. This will involve removal of shrubs, bushes, and vegetation as well as other natural or man-made obstructions from the right of way. It will be followed by filling of low spots in the right of way, constructing a well compacted pad, and excavation of channel as per engineering design;

e. after completion of 80% of earthen construction of watercourse, the WUA will install water control structures and carry out lining of critical sections of the watercourse;

f. farmers will contribute their requisite share for labour and mason costs for installation of water control structures, construction of culverts, animal wallow, drop structures, lining of critical sections and back earth filling of water control structure and lined sections and the Government will bear entire cost for earthen construction of watercourse and all construction materials;

g. the requisite funds will be released into joint account of the respective Water Users Association by Deputy Director Agriculture (OFWM) in three installments on recommendations of the CADCC as per following criteria;

   i. **First Installment:** Release of 50 percent cost of earthen construction and 40 percent of the estimated material cost on receipt of first intermediate completion report from the CADC certifying; (a) PIO has issued technical sanction; (b) deposit of 50 percent farmers' share on account of labor charges for lining, installation of water control structures and associated works; and (c) earthen construction of at least 80 percent of designed watercourse;

   ii. **Second Installment:** Release of remaining 50 percent cost of earthen construction and 30 percent of the estimated material cost on receipt of second intermediate completion report from CADC certifying; (a) deposit of remaining 50 percent labor charges of farmers' share on account of lining, installation of water control structures and associated works; (b) development of entire designed earthen sections; and (c) completion of at least 30 percent planned lining and other works.

   iii. **Third Installment:** Release of remaining 30 percent of the estimated material cost on receipt of final completion report from CADC consultants certifying; (a) completion of all planned works; (b) rectification of any pending discrepancy.[5]

[5] On completion, the WUA, PIO and CADC will jointly visit the completed works for inspection. If the inspection team concludes that works have been implemented satisfactorily, a completion certificate will be issued by the PIO.

h. the requisite funds for watercourse construction and lining/ improvement under the proposed project will be transferred from provincial Account-I to Cost Centers/ DDO Codes of respective DDA (OFWM) with the authorization of the Finance Department;

i. the funds from Cost Centers/ DDO Codes will be released by the Deputy Director Agriculture (OFWM)/competent authority into the joint account of respective WUA in three instalments on recommendations of CAD Consultants as per above said criteria;

j. audit will be carried out through PIO internal audit and externally appointed auditor. This audit report should form a part of the overall audit of the Project and should be submitted to ADB in accordance with loan covenants.

7. **Risk mitigation:** The community participation may encounter risk such as (i) being time and resource intensive; (ii) logistically difficult; (iii) conflicts among stakeholders; (iv) consultative groups not duly represented; (v) higher expectations; (vi) domination by powerful and more educated elite; and (vii) lack of adequate capacity. The PIO will address the risk through awareness creation, capacity building and engaging CADC early during the project implementation. Majority of farmers are absentees because presently there is no significant agricultural activity in the area. The watercourse development may face absence of owners, shortage of labor, and poor financial condition of the farming community. It is therefore planned that cost for earthen construction of watercourses will be borne by the project. This will provide initial contribution to the project and jumpstarting the activities.

8. **Land Donation:** The land is provided by the farmer beneficiaries and local communities for farm level field channels (watercourses) as counterpart support including other assets such as trees and labor, therefore involuntary resettlement is not involved. As a safeguard measure, PAD and PIO shall undertake the following:

a. Early screening of the watercourse development will be undertaken to fully determine the impacts, including the land requirements. Consultations with local communities will be undertaken throughout the screening, planning and implementation phases of each project. Consultations will be recorded in detail and will include all discussions in relation to the donation of land, if applicable;

b. Where land donation is required, written agreements between the parties will be obtained;

c. Donated lands for the watercourse will be legally transferred to the WUA;

d. Only watercourse alignment where there is written confirmation of agreement among all concerned landowners/farmers will be included under the Project; and

e. A grievance redress mechanism will be put in place under the PAD and PIO, with representation of the farmer beneficiaries, and local government. A grievance log will be established prior to project implementation and will be available for inspection and reporting by project monitors.

Attachment 1

Command Area Development of Jalalpur Irrigation Project (CAD-JIP)
(ADB Funded)

PARTICIPATION AGREEMENT

This deed of agreement for the construction and improvement/ lining of watercourse is made on_____between the Deputy Director Agriculture (On Farm Water Management)/ authorized representative of Provincial Government (hereinafter referred to as the **First Party**)

And

The Water Users Association (WUA) registered under OFWM and WUA Ordinance 1981 (amended 2001) of Watercourse No. _____ Village/Chak No._____, Union Council _____ Tehsil _____, District _____ (hereinafter referred to as **Second Party**).

WHEREAS the parties agree to the following terms and conditions:

1. ESTIMATED COST OF WORKS

1.1 Total cost of the watercourse construction and improvement/lining is determined as Rs. _____ (Annexure-I). Cost of construction materials of the watercourse is termed as Material Cost and is Rs. _____. The cost of skilled and unskilled labor as well as earthen construction is termed as Labor Cost. Material cost as well as cost of earthen construction will be provided by the First Party as financial assistance to the Second Party whereas labor cost for lining, installation of water control structures, back earth filling etc. shall be contribution of the Second Party for watercourse construction and improvement/ lining.

1.2 The agreed/ approved cost will be paid by the First Party to the Second Party in three installments as stipulated below in clause 3.1.

2. OPENING OF BANK ACCOUNT

2.1 After signing of mutual agreement, the second party will open a contract specific joint bank account in any commercial bank which will be jointly operated by Chairman and Treasurer of the Water User Association (WUA) and report of the account opening will be made to First Party.

2.2 Second Party will provide copy of specimen signatures of account operators (Chairman and Treasurer WUA) to the First Party. Any change shall be communicated to the First Party immediately. The signatories shall not be changed without prior consent of the First Party.

3. DISBURSEMENT OF FUNDS

3.1 Payment to the Second Party for watercourse construction and improvement/ lining shall be released by the First Party in three installments in the following manner:

First Installment

Release of 50 percent cost of earthen construction and 40 percent of the estimated material cost on receipt of First Intermediate Completion Report (ICR-I) from the Command Area Development (CAD) consultants certifying the following requirements (Annexure-II).

i. Issuance of Technical Sanction by the Director Agriculture (OFWM)/Deputy Director Agriculture (OFWM).
ii. Deposit of 50 percent farmers' share on account of labour charges for lining and installation of water control structures.
iii. Earthen construction of at least 80 percent of designed watercourse.

Second Installment

Release of remaining 50 percent cost of earthen construction and 30 percent of the estimated material cost on receipt of Second Intermediate Completion Report (ICR-II) from CAD consultants verifying followings (Annexure-III).

i. Deposit of remaining 50 percent labour charges of farmers' share on account of lining/installation of water control structures etc.
ii. Development of entire designed earthen sections.
iii. Completion of at least 30 percent planned lining and other works.

Third Installment

Release of remaining 30 percent of the estimated material cost on receipt of Final Completion Report (FCR) from CAD consultants certifying following factors (Annexure-IV).

i. Completion of all planned works.
ii. Rectification of any pending discrepancy.

3.2 Payment at each stage will be made by the First Party on submission of a bill for completed portion of works at the stages agreed under clause 3.1 to the Second Party on its certification by the CAD consultants. A contingent bill will be prepared and submitted by the Deputy Director Agriculture (OFWM) to the District Accounts Officer for making payment to the Second Party.

3.3 The Second Party will release all payments through crossed cheques with authentication by the concerned Assistant Director Agriculture (OFWM). The Second Party will maintain record of all transactions and purchases made for construction and improvement/lining of watercourse in a specified register.

Adjustments of Construction Material Prices

3.4 Upon submitting the request for second installment, the Second Party shall provide details of actual expenditures to the First Party. The prices shall be adjusted as per actual expenditures provided that the unit rates were within the price band approved by the District Rate Committee (DRC) (Annexure-V).

3.5 In the course of watercourse construction/ improvement/ lining, if the Purchase Committee of WUA discovers that the market rates are outside the DRC approved price bands, the Purchase Committee shall approach the DRC for a revision.

3.6 There will be no financial implication on the part of First Party, if the actual rates adopted by Purchase Committee for procurement of construction materials exceed those approved by DRC.

4. PROCUREMENT, FINANCIAL MANAGEMENT AND MAINTENANCE OF ACCOUNT/ RECORD

4.1 The DRC will fix price band for various construction materials to be procured by the Water Users Associations. The Purchase Committee (PC) for the watercourse comprising of representatives of Second Party (Annexure-VI) will be responsible to procure the construction materials following Shopping Procedure for Water Users Associations (Annexure-VII). The WUA Purchase Committee shall survey the local market/area and collect the rates of construction materials i.e. cement, bricks, sand, pipes, precast concrete parabolic segments (PCPS), *nakkas* etc. from at least three different firms/suppliers. For purchase of PCPS, quotations will be collected only from suppliers prequalified by the Agriculture Department for the purpose. The quotations so offered will be in the name of Purchase Committee and other relevant record thereof will be maintained in a proper manner by the Second Party. The Second Party shall procure materials from the local market at the lowest competitive rates and execute the works in accordance with clause 3 above.

4.2 In the event of any misuse of funds by the Second Party, the First Party shall have the right to freeze the bank account of the Second Party and initiate inquiry as deemed necessary.

4.3 In case of non-utilization of funds due to any reason, the Second Party will be liable to refund the unspent balance immediately to the First Party.

5. COMPLETION TIME AND CONTRACT TERMINATION

5.1 The works shall be completed by the Second Party within 365 days and shall be responsible for timely completion of works. In exceptional circumstances, the time period may be extended in writing by mutual consent of both the parties and approval of the Director General Agriculture (WM)/ Director Agriculture (OFWM).

5.2 If the Second Party commits a major breach of any of the terms & conditions under this Agreement, and does not take appropriate remedial actions as advised by the First Party within one month of such advice, then the First Party may terminate this Agreement. In case of such termination, the Second Party shall refund the un-utilized funds provided by the First Party deducting the value of completed works undertaken by the Second Party in accordance with the approved procedure and verified/ certified by the CAD consultants. In this case, the watercourse will be considered completed as such, even if construction/ improvement/lining works have not been accomplished as per plan.

6. DUTIES AND RESPONSIBILITIES OF FIRST PARTY

The First Party shall:

- Issue directions to the Second Party (WUA) for the development/ construction and improvement/ lining of watercourse;
- Facilitate WUA to collect approved Chakbandi Plan and Warabandi from the Irrigation Department;
- Conduct the survey and prepare the design of watercourse according to the engineering principles;
- Prepare the cost estimates of watercourse;
- Get the design and cost estimates approved from the CAD consultants;

- Provide help in construction/ improvement/ lining of watercourse and arrange government funds to be provided in installments to the WUA;
- Provide technical guidance in construction works according to the standards and specifications of the department to complete the task in time;
- Facilitate for certification of completed works by CAD consultants and release funds to WUA on completion of requisite milestones as per recommendations of CAD consultants;
- Resolve the disputes amongst the members of WUA;
- Not be responsible for any damage, if so occurred during or after completion of work, due to mismanagement or negligence of the Water Users Association or due to natural calamities like rain, floods etc;
- Not be responsible for over-topping of watercourse due to increase in flow over and above designed/sanctioned discharge of the watercourse caused by change in full supply level of the canal/ minor or any sort of hindrance/ obstacle created by human or animals in the flow of water;

7. DUTIES AND RESPONSIBILITIES OF SECOND PARTY

The Second Party shall:

- Perform duties as per provisions of the OFWM and WUA Act 1981 (amended 2001) as well as relevant project documents/ guidelines;
- Provide the approved Chak Plan and Warabandi from the Irrigation Department;
- Provide the list of shareholders of the watercourse attested by the Numberdar or WUA Chairman;
- Resolve the disputes among shareholders amicably;
- Arrange/ provide land for watercourse right of way, get it cleared by the shareholders and remove obstacle, if any;
- Collect the farmers' share from the shareholders well in time;
- Complete the earthen construction, installation of water control structures & lining/ improvement works within the specific period agreed with the First Party;
- Arrange requisite machinery, materials and suitable skilled and unskilled labour to carry out the works;
- Purchase the construction materials from the local market on competitive rates within limits approved by DRC in accordance with the "Shopping Procedure for WUA".
- Utilize the allocated/sanctioned funds (Government & Farmers' Share) properly, and use/consume the construction materials according to the departmental standards and specifications. The WUA will maintain the record of all receipts and consumptions in the specified register;
- Follow the guidelines and instructions of the CAD consultants and OFWM field staff;
- Provide access to the First Party or its representatives during construction and improvement/ lining of watercourse;
- Provide procurement record/ vouched accounts to the First Party or its representative on demand;
- Make alternative route/passage arrangement during watercourse improvement/ lining process;

8. CONTRACT TERMINATION

This Agreement may be terminated on the occurrence of any of the followings.

a) By mutual agreement between both parties
b) By the First Party in following cases.

i. If the Second party breaches any of the provision of the Agreement.
ii. If the Second Party is found to be engaged in fraud or corrupt practices that have impacted the execution of Agreement badly for completion of planned works.
iii. Upon completion of works as per satisfaction of the First Party on evidence by the WUA.
iv. Any other reason as considered justified by the First Party in the best interest of the Contract.

9. SETTLEMENT OF DISPUTE

During execution of the scheme, if any dispute arises, relating to any aspect of this Agreement, the parties shall first attempt to settle the issue through mutual and amicable consultation. If the same is not resolved through such consultation, the matter will be referred for adjudication to the Director General Agriculture (WM)/ Project Director/ Director Agriculture (OFWM) whose decision will be final and binding on both parties.

On behalf of Second Party

Signature _____ Place _____ Dated _____

Name of Chairman _____ Office Stamp _____

Watercourse No. _____ Village /Chak No. _____

On behalf of First Party

Signature _____ Place _____ Dated _____

DDA (OFWM) _____ Office Stamp _____

W I T N E S S E S

1. Signature _____ Place _____ Dated _____

   Name _____ Village _____ Tehsil _____

2. Signature _____ Place _____ Dated _____

   Name _____ Village _____ Tehsil _____

Annexure-I

Command Area Development of Jalalpur Irrigation Project (CAD-JIP)
Watercourse Construction and Improvement/ Lining

Financial Year:_____

COST ESTIMATES

Watercourse No._____ Village/Chak No._____ Minor/Disty._____
Field Team_____ Tehsil _____ District_____
Total Length _____m, Planned Earthen Construction_____,
Planned Lining _____m (____%)
Lining Technology: Precast Concrete Parabolic Segments (PCPS) Lining

Segment No. _____ Top Width (T)_____ m, Depth (D)_____ m

Material Estimates

S. No	Description of Work	Qty	Brick Work (cu.m)	Concrete Work (cu.m)	Bricks (No)	Cement (Bags)	Sand (cu.m)	Gravel (cu.m)	Steel (Kg)	PCPS (No)
1.	PCPS Lining (m)									
2.	Nuccas (Nos) i. ---------dia ii. ---------dia									
3.	Culverts (Nos) i. Box Culvert ii. Slab Culvert									
4.	B. Wallows (No)									
5.	Drop Structure (No)									
6.	Joints (Nos)									
7.	Others _____ _____									
	Total									

A: Total Estimated Cost of Civil Works

Cost of bricks (rate / 1000 x total bricks) = Rs. _____
Cost of cement (rate / bag x total bags) = Rs. _____
Cost of sand (rate / cu.m x total sand) = Rs. _____
Cost of gravel (rate / cu.m x total gravel) = Rs. _____
Cost of reinforcement (rate / kg x total steel) = Rs. _____
Cost of _____ No. PCPS @ Rs._____/ PCPS = Rs. _____
Cost of _____ No. Nakkas of _____ dia @ Rs. _____/Nakka = Rs. _____
Others (if any) Item _____, Quantity _____ Rate _____ = Rs. _____

Total : A = Rs. _____

B: Total Estimated Cost of Labor

a) Cost of masons/semi-skilled labor including back earth filling charges =Rs. _____
b) Cost of unskilled labor for earthen construction and excavation of section to be lined = Rs. _____

Total (a+b) : B = Rs. _____

Total Estimated Cost of Watercourse Construction and Improvement/ Lining

Total Cost (A+B) = Rs. _____

Government Share {A+B(b)}= Rs. _____

Farmers' Contribution {B(a)}= Rs. _____

Water Management Officer/Supervisor	Assistant Director Agri. (OFWM)/AAE
_____	_____
Signature and Stamp	Signature and Stamp

Deputy Director Agriculture (OFWM)	CAD Consultants Field Engineer
_____	_____
Signature and Stamp	Signature and Stamp

Annexure-II

First Intermediate Completion Report (ICR-I)
Command Area Development of Jalalpur Irrigation Project (CAD-JIP)

WATERCOURSE CONSTRUCTION AND LINING

Financial Year:_____

Release of 1st Installment – 50% of total Earthen Construction Cost and 40% of Total Material Cost

Watercourse No._____ Village/Chak No._____ Minor/Disty._____
Field Team_____ Tehsil _____ District_____
Total Length _____m, Planned Lining _____m (_____ %),
Planned Earthen Construction_____m, (_____ %)

Earthen Construction (Mini. 80%) and Deposit of Farmers' Share (Mini. 50%) by WUA

Particulars	Earthen Construction			Deposit of Farmer's Share		
	Planned (m)	Executed (m)	%	Total Masonry Labor Cost for Civil Works (Rs.)	Deposited (Rs.)	%
Main						
Branch – A Branch – B Branch – C ……..						
Total						

Signature_____ Signature_____

Name of Chairman (WUA)_____ Name of WMO/WM Sup._____

Signature_____ Signature_____

Name of DDA (OFWM)_____ Name of ADA (OFWM)_____

Certificate by CAD Consultants;

"Certified that ____% of planned earthen construction executed by WUA have been checked and found satisfactory. WUA has also deposited Rs. _____ as its due share (_____%) towards masonry labour cost. Release of First Installment i.e. 50% of earthen construction cost and 40% of total material cost amounting to Rs. to WUA, therefore, is recommended."

Signature: _____

Name of CAD Consultants FE:_____

Official Stamp: _____

Annexure-III

Second Intermediate Completion Report (ICR-II)
Command Area Development of Jalalpur Irrigation Project (CAD-JIP)

WATERCOURSE CONSTRUCTION AND LINING

Financial Year:_____

Release of 2nd Installment – 50% of total Earthen Construction Cost and 30% of Total Material Cost

Watercourse No._____ Village/Chak No._____ Minor/Disty._____
Field Team_____ Tehsil _____ District_____
Total Length _____m, Planned Lining _____m (_____ %),
Planned Earthen Construction_____m, (_____ %)

Earthen Construction (100%) and Deposit of Remaining Farmers' Share (50%) by WUA

Particulars	Earthen Improvements			Deposit of Farmer's Share		
	Planned (m)	Executed (m)	%	Total Masonry Labor Cost for Civil Works (Rs.)	Deposited (Rs.)	%
Main						
Branch – A Branch – B Branch – C ……..						
Total						

Civil Works (Minimum 30%)

Particulars	Planned	Executed	%
PCPS Lining Section I Section II	_____ m _____ m	_____ _m _____ _m	
Nakkas (……dia) (……..dia)	_____ No _____ No	_____ _No _____ _No	
Culverts	_____ No	_____ _No	
B. Wallows	_____ No	_____ _No	
Other structure, drop, syphon etc.			

Signature_____ Signature_____

Name of Chairman (WUA)_____ Name of WMO/WM Sup._____

Signature_____ Signature_____

Name of DDA (OFWM)_____ Name of ADA (OFWM)_____

Certificate by CAD Consultants;

"Certified that _____% of planned earthen construction and _____% of planned civil works executed by WUA have been checked and found satisfactory. WUA has also deposited Rs._____ as its due share (remaining _____ %) towards masonry labour cost. Release of Second Installment amounting to Rs._____ to WUA, therefore, is recommended."

Signature: _____

Name of CAD Consultants FE: _____

Official Stamp: _____

Date: _____

Annexure-IV (FCR -1/2)

Final Completion Report (FCR)
Command Area Development of Jalalpur Irrigation Project (CAD-JIP)

WATERCOURSE CONSTRUCTION AND LINING

Financial Year:_____

Release of Final Installment – 30% of Total Material Cost

Watercourse No._____ Village/Chak No._____ Minor/Disty._____ Field Team_____ Tehsil _____ District_____Total Length _____m, Planned Lining _____m (_____ %), Planned Earthen Construction_____m, (_____ %)

Detail of Civil Works	Type of lining	Length	Width	Depth	Side Slope	Wall Thickness	Floor Width	Floor Thickness	Unit Volume/ Length	Total Brick Work	Total Concrete Work	Construction Materials As Per Maximum Permissible Limits					
												Bricks	Cement	Sand	PCPS	Gravel	MS Bars
		(m)	(m)	(m)	(z)	(m)	(m)	(m)	(cu.m/m)	(cu.m)	(cu.m)	(No)	(bags)	(cu.m)	(No)	(cu.m)	(Kg)
Lined Section I	PCPS																
Lined Section II	PCPS																
Lined Section III	PCPS																
Total :																	
Naccas/ Outlets	..... No. of ..... cm dia. Size																

	……. No. of ……..……. cm dia. Size									
	Total ……..……. Naccas/ Outlets (Nos.)									
Arch Culverts	……. No. of …… m length each									
Slab Culverts	……. No. of …… m length each									
Drop Structures	…….. Size…….. Nos									
Buffalow Wallow	…….. Size…….. Nos									
Any Other	…….. Size…….. Nos									
Total Civil Works Executed and Construction Materials As Per Maximum Permissible Limits										
Total Materials Actually Consumed										

Annexure-IV (FCR -2/2)

Details of Actual Expenditure Incurred on Physically Consumed Construction Materials

Watercourse No. _____ Village/Chak No. _____ Minor/Disty. _____ Field Team/Unit _____ Tehsil _____ District_____

Sr. No	Description	Unit	Quantity	Unit Rate	Total Cost (Rs.)
Cost of Civil Works / Construction Material (Government Share)					
1	PCPS	(No.)	I) II)		
	Total:				
2	Cement	(bags)	I) II)		
	Total:				
3	Sand	(cu.m)	I) II)		
	Total:				
4	Bricks	(No.)	I) II) ..		
	Total:				
5	Pannel Naccas	(No.)	I) II) ..		
	Total:				
6	Gravel	(cu.m)			
7	MS Bars	(Kgs)			
8	Any Other				
Total Cost of Civil Works / Construction Material					
Amount already paid through First Installment					
Amount already paid through Second Installment					
Total Amount paid through First & Second Installments					
Amount to be paid as Third/Final Installment/Recovered					

Remarks

It is certified that:-

1. 'A' class bricks, portland good quality fresh cement, good quality sand, gravel of required strength, MS bars of desired size have been used in the civil works.
2. PCPS and pannel nakkas have been purchased from the pre-qualified firms and installed by following project standards and specifications.
3. All above costruction material have been purchased at lowest competitive rates.
4. The mortar in 1:4 cement sand ratio has been used in brick masonry and plaster works.
5. The executed works meet the prescribed project standards and specifications.
6. Cost analysis has been made on the basis of approved rates by the purchase committee, actually consumed materials and as per financial record maintained by the WUA .

Signature: _____
Name of Chairman WUA _____
Official Stamp _____

Signature: _____
Name of WMO/Sup _____
Tehsil_____
Official Stamp _____

Signature: _____
Name of ADA (OFWM)_____
Tehsil/Field Team/Unit _____
Official Stamp _____

Signature: _____
Name of DDA (OFWM)_____
District/Region _____
Official Stamp _____

Certificate by CAD Consultants

"Certified that total civil works and entire earthen construction executed by WUA have been checked and found satisfactory. Release of Third/Final Installment i.e. remaining amount (≤30% of total materials cost) of Rs. _____ to WUA is, therefore, recommended."

Signature: _____
CAD Consultants FE Name _____
District _____
Official Stamp _____
Date _____

Annexure-V

Command Area Development of Jalalpur Irrigation Project (CAD-JIP)
Composition and TORs of District Rate Committee

1.	Director Agriculture (OFWM) of respective Division	Chairman
2.	XEN Building Department	Member
3.	Field Engineer (CAD Consultant)	Member
4.	Deputy Director Agriculture (OFWM) concerned	Member/Secretary

The terms and reference of the DRC include, interalia the followings.

i) Periodically review rates of various construction materials (sand, cement, bricks, pre-cast concrete parabolic segments etc.) for watercourse improvement/ lining/ construction;

ii) Fix price band for different materials for clusters on geographical basis;

iii) Fix rates for excavation, geomembrane laying/ jointing and earthen covering (clay) for construction of water storage ponds at high efficiency irrigation system

Annexure-VI

DIRECTORATE GENERAL AGRICULTURE (WATER MANAGEMENT), PUNJAB, LAHORE

O R D E R

In order to effect purchase of construction materials (PCPS, cement, sand, bricks, nakkas, gravel, pipes, other accessories etc.) for construction and improvement/ lining of watercourses under the Command Area Development of Jalappur Irrigation Project (CAD-JIP), the Purchase Committee would comprise of the following:

Sr. No.	Name	Designation
1	Chairman, WUA	Chairman
2	Secretary, WUA	Member
3	Treasurer, WUA	Member
4	Member, WUA	Member
5	Member, WUA	Member

The committee would affect purchase of construction materials observing specified terms and conditions as mentioned in the Participation Agreement for construction and improvement/ lining of watercourses under the CAD-JIP.

Sd/-
Director General Agriculture
(Water Management), Punjab
Lahore

No. _____/DO/OFWM/ Dated

A copy is forwarded for information and immediate necessary action to:

1. Director Agriculture (OFWM) concerned
2. Deputy Director Agriculture (OFWM) concerned

Director General Agriculture
(Water Management), Punjab
Lahore

Annexure-VII

Command Area Development of Jalappur Irrigation Project (CAD-JIP)
Procurement Procedure for Water Users Association

The Deputy Director Agriculture (OFWM)/ First Party will ensure that the requisite goods/materials for construction and improvement/ lining of watercourses are procured by the Water Users Association (Second Party) in accordance with the simplified procurement procedure as given bellow:

(i) Water Users Association (Second Party) will plan to procure construction material and hire labor (skilled and unskilled) at least for every seven (07) days;

(ii) The Second Party will ask for at least three quotations (in writing) for all planned material to be procured for execution of works;

(iii) The Second Party will hire labor only or as services from PCPS firms alongwith materials for planned works;

(iv) The quotations shall be placed on the Second Party office notice board for 3-5 days;

(v) At least three members of Second Party shall prepare a comparative statement for the received quotations and recommend award to the lowest evaluated quoting firm/supplier for procurement of goods/material in consultation with the OFWM field staff;

(vi) The work order/ award shall be in writing and shall indicate the cost, quantity of material and required date of delivery;

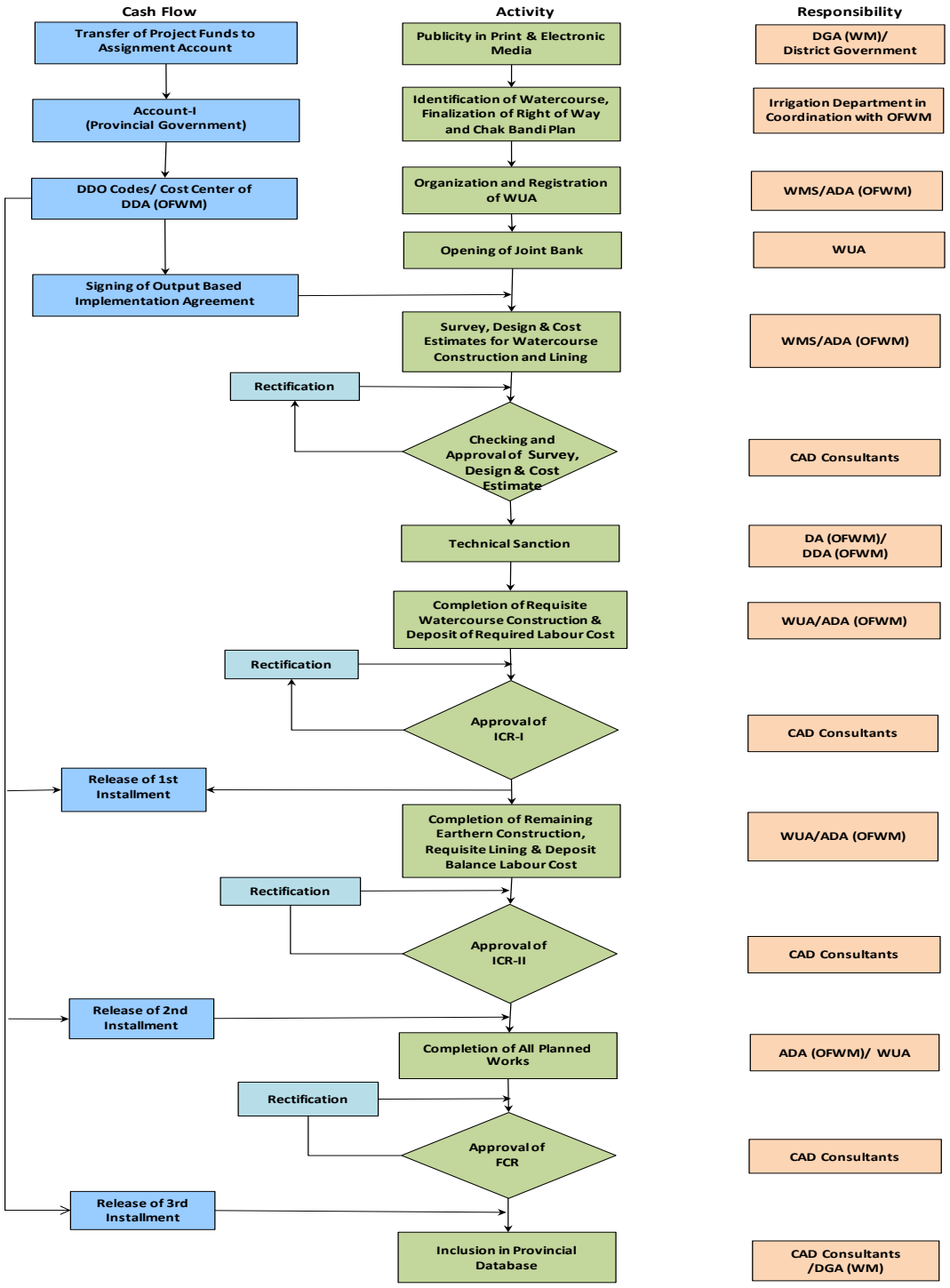
(vii) The receipt of material/ goods, and payment shall be kept in records;

(viii) The Second Party shall maintain a register of the received goods/materials and hired labour vis-à-vis their consumption as well as receipts shall be kept/ placed on record properly;

(ix) If the Second Party hires the labor for execution of works, the attendance sheet shall be maintained;

Annexure 2

Command Area Development of Jalalpur Canal Irrigation
Process Map for Watercourse Construction and Lining



DGA (WM) : Director General Agriculture (Water Management)
DA (OFWM) : Director Agriculture (OFWM)
ADA (OFWM) : Assistant Director Agriculture (OFWM)
ICR: Intermediate Completion Report
DDO: Drawing and Disbursing Officer
OFWM : On Farm Water Management
DDA (OFWM) : Deputy Director Agriculture (OFWM)
WMS : Water Management Supervisor
FCR: Final Completion Report
CAD : Command Area Development