

Project Administration Manual

Project Number: 45207-006

Loan Number(s): Loan 3135-BAN, Loan xxxx-BAN (additional financing)

August 2021

People's Republic of Bangladesh: Irrigation
Management Improvement Project

ABBREVIATIONS

ADB	–	Asian Development Bank
APFS	–	audited project financial statements
BWDB	–	Bangladesh Water Development Board
C-IMO	–	construction phase irrigation management operator
DMF	–	design and monitoring framework
EIA	–	environmental impact assessment
EMP	–	environmental management plan
ERD	–	Economic Relations Division
GAP	–	gender action plan
GKIP	–	Ganges-Kobadak Irrigation Project
ha	–	hectare
ICB	–	international competitive bidding
IEE	–	initial environmental examination
IMIP	–	Irrigation Management Improvement Project
M-IMO	–	Management phase irrigation management operator
MIP	–	Muhuri Irrigation Project
MOM	–	management, operation, and maintenance
MOWR	–	Ministry of Water Resources
NCB	–	national competitive bidding
NGOs	–	nongovernment organizations
O&M	–	operations and maintenance
PIM	–	participatory irrigation management
PIU	–	project implementation unit
PMU	–	project management unit
PPP	–	public-private partnership
QCBS	–	quality- and cost-based selection
RRP	–	report and recommendation of the President
SOE	–	statement of expenditure
SPS	–	Safeguard Policy Statement, 2009
TBIP	–	Teesta Barrage Irrigation Project
TOR	–	terms of reference

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Project Administration Manual Purpose and Process

The project administration manual (PAM) describes the essential administrative and management requirements to implement the project 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 Bangladesh Water Development Board (BWDB) is wholly responsible for the implementation of this ADB-financed project, 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 BWDB of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.

At loan negotiations, the borrower and ADB agreed to the PAM and ensured consistency with the loan agreement. Such agreement is 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 project'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 Irrigation Management Improvement Project is designed to realize the full production potential of large-scale irrigation schemes in Bangladesh. It will address the recurrent lack of sustainable management, operation, and maintenance (MOM) and increase water productivity by transferring MOM schemes to private operators and introducing innovative infrastructure modernization. The project will focus on modernizing the Muhuri Irrigation Project (MIP) in Feni district. It will also finance a feasibility study and detailed design for modernizing the Ganges–Kobadak Irrigation Project (GKIP) in Khulna division and the Teesta Barrage Irrigation Project (TBIP) in Rangpur division. The additional financing is required to cover cost overruns associated with the ongoing project,¹ the performance of which is on track.²

2. The primary sources of water in Bangladesh are local rainfall amounting to about 250 cubic kilometers (km³) annually and the trans-boundary inflows amounting to about 1,000 km³ annually, derived mainly from the Brahmaputra, Ganges, and Meghna Rivers. Bangladesh occupies only 8% of the total drainage area of these rivers but is located at their downstream end. The result is an abundant excess of surface water during the summer monsoon months and water shortfalls in the winter dry months. The impossibility of developing dams' facilities prevents flow regulation throughout the year. Despite being scarce, water is not well managed. There is minimal attention to water use efficiency and equitable allocation. Many farmers rely on groundwater to supplement the limited and irregular surface water supplies. However, in many parts, the use of groundwater is significantly constrained by arsenic contamination and aquifer limitations. Consequently, the minimum flows required to meet total dry season demands are less than what is available from surface and groundwater. This is aggravated by the increasing competition for water among sectors including agriculture, domestic and industrial water use, navigation, fisheries, and conservation of natural eco-habitats. Possible changes in temperature and rainfall patterns due to global warming may also modify crop water requirements and water availability, and adversely widen the current gap between supply and demand.

3. **Performance of irrigated agriculture and large irrigation schemes.** In Bangladesh, 31.5% of the population was living below poverty line in 2010. Although agriculture's share of gross domestic product has declined, it is the primary economic sector in rural areas and provides 63% of rural employment. Bangladesh has a net cultivable area of around 8 million hectares (ha). About 5.3 million ha were irrigated in 2011–2012. The total rice production in Bangladesh in 2010–2011 was 33.5 million metric tons with 56% of the total being produced during the dry season.³ Productivity of irrigated agriculture remains chronically low; paddy yields during the past 10 years average at 3.6 tons per hectare (t/ha).⁴ The low land productivity is attributable to unreliable irrigation supply, inadequate agriculture extension services and poor access to farm inputs, markets and agricultural credit services. Around 550,000 ha or 11% of the total irrigated area is

¹ Cost overruns resulted from (i) higher bid price than cost estimate at project preparation; (ii) increase in contract quantities; (iii) additional provisions and (iv) SDR depreciation against the US Dollar.

² ADB. 2014. [*Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of Bangladesh for the Irrigation Management Improvement Project*](#). Manila, ADB approved the ongoing project on 30 June 2014 for a \$46 million loan from concessional ordinary capital resources, equivalent to SDR 29,551,000. The loan agreement was signed on 14 August 2014 and declared effective on 16 September 2014. The project is being implemented over 7.8 years including a 1.5-year extension approved on 2 November 2018. The physical closing date is extended to 30 June 2023 (financial closing on 31 December 2023).

³ Government of Bangladesh. 2011. Bangladesh Bureau of Statistic. *Yearbook of Agricultural Statistics, Chapter 2*.

⁴ Government of Bangladesh. Bangladesh Bureau of Statistic. *Yearbooks of Agricultural Statistics, 2003–2012*.

under large irrigation schemes.⁵ However, only 46% of this area is currently irrigated during the dry season.

4. A major weakness that continues to plague the productivity of large irrigation schemes is the lack of efficient and sustainable MOM. In 2012, the average level of MOM cost recovery from the beneficiaries for three large scale irrigation projects, MIP, GKIP and TBIP, was 24%. The highest recovery was for MIP with 63% while TBP was at 18% and GKIP at 0.26%. As a consequence, the infrastructure of these schemes is degraded and needs rehabilitation and modernization. Other reasons include inadequate Government financing;⁶ lack of beneficiary empowerment and engagement in MOM; and limited capacity of public agency resulting in weak service delivery. Specific issues are the: (i) inadequacy of budget⁷ to support system MOM; (ii) lack of distinction between annual, periodic or emergency maintenance of a system; and (iii) poor cost recovery from the water management groups.

5. During the past 30 years, substantial efforts were made to improve irrigation MOM through introduction of participatory irrigation management (PIM). In Bangladesh, PIM proved generally successful on small and medium schemes, but it has yielded limited results on large schemes. The variable performance of PIM in improving irrigation MOM is internationally documented and private sector participation through public private partnership (PPP) is seen as an alternative approach.⁸ It has demonstrated promising results in few developing countries such as Brazil, Morocco and Ethiopia but is still to be developed in Asia. In 2009, the Asian Development Bank (ADB) provided a technical assistance (TA) to the Bangladesh Water Development Board (BWDB) to examine alternative approaches of service delivery agreements and management arrangements including PPP for sustainable irrigation MOM in large irrigation schemes. The TA proposed a conceptual framework for engaging a third-party operator to address the shortcomings in MOM of MIP. It established the basis for the social and economic feasibility of the approach and confirmed farmer's willingness to pay.

6. The National Water Policy, adopted by the government in 1999, sets out a comprehensive framework for the water sector in general, and for large surface water irrigation schemes including a strategic vision comprising private irrigation MOM through leasing, concession, or management contracts. The government has well established an advanced policy, legal, institutional, and planning frameworks for the water sector in Bangladesh. These provide a suitable environment for driving the necessary reforms in the sector. The Water Act that was promulgated in May 2013 further revised and consolidated existing laws that govern the ownership, utilization, and financial management of water.

7. The Sixth Five Year Plan, 2011–2015 recognizes the need to raise agricultural productivity, foster crop diversification, and boost public spending on rural infrastructure.⁹ The Plan also presents a strategic direction for medium and large-scale surface water irrigation. At its highest level, the strategy focuses on modernization and improved management of existing irrigation systems and expansion of the irrigation areas. To reduce public costs in sustainably operating these schemes and to improve delivery service, the strategy encourages use of PPP

⁵ Large irrigation schemes have command areas of 2,000 hectares or more.

⁶ Government of Bangladesh fund provided for maintenance only meet about 50% of requirements for the 3 schemes.

⁷ For 2009–2010, budget was \$126,000 against a demand of \$710,000 and irrigation service charge was \$12,000 against target of \$430,000.

⁸ Participatory Irrigation Management (PIM) has been used as the primary method of achieving Irrigation Management Transfer (IMT) so the terms IMT and PIM are used interchangeably.

⁹ Government of Bangladesh. Planning Commission, Ministry of Planning. 2011. *Sixth Five-Year Plan, 2011–2015*. Dhaka. The project remains aligned with the *Eighth Five-Year Plan, 2020-2025*.

wherever appropriate. As part of an overall investment program for the water sector, the government has approved an investment plan to rehabilitate and modernize all large surface water irrigation schemes at an estimated total cost of \$745 million. The project will support the implementation of the program by modernizing the infrastructure and MOM of the MIP including transfer of the MOM to private sector. The project will also finance the preparation of the modernization strategy including feasibility studies and detail designs of the GKIP and TBIP.

8. The MIP construction was completed in 1986. The design enabled dry season irrigation as well as supplemental wet season irrigation by constructing the Feni Closure Dam and Regulator to create a reservoir downstream of the confluence of the Feni, Muhuri and Kalidash-Pahalia rivers. The backwaters from the barrage enter the natural channels (khals) and canal network by gravity. From there it was to be lifted to irrigate the fields by about 800 low-lift diesel pumps. The project was to increase the dry season rice area from about 6,000 ha to 20,000 ha. Initially, farmers experienced major improvement in production and were able to cultivate much larger areas with rice; however, siltation of the reservoir and khals due to lack of maintenance and reduction of river runoff in the river has reduced the benefit over the years. The area irrigated in dry season shrunk to 11,300 ha. Increase in diesel cost combined with low efficiency of the pumps and decrease in rice price further contribute to discourage farmers from cultivating. Opportunities to substantially increase water use efficiency and reduce pumping cost through innovative design modernization and improved MOM were identified during the project preparatory technical assistance and will be supported by the project.

9. The project impact will be sustained high growth in irrigated agriculture. The outcome will be increased productivity and sustainability of MIP.¹⁰

10. The project has three outputs comprising:¹¹

11. **Output 1: Performance-based irrigation management and agriculture support services established.** This output will include contracting private irrigation management operators under 5 years performance-based management contracts. This “Construction phase” irrigation management operators (C-IMO) will supervise modernization works, establish sustainable MOM and provide agricultural support services in MIP. Efficient management systems will be adopted to maximize water use efficiencies and develop sustainable and reliable irrigation service delivery. Viable and effective operations and maintenance (O&M) cost recovery mechanisms will be setup to achieve 100 % cost recovery. The objective will be to bring MIP scheme to the level of profitability and sustainability required for enabling the recruitment of a long term “management phase” irrigation management operator (M-IMO) through a PPP modality.¹² The project will also support the preparation of the long-term PPP transaction.

12. **Output 2: Irrigation system infrastructure rehabilitated and modernized.** This output will include physical rehabilitation and modernization of irrigation infrastructure including (i) repair of about 373 km of canals and 17 km of coastal embankments with ancillary facilities; (ii) development of about 18,000 ha of modern and highly efficient piped water distribution system to improve timely water access and reduce water losses; (iii) provision of prepaid card meters to

¹⁰ The updated design and monitoring framework is in Appendix 1.

¹¹ Upon approval of the additional financing loan to the project, project’s outputs will be reduced to two. Output 3 of the original design and monitoring framework has been reclassified as Project Management Activities in line with the [Guidelines for Preparing and Using a Design and Monitoring Framework: Sovereign Operations and Technical Assistance \(2020\)](#) (see Section IX of the PAM).

¹² Contracting modality and service terms for the M-IMO will be assessed by BWDB with the support of an independent panel of experts.

allow water allocations to be based on a volumetric basis and ensure full and transparent payment and accounting, (iv) full electrification of the pumping to reduce the operational costs and increase management flexibilities and; (v) pilot solar panels and pumps for about 60 ha.

13. Output 3: The Project is efficiently managed with effective institutional development. This output will include (a) establishment of competent project management and project implementation unit; (b) timely procurement and disbursement; (c) timely preparation of detail designs for Muhuri Irrigation Project remaining works, (d) timely appraisal of Ganges-Kobadak and Teesta modernization requirements and provision of required feasibility studies and detail designs and strategies to transfer MOM to private sector; and (e) institutional support and capacity and awareness building of BWDB and water management organizations to successfully administer and support PPP contracts.

II. IMPLEMENTATION PLAN

14. The overall project comprises nine civil works packages (CW), two consultant firm packages, and four goods packages. As of December 2019, all contracts have been awarded and are ongoing. The DPP for the additional financing has already been approved by government. The project management unit are in place at central level and all staff have already been recruited for the project implementation unit to implement the scope of the ongoing project and that under the additional financing.

15. The Project Management Unit (PMU) will update the initial environmental examination (IEE) including the environmental management plan (EMP) to comply with the Environmental Conservation Act 1995, Environmental Conservation Rules 1997 and ADB Safeguards Policy Statement (SPS) 2009. PMU will also prepare a resettlement plan and resettlement framework.

A. Project Readiness Activities

Table 1: Project Readiness Activities for the Additional Financing

Indicative Activities	2021				Responsible Individual/ Unit/ Agency/ Government
	Sep	Oct	Nov	Dec	
ADB Board approval	X				ADB
Loan signing			X		ADB / BWDB / GOB
Government legal opinion provided				X	BWDB / GOB
Government budget inclusion	X				BWDB / GOB
Loan effectiveness				X	ADB

ADB = Asian Development Bank, BWDB = Bangladesh Water Development Board, GOB = Government of Bangladesh

Source: ADB.

B. Overall Project Implementation Plan

Figure 1: Overall Implementation Plan

[illegible]

III. PROJECT MANAGEMENT ARRANGEMENTS

16. The implementation arrangements for the additional financing will remain unchanged from the ongoing project.

A. Project Implementation Organizations: Roles and Responsibilities

Table 2: Project Implementation Organizations: Roles and Responsibilities

Project Implementation Organizations	Management Roles and Responsibilities
<ul style="list-style-type: none"> • Ministry of Water Resources (MOWR) <ul style="list-style-type: none"> - Chairs the Project steering committee. - Support the implementation of policy, legal and institutional reforms proposed under the project road map. - Ensures adequate counterpart funding is provided to the executing agency. - Approve procurement of works and consultants or submit for approval to the inter-ministerial purchasing committee. 	
<ul style="list-style-type: none"> • The Executing Agency: Bangladesh Water Development Board (BWDB) 	<p>Dhaka office staff</p> <ul style="list-style-type: none"> - Establish a PMU - Oversee implementation of the project - Prepare annual budget for counterpart funds financing and obtain timely approval. - Monitor and ensure compliance of loan covenants and environmental and social safeguards and facilitate the implementation of corrective action - Procure international consultant(s) and contractor(s) - Lead MOM studies and planning and design for preparation of GKIP and TBP. - Prepare quarterly reports to ADB, disbursement projections, updated implementation plans, etc. - Monitor the Gender Action Plan implementation and prepare regular reports for ADB. - Financial management: preparation of withdrawal applications and Statement of expenditures, centralized payments to contractors and consultants (including C-IMO), arranging for financial audits and implement recommended financial management improvements actions - Administer PMDC and C-IMO contract ensuring timely processing of payments and contract variations. - Implement the participation and communication plan - Monitor C-IMO key performance payment indicator achievement <p>Sub-Project office staff</p> <ul style="list-style-type: none"> - Facilitate and support- IMO work in the field - Ensure maintenance of primary system and timely and adequate water delivery to secondary and tertiary level - Review C-IMO construction supervision report/recommendations for payment to contractors and submit to PMU for payment - Support PMU design, monitoring and safeguards cells
<ul style="list-style-type: none"> • Project Steering Committee (PSC) 	<ul style="list-style-type: none"> - The PSC will be chaired by MOWR and will include members from, Planning Commission BWDB, MOA, LGC, MOEF, ERD, ARDRS, DAE, BRMMOF and EPD. - Ensure inter-ministerial coordination - Oversee implementation of the project - Monitor progress of the project including safeguards and development objectives

Project Implementation Organizations	Management Roles and Responsibilities
	<ul style="list-style-type: none"> - Rectify issues hindering progress of the project - Guide the Executing Agency - Meet at least once each quarter - PSC may establish a Project Implementation Committee if required
<ul style="list-style-type: none"> • Project Management and Design Consultant (PMDC) 	<ul style="list-style-type: none"> - Prepare feasibility and detail designs for GK and TBP irrigation project including detailed options for structural and management modernization - Prepare detail design for pump electrification and MIP hydraulic structures. - Prepare lease agreement for M-IMO and support tendering process. - Provide overall project management support on reporting, financial management, M&E, - Prepare quarterly progress reports on GAP implementation, - Prepare tenders for GKIP and TBP works and support procurement. - Set up a monitoring and evaluation system including PPMS.
<ul style="list-style-type: none"> • Irrigation Management Operator (C-IMO) 	<ul style="list-style-type: none"> - Ensure MIP civil works supervision - Prepare detail design of prepaid pumps and piped prepaid systems in MIP - Prepare O&M annual plan and implement them - Collect water charges and ISF - Provide agriculture support services - Ensure quality water service delivery to the farmers - To engage with farmers and other stakeholders to ensure of understanding of the new systems and promote the effective use of the irrigation facilities to improve crop productivity. - To establish and manage customer relations including complaints mechanisms.
<ul style="list-style-type: none"> • Implementation coordination committee 	<ul style="list-style-type: none"> - Provide tripartite conflict resolution at field level - Review performance of the parties involved at field level - Review of C and later M- IMO annual O&M work plan
<ul style="list-style-type: none"> • Water Management Organizations 	<ul style="list-style-type: none"> - Provide feedback to the C- IMO on the quality of water service delivery - Support participatory planning and design - Support participatory work construction supervision - Support conflict resolution between farmers and between farmers and C- IMO and later M-IMO - Ensure water users are kept inform about ICC decision, project progress and implementation issues. - Support/guide IMO agricultural support activities
<ul style="list-style-type: none"> • ADB 	<ul style="list-style-type: none"> - Recruit PMDC and C- IMO consultants for the Project - Conduct regular loan review missions - Review and issues no-objection to procurement and disbursement documents - Overall coordination and advisory support

Note: The roles and responsibilities for the additional financing will remain the same as those for Loan 3135-BAN: Irrigation Management Improvement Project

17. A Project Steering Committee will be established to provide overall coordination to the Project and to deal with issues requiring inter-ministerial coordination. The Steering Committee will be chaired by the Secretary, Ministry of Water Resources (MOWR). The Project Steering Committee will include representation of all concerned ministries and agencies including: Ministry of Water Resources Ministry of Agriculture, Ministry of Local Government Rural Development and

Cooperatives, Ministry of Environment and Forests, Economic Relations Division (ERD), Finance Division, Implementation Monitoring and Evaluation Division, Planning Commission, BWDB, DAE, Ministry of Fisheries and Livestock and a representative of the ADB. The Project Management and Design Consultants (PMDC) as well as the Irrigation Management Operators (IMOs) will also participate in the Project Steering Committee as observers.

18. As well as dealing with issues that emerge during the implementation the Project Steering Committee will have two permanent agenda items: review safeguard compliance, and review project impacts in terms of metrics that include amongst others: poverty and gender. These agenda items will require a monitoring unit to prepare submissions to the Project steering Committee. The steering committee will meet at least twice per year.

B. Key Persons Involved in Implementation

Executing Agency

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C. Project Organization Structure

19. The Executing Agency is BWDB. A Project Director, with the rank of at least superintending engineer, will be appointed for the duration of the project. The Project Director will be responsible for the overall management of the project and will manage the Project Management Unit and authorize payments. He or she will report directly to BWDB additional Director General Planning.

20. The Project Director will be supported by the IMIP support services based on seven support units: accounts, administration, procurement, PPP, Planning and Design, Safeguards and Communications and Strategy Building. The core of the project management will be managed by the Dhaka central office however supported by frequent field visits to engage with the field staff as well as stakeholders. All procurement, payments as well as planning and design will be managed by the support units based in Dhaka.

21. A Project implementation unit (PIU) will be established in MIP. A PIU Director with the rank of Executing Engineer will be appointed. He or she will be in charge of supervising MIP modernization in the field including the activities currently managed by the Government as well as the investments and OM activities of the project. The PIU Director will be based in the field but will make frequent visits to the PMU in Dhaka. The PIU would incorporate the staff of the superintending engineer's office in Muhuri. Thirty staff would be formally assigned to the PIU under the PIU director. For the Teesta Barrage and the GK irrigation projects, a small Design Support Unit will be set up under the direction of an Executive Engineer Design to be based at each project site. Coordination and support will be provided by the Project Directors of the two projects on a part time basis.

22. The development of capacity in the management of PPP is a key requirement. A PPP unit will be established to support the IMIP Project Director, the unit will comprise of one person from Government with appropriate knowledge in tendering, contract management, negotiating, legal, and communication and preferably private public partnerships. The unit will work closely with the procurement unit and will be responsible for tender documents and will be active in the bidding process during the engagement of the IMOs. The unit will also be a party to the PPP contract negotiations between the Project management phase IMO (M-IMO) and construction phase and management phase IMOs of GKIP and TBP and BWDB and will, in the longer term, be responsible for monitoring and managing the PPP contract. The PPP unit will participate and support the Implementation Coordination Committee in C-IMO and M-IMO performance evaluation and review and will maintain linkages to the PPP Office under the Prime Minister's Office. It is expected that PPP Office in the Prime Minister's office will be able to provide specialist PPP support as and when requested by BWDB. BWDB will consult with the PPP Office in the prime minister's office and prepare a MOU to identify and implement appropriate support actions. Support to establish and develop the PPP unit will be provided by the PMDC.

23. **Positions outside the PMU:** As the PPP lease contract will continue after the completion of the IMIP project it will be necessary to appoint a PPP officer outside the PMU and under the procurement cell funded from the establishment budget. The PPP officer will be appointed one years prior to the start of the Muhuri lease contract. A monitoring cell will be established to provide independent verification of the performance of various stakeholders as well as assessing impacts associated with investment objectives. There is an existing monitoring division within BWDB under the Chief Monitoring who reports to BWDB's Director General. The IMIP monitoring cell will be situated under the Chief Monitoring. The monitoring cell will monitor the project progress against the outputs and targets set out in the Design and Monitoring Framework (DMF).

24. The staff for the PMU will be assigned on deputation or given additional charge from BWDB or other Government Departments. If staff are not available from the Government, they will be recruited from the private sector for the period of the project. The PMU staffing as of 1 November 2020 is shown in the table below.¹³

Table 3: PMU Staffing (as of 1 November 2020)

	Position	No.	Office	FT/ PT	Recruitment		Status
					Date	Source	
A. Central PMU, Dhaka							
1	IMIP Project Director Project Management Unit. (ACE/SE Gr-3/4)	1	PD's Office/PMU	FT	June 2015	Deputation	Md Rafus Sazzad Superintending Engineer & Project Director
2	Executive Engineer Planning and Design (EE Gr-5)	2	PD's Office/PMU	FT	2019	Deputation	Nusrat Alam (Executive Engineer, Planning)
					November 2015	Deputation	Md Saidul Islam Khan (Executive Engineer, design)
3	Deputy Director Accounts and Finance (Gr-5)	1	PD's Office/PMU	FT	November 2014	Deputation	Md Shahjahan Deputy Director (Accounts/Finance)
4	Deputy chief (Economics) / Asst. Chief (Economics) (Gr-5/6)	1	PD's Office/PMU	FT	December 2014	Deputation	Kishoar Jahan (Asst. Chief, Economics)
5	Accountant (Gr10)	1	PD's Office/PMU	FT	June 2015	Deputation	Md Abdul Qayyum (Accountant)
6	MIS expert (Asst. Engineer Gr-9)	1	PD's Office/PMU	FT	November 2015	Deputation	Md. Atiqur Rahman (Assistant Engineer)
7	Deputy chief (extension) Gr-5	1	PD's Office/PMU	FT	June 2015	Deputation	Md Jahangir Alam (acting as safeguards officer)
8	Procurement Officer (SDE Gr-6)	1	PD's Office/PMU	-	October 2018	Deputation	N.M Jahangir
9	PPP Officer (Gr-6)	1	PD's Office/PMU	FT	2015	Additional charge	Ms Nusrat Alam (EE Planning)
10	Assistant Chief (Sociology) (Gr-6)	1	PD's Office/PMU	FT	November 2014	Deputation	Shahnaz Pervin (Assistant chief, Sociology) (GAP focal person)
11	Assistant Director Administration (Gr-9)	1	PD's Office/PMU	-		Additional charge	Shahnaz Pervin (Assistant chief, Sociology)
12	Data Entry Operator (Gr-16)	2	PD's Office/PMU	-	Vacant		1 post vacant (PMDC is covering this activity)
13	Driver (Gr-16)	4	PD's Office/PMU	FT	June 2016	Outsource	1. Md Enayet Hossain 2. Md. Hiron Khan 3. Md. Bokhtair 4. Md. Umar Faruq
14	MLSS (Gr-20)	4	PD's Office/PMU	FT	June 2016	Outsource	1. Md. Rubel Hossain 2. Md. Nurujjaman 3. Md. Sobuj 4. Md Nasiruddin 5. Md Saed Muillah
15	Cleaner (Gr-20)	1	PD's Office/PMU	FT	June 2016	Outsource	Mr. Bahadur
	Sub Total PMU	23		23			20

¹³ Staff recruited under ADB. [Bangladesh: Irrigation Management Improvement Project](#) will also implement project activities under the additional financing project.

	Position	No.	Office	FT/ PT	Recruitment		Status
					Date	Source	
B. Project Implementation Unit (PIU), Feni							
1	Muhuri Project Implementation Unit Director/Project Executive Engineer/EE (Gr-5)	1	Head of Implementation of the Muhuri Irrigation Project. Reports to Director Project Management Unit (PMU) Liaises with central support units and field operations	PT	2019	Additional charge	(Executive Engineer)
2	Sub Divisional Engineer (Gr-6)	3	Implementation to support works, MOM, design and safeguards	PT		Additional charge	1 post Vacant
3	Sub Assistant Engineer Section Officer (Gr-10)	6	BWDB Feni OM Division Post to include: (i) design, (ii) works, (iii) OM, 9, (iv) extension; (v) capacity building and (vi) communication	PT	April 2015	Additional charge	3 post Vacant
4	Surveyor (Eng) (Gr-11)	2	Field engineering surveys	PT		-	1 post Vacant
5	Data Entry Operator (Gr-16)	2	Office support	PT		-	1 post Vacant
6	Assistant Accountant (Gr-11)	1	Assistant on Finance and Account related tasks	PT	April 2015	Additional Charges	1 post Vacant
7	MLSS, Cleaner and Guards (Gr-20)	7	Office of the PIU Feni	FT		Outsourced	
	Sub-Total PIU	22		16			16
C. Design Support Units (DSU) for TBIP and GKIP							
1	Feasibility Study/ Design Support Officer (EE Gr-5)	2	Head of the Planning and Design Unit at the Teesta and GK project sites	PT	2015	Additional Charges	(Executive Engineer for GKIP)
					2015		(Executive Engineer for TBP)
2	Design Support Sub Divisional Engineers (SDE Gr 5)	10	Sub Divisional Engineers to support planning and design work in TBIP and GKIP	PT	2015	Additional Charges	(Sub Divisional for TBP)
					2015		(Sub Divisional Engineer for GKIP)
3	Sub Assistant Engineers (SO Gr 10)	20		PT	2015	Additional Charges	(Sub Assistant Engineer for GKIP)
	Sub-Total (SDUs)	32					32
	Overall Total	77					68

Notes: Deputation-BWDB Staff on Deputation from Existing Manpower of BWDB, or existing staff will be given the Additional Charge to support the IMIP.

25. **Implementation Coordination Committee.** To facilitate implementation of the MIP modernization, an Implementation Coordination Committee (ICC) will be established. The ICC will be under the leadership of the BWDB Zonal Chief Engineer. Members of the ICC will include representatives from the offices of the Deputy Commissioner, the Water Users Federation, Water

User Associations, the Rural Electrification Board, Department of Agriculture Extension, and law enforcement. The IMO will also be a member of the ICC and will act as the member secretary. The ICC will deal with field implementation issues that arise related to conflicts, safeguards, security, and more generally concerns about the performance of the implementing parties and will meet four times per year at a location close to MIP. The PMU with the support of the PMDC will be responsible for the establishment of the ICC.

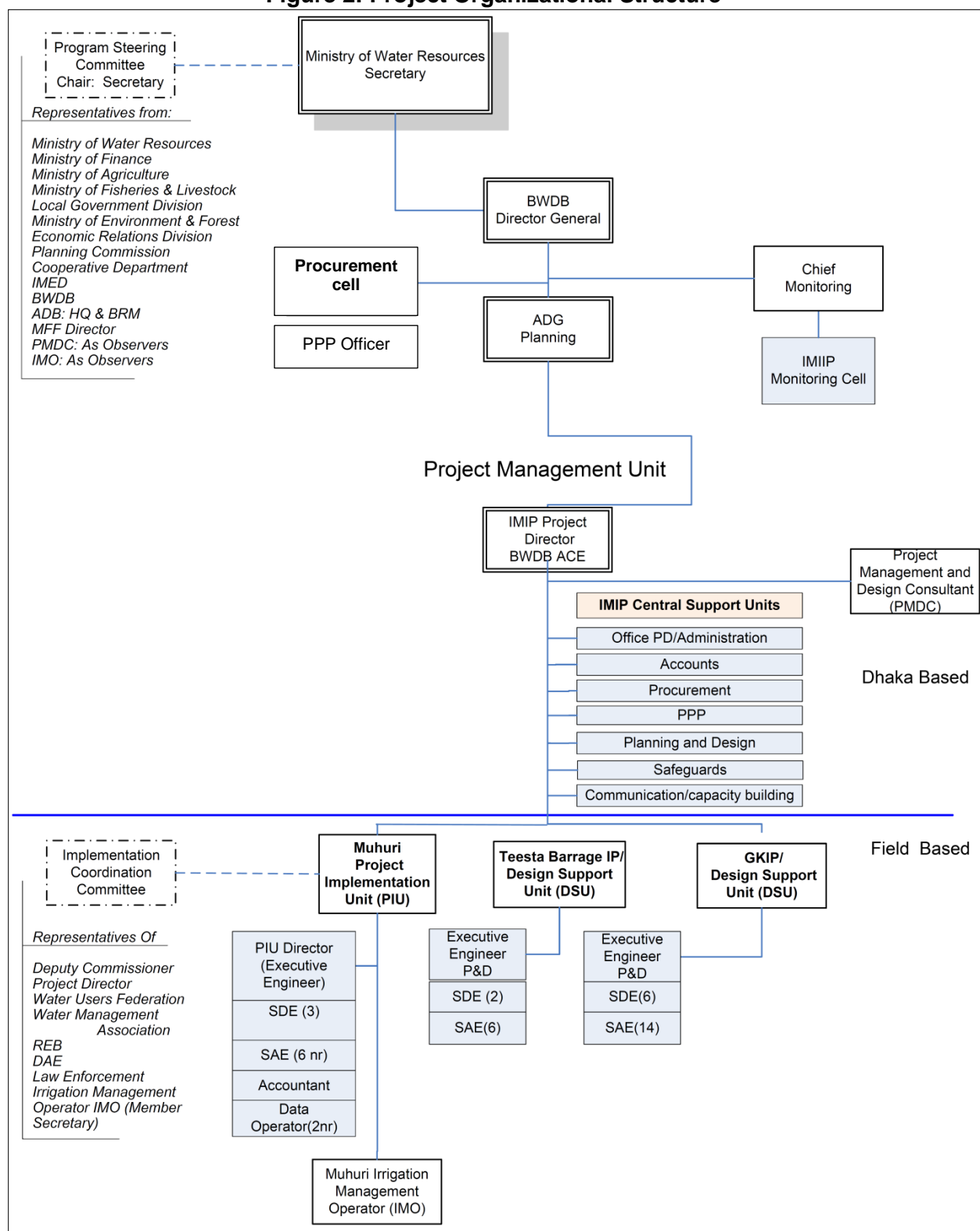
26. **The Water Management Organizations (WMOs)**, WUG, WMA, and WMF will play a supporting and guiding role in close coordination with the ICC. The role of the WMOs will include; (i) to support feedback and monitoring of the operation and management of the projects through the ICC; (ii) liaising with farmers and the ICC; (iii) implementing independent monitoring function of the management activities including construction, operation and physical maintenance work; and (iv) supporting and dealing with the complaints and grievances in coordination with ICC; more serious complaints would be referred to the ICC who would meet every 3 months; additional special meetings can be organized as necessary.

27. **Independent Panel of Experts (PoE)**. An independent panel of experts will be recruited and engaged by ADB,¹⁴ to (a) review the performance of the C-IMO thus far and assess whether the Project is ready to have its long-term MOM transferred to the M-IMO in accordance with paragraph 9, Schedule 4 of the ongoing loan's Project Agreement; and—if not— (b) advise on measures to remedy the deficiencies in the proposed plan or propose alternative approaches to ensure that the sustainable development objectives envisaged under the Project are achieved. BWDB shall assist the PoE by providing any data and support that the panel may reasonably require. BWDB shall endorse the conclusions and recommendations issued by the panel and commit to their effective implementation.

28. If the independent PoE recommends that the long-term MOM of all or part of the project facilities be transferred to an M-IMO upon expiry of the management contract of the C-IMO, BWDB shall transfer the responsibility for such MOM activities to the M-IMO pursuant to a long-term lease, concession or other PPP modality in a manner that (a) allocates risks and responsibilities among the stakeholders in accordance with sound international practice; (b) includes a transparent, objective and comprehensive water service tariff regulation mechanism that is aimed at cost recovery and provides for a reasonable return on equity for the M-IMO; and (c) provides the M-IMO with the operational autonomy to effectively manage its operations, to meet the requirements for operation and maintenance cost recovery and preserve its business interests, through collection of water service charges or other cost recovery/income generating activities.

¹⁴ BWDB shall review the short-list of candidates and send its concurrence to ADB on a non-objection basis.

Figure 2: Project Organizational Structure



IV. COSTS AND FINANCING

29. The cost of the project is at \$68.1 million, inclusive of taxes and duties, and financing charges during implementation (Table 4). Financing for the overall project will come from an ADB loan, government contribution, and farmer contribution (Table 4). Farmers in the project will contribute \$4.4 million for the operation and maintenance (O&M) cost of level 2 and 3 irrigation infrastructure and equipment; this farmers' contribution will be paid via a levy issued by the M-IMO. Farmers' contributions will include an upfront payment towards the OM to not exceed \$0.15 million, which is equivalent to \$9/ha. Farmers' contribution of \$4.4 million is designed to develop a sense of ownership by farmers of the pipeline distribution systems. The government will contribute \$8.7 million; this includes payment to BWDB for the rehabilitation and O&M of MIP level 1 irrigation infrastructure. Both ADB loans will have a term of 25 years, including a grace period of 5 years, with an interest rate of 2% throughout the loan period, and such other terms and conditions set forth in the loan and project agreements.

Table 4 : Overall Project Investment Plan
(\$ million)

Item	Ongoing Amount ^c	Additional Financing ^d	Total
A. Base Cost ^a			
1. Performance-based irrigation management	7.12	0.76	7.88
2. Rehabilitated and modernized irrigation schemes	35.14	11.71	46.85
3. Project management	8.53	0.00	8.53
Subtotal (A)	50.79	12.46	63.25
B. Contingencies ^b	1.10	1.94	3.04
C. Interest Charges During Implementation	1.61	0.23	1.84
Total (A+B+C)	53.50	14.63	68.13

Notes: Numbers may not sum precisely due to rounding.

^a In April 2021 prices.

^b Physical contingencies of 5% on civil works. Price contingencies computed on all costs except international and national consultants, based on an annual cost escalation factor of 5.8% for 2021-2023 for local currency costs; and 1.6% for 2021, 1.7% for 2022-23, and 1.8% in 2024 on annual foreign exchange costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

^c As of 6 April 2021. Original project cost was estimated at \$58.0 million at approval. ADB loan value was reduced due to depreciation of the special drawing right against the dollar. Includes taxes and duties of \$5.3 million to be financed by the government.

^d Includes taxes estimated at \$1.13 million, which the Borrower will reimburse to BWDB.

Source: Asian Development Bank estimates.

Table 5 : Financing Plan
(\$ million)

Source	Ongoing Loan ^a		Additional Financing		Total	
	Amount	Share of Total (%)	Amount	Share of Total (%)	Total	Share of Total (%)
Asian Development Bank	41.5	77.6%	13.5	92.3%	55.0	80.7%
Beneficiaries ^b	4.4	8.2%	0.0	0.0%	4.4	6.5%
Government ^c	7.6	14.2%	1.1	7.7%	8.7	12.8%
Total	53.5	100%	14.6	100%	68.1	100%

^a Original project cost was estimated at \$58.0 million during loan approval. As of 6 April 2021, SDR-denominated ADB loan amount was reduced from \$46.0 million to ~\$41.5 million due to depreciation of the special drawing rights against the dollar.

^b Contribution to irrigation operation and maintenance costs of each project funded by water charges levied on farmers. Irrigation management operator costs for initial 5 years paid by ADB.

^c Includes financing by the Bangladesh Water Development Board of Level 1 (primary irrigation) infrastructure and project management.

Source: Asian Development Bank estimates.

A. Cost Estimates Preparation and Revisions

30. For the additional financing, estimates for the extension of costs for the construction contracts, and for the extension of costs for the C-IMO were prepared by BWDB and reviewed by ADB. Cost estimates for financing charges during implementation were prepared by ADB in consultation with BWDB. The cost estimate model was prepared using Microsoft Excel. It is available with the ADB project team and the PMU. During implementation, the PMU will be responsible for updating cost estimates from the model. Revisions to planned withdrawal allocations will require prior approval from ADB.

B. Key Assumptions

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

- (i) Exchange rate: Tk 84.71 = \$1.00 (as of 30 June 2021).
- (ii) Price contingencies based on expected cumulative inflation over the implementation period are as follows:

Table 6: Escalation Rates for Price Contingency Calculation

Item	2021	2022	2023	2024	Average
Foreign rate of price inflation	1.6%	1.7%	1.7%	1.8%	1.7%
Domestic rate of price inflation	5.8%	5.8%	5.8%	5.8%	5.8%

Source: Asian Development Bank, Asian Development Outlook Supplement, April 2021.

C. Detailed Cost Estimates by Expenditure Category

Table 7: Cost Estimates by Expenditure Category – Ongoing Loan

	(Tk million)			(\$ million)			% of Total Base Cost
	Foreign Exchange	Local Currency	Total Cost	Foreign Exchange	Local Currency	Total Cost	
A. Investment Costs							
1. Civil Works	338.5	2,086.8	2,425.3	4.2	26.1	30.3	59%
2. Vehicles and Equipment	10.9	22.4	33.3	0.1	0.3	0.4	1%
3. Consulting Services	317.7	706.1	1,023.8	4.0	8.8	12.8	25%
4. Training Workshops	3.0	113.4	116.4	0.0	1.4	1.4	3%
5. Land Acquisition	0.0	0.0	0.0	0.0	0.0	0.0	0%
Subtotal (A)	670.1	2,928.7	3,598.8	8.3	36.6	44.9	88%
B. Recurrent Costs							
1. Scheme Operations and Maintenance	29.7	280.7	310.4	0.4	3.5	3.9	8%
2. Staff and Office Expenses	1.0	156.1	157.1	0.0	2.0	2.0	4%
3. Vehicle Operation and Maintenance	1.4	13.0	14.4	0.0	0.2	0.2	0%
Subtotal (B)	32.1	449.7	481.8	0.0	5.6	5.6	11%
Total Base Cost	702.1	3,378.6	4,080.6	8.8	42.2	51.0	100%
C. Contingencies							
1. Physical	28.8	143.6	172.4	0.4	1.8	2.2	4%
2. Price	135.6	714.0	849.6	0.5	2.5	3.0	6%
Subtotal (C)	164.4	857.5	1,021.9	0.9	4.3	5.2	10%
D. Financing Charges							
1. Interest During Implementation	157.7	0.0	157.7	1.8	0.0	1.8	4%
2. Commitment Charge	0.0	0.0	0.0	0.0	0.0	0.0	0%
Subtotal (D)	157.7	0.0	157.7	1.8	0.0	1.8	4%
Total Project Cost (A+B+C+D)	1,024.2	4,236.1	5,260.2	11.4	46.5	57.9	114%

Note: Cost estimates at time of approval of Loan 3135-BAN

Table 8: Cost Estimates by Expenditure Category – Additional Financing

(\$ million)				
Item	Local Currency	Foreign Currency	Total	% of Total Base Cost
A. Base Costs				
1 Civil Works	10.35	0.00	10.35	83.0%
2 Civil Works - Electrification	1.36	0.00	1.36	10.9%
3 Goods, Training	0.00	0.00	0.00	0.0%
4 Consulting Services	0.76	0.00	0.76	6.1%
Subtotal A	12.46	0.00	12.46	100.0%
B. Contingencies				
1 Physical	0.53	0.00	0.53	4.2%
2 Price	1.41	0.00	1.41	11.3%
Subtotal B	1.94	0.00	1.94	15.5%
C. Financing Charges During Implementation				
	0.00	0.23	0.23	1.8%
Subtotal C	0.00	0.23	0.23	1.8%
Total Project Cost (A+B+C)	14.40	0.23	14.63	117.4%

Note: Numbers may not sum precisely due to rounding.

Source: Asian Development Bank estimates.

D. Allocation and Withdrawal of Loan Proceeds**Table 9: Allocation of Loan Proceeds (Loan 3135-BAN)**

No.	Item	Amount Allocated (SDR million)		Basis for Withdrawal from the Loan Account
		Category	Subcategory	
1	Civil Works	17,448,000		
1A	Electrification		1,902,000	100% of total expenditure claimed ^a
1B	Other Works		15,546,000	90% of total expenditure claimed
2	Vehicles and Equipment	109,000		100% of total expenditure claimed ^a
3	Consulting Services	7,465,000		100% of total expenditure claimed ^a
4	Training, Workshops and Extension	810,000		100% of total expenditure claimed ^a
5	Interest Charge	1,156,000		100% of total amount due
6	Unallocated	2,563,000		
Total		29,551,000		

^a Exclusive of taxes and duties imposed in the territory of the Borrower.

Table 10: Allocation of Loan Proceeds – Additional Financing (Loan XXXX-BAN)

Number	Item	Total Amount Allocated for Financing (\$)		Basis for Withdrawal from the Grant Account
1	Civil works packages – Other Works ^a	9,311,560		90% of total expenditure claimed.
2	Other investment costs – Electrification, consulting services, goods, training ^a	3,961,730		100% of total expenditure claimed. ^b
3	Financing Charges	226,710		100% of total amount due.
Total		13,500,000		

^a Includes contingencies.

^b Exclusive of taxes and duties imposed in the territory of the Borrower.

E. Detailed Cost Estimates by Financier

Table 11: Cost Estimates by Financier - Ongoing Project
(\$ million)

	ADB		IMO		Farmers		Direct Cost	Government				Total Cost
	Amount	% Cost Category	Amount	% Cost Category	Amount	% Cost Category	Amount	BWDB Amount	Taxes	Total Amount	% Cost Category	
A. Investment Costs												
1. Civil Works	27.2	89.6	0.0	0.0	0.0	0.0	0.2	0.0	3.0	3.2	10.4	30.3
a. Electrification	3.0	87.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	13.0	3.4
b. Other Works	24.2	89.9	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.7	10.1	26.9
2. Vehicles	0.2	39.7	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	59.5	0.4
3. Consulting Services	11.6	90.7	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	9.2	12.8
4. Training, Workshops, Extension	1.3	86.7	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	13.3	1.5
Subtotal (A)	40.2	89.3	0.0	0.0	0.0	0.0	0.2	0.0	4.6	4.8	10.7	44.9
B. Recurrent Costs												
1. Scheme Operations and Maintenance	0.0	0.0	3.7	96.2	0.1	3.8	0.0	0.0	0.0	0.0	0.0	3.9
2. Staff and Office Expenses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.2	2.0	100.0	2.0
3. Vehicle Operation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	2.0	100.0	0.2
Subtotal (B)	0.0	0.0	3.7	62.1	0.1	2.5	0.0	1.9	0.2	2.1	35.6	6.0
Total Base Cost	40.2	78.8	3.7	7.3	0.1	0.3	0.2	1.9	4.8	6.9	13.6	51.0
C. Contingencies	4.0	78.1	0.4	8.4	0.0	0.0	0.1	0.2	0.4	0.7	13.1	5.2
D. Financing Charges During Implementation	1.8	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8
Total Project Cost (A+B+C+D)	46.0	79.4	4.2	7.2	0.2	0.3	0.3	2.1	5.3	7.6	13.1	57.9

ADB = Asian Development Bank, BWDB = Bangladesh Water Development Board, IMO = irrigation management operator.

Note: Cost estimates at time of approval of Loan 3135-BAN. Numbers may not sum precisely due to rounding.

Source: ADB estimates.

Table 12: Cost Estimates by Financier - Additional Financing
(\$ million)

Item	ADB		Government		Total	
	Amount	%	Amount	%	Amount	Taxes and Duties
A. Base Costs						
1 Civil Works – Others	9.31	90	1.03	10	10.35	1.03
2 Civil Works – Electrification	1.27	93	0.10	7	1.36	0.10
3 Goods, training	00.0	0	0.00	0	0.00	0.00
4 Consulting Services	0.76	100	0.00	0	0.76	0.00
Subtotal A	11.34	91	1.13	9	12.46	1.13
B. Contingencies						
1 Physical	0.53	100	0.00	0	.53	0.00
2 Price	1.41	100	0.00	0	1.41	0.00
Subtotal B	1.94	100	0.00	0	1.94	0.00
C. Financing Charges During Implementation						
	0.23	100	0.00	0	0.23	0.00
Total Project Cost (A+B+C)	13.50	92	1.13	8	14.63	1.13

Note: Numbers may not sum precisely due to rounding.

Source: Asian Development Bank estimates.

F. Detailed Cost Estimates by Outputs/Components

Table 13: Cost Estimates by Outputs - Ongoing Project
(\$ million)

	1. Performance-based irrigation management		2. Rehabilitated and modernized irrigation schemes		3. Project management		Total
	Amount	%	Amount	%	Amount	%	
A. Investment Costs							
1. Civil Works	0.0	0.0	30.3	100.0	0.0	0.0	30.3
2. Vehicles	0.0	0.0	0.0	0.0	0.4	100.0	0.4
3. Consulting Services	6.0	47.0	0.0	0.0	6.8	53.0	12.8
4. Training, Workshops, Extension	1.2	85.7	0.0	0.0	0.2	15.0	1.4
Subtotal (a)	7.2	16.0	30.3	67.5	7.4	16.5	44.9
B. Recurrent Costs							
1. Scheme Operations and Maintenance	0.0	0.0	3.7	100.0		0.0	3.7
2. Staff and Office Expenses	0.4	22.0	0.0	0.0	1.5	75.0	2.0
3. Vehicle Operation	0.0	0.0	0.0	0.0	0.2	100.0	0.2
Subtotal (B)	0.4	7.5	3.7	62.7	1.7	28.8	5.9
Total Base Cost	7.7	15.2	34.0	66.9	9.1	17.9	50.8
C. Contingencies							
1. Physical	0.7	13.7	3.6	70.6	0.8	15.7	5.1
2. Price	0.0	0.0	0.1	50.0	0.0	0.0	0.2
Subtotal (C)	0.8	15.1	3.7	69.8	0.8	15.1	5.3
D. Financing Charges							
1. Interest During Implementation	0.3	16.7	1.2	66.7	0.3	16.7	1.8
2. Commitment Charge	0.0		0.0		0.0		0.0
Subtotal (D)	0.3	16.7	1.2	66.7	0.3	16.7	1.8
Total Project Cost (A+B+C+D)	8.7	15.0	39.0	67.3	10.2	17.7	57.9

Note: Cost estimates at time of approval of Loan 3135-BAN. Figures may not add up due to rounding.

Source Asian Development Bank estimates.

Table 14: Estimated Expenditures by Outputs - Additional Financing
(\$ million)

Item	Total	1. Performance-based irrigation management	2. Rehabilitated and modernized irrigation schemes	3. Project management
A. Base Costs				
1 Civil Works – Others	10.35	0.00	10.35	0.00
2 Civil Works – Electrification	1.36	0.00	1.36	0.00
3 Goods, training	0.0	0.00	0.00	0.00
4 Consulting Services	0.76	0.76	0.00	0.00
Subtotal A	12.46	0.76	11.71	0.00
B. Contingencies				
1 Physical	0.53	0.00	0.53	0.00
2 Price	1.41	0.00	1.41	0.00
Subtotal B	1.94	0.00	1.94	0.00
C. Financing Charges During Implementation	0.23	0.00	0.00	0.23
Subtotal C	0.23	0.00	0.00	0.23
Total (A+B+C)	14.63	0.76	13.65	0.23

Notes:

(i) Numbers may not sum precisely due to rounding.

(ii) Expenditures is inclusive of climate change adaptation equivalent to \$4 million, to be financed by the Asian Development Bank in full.

Source: Asian Development Bank estimates.

G. Detailed Costs Estimates by Year

Table 15: Estimated Expenditures by Year - Ongoing Project
(\$ million)

Item	Total Cost	(\$ million)				
		2014	2015	2016	2017	2018
A. Investment Costs						
1 Civil Works	30.3	0.9	4.2	8.3	10.4	6.4
2 Vehicles and Equipment (PMU)	0.4	0.4	0.0	0.0	0.0	0.0
3 Consulting Services (including PDMC and IMO)	12.8	3.5	3.9	2.2	1.6	1.6
4 Training, Workshops, Extension	1.5	0.1	0.3	0.4	0.4	0.3
Subtotal (A)	45.0	5.0	8.4	10.9	12.4	8.3
B. Recurrent Costs						
1 Scheme Operation and Maintenance	3.9	0.0	0.5	0.8	1.1	1.4
2 Staff and Office Expenses (PMU)	2.0	0.3	0.4	0.4	0.4	0.4
3 Vehicle Operation and Maintenance (PMU)	0.2	0.0	0.0	0.0	0.0	0.0
Subtotal (B)	6.0	0.4	1.0	1.2	1.6	1.8
Total Base Cost	51.0	5.4	9.4	12.2	13.9	10.1
C. Contingencies	5.1	0.3	0.7	1.1	1.6	1.4
D. Financing Charges During Implementation	1.8	0.0	0.1	0.3	0.5	0.8
Total Project Cost (A+B+C+D)	57.9	5.7	10.3	13.6	16.0	12.3
% Total Project Cost	100.0	9.8	17.8	23.5	27.7	21.2

IMO = irrigation management operator; PDMC = Project Design and Management Consultants; PMU = program management unit.

Note: Cost estimates at time of approval of Loan 3135-BAN. Figures may not add up due to rounding.

Table 16: Estimated Expenditures by Year - Additional Financing(\$ million)

Item	Total	2021	2022	2023
A. Base Costs				
1 Civil Works – Others	10.35	0.00	7.24	3.10
2 Civil Works – Electrification	1.36	0.00	0.95	0.41
3 Goods, training	0.00	0.00	0.00	0.00
4 Consulting Services	0.76	0.00	0.53	0.23
Subtotal A	12.46	0.00	8.72	3.74
B. Contingencies				
1 Physical	0.53	0.00	0.37	0.16
2 Price	1.41	0.00	0.99	0.42
Subtotal B	1.94	0.00	1.36	0.58
C. Interest charges during implementation	0.23	0.00	0.07	0.16
Subtotal C	0.23	0.00	0.07	0.16
Total Project Cost (A+B+C)	14.63	0.00	10.15	4.48

Note: Numbers may not sum precisely due to rounding.

Source: Asian Development Bank estimates.

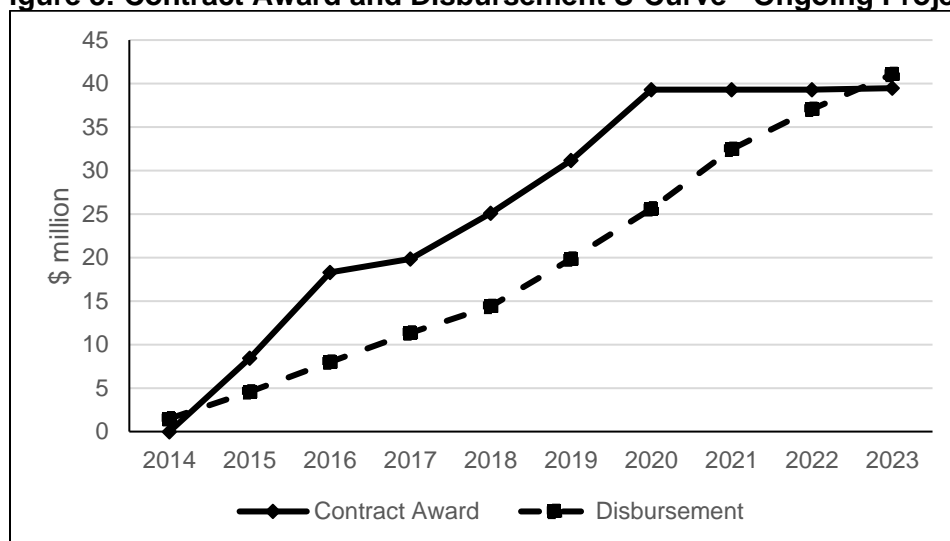
H. Contract Award and Disbursement S Curve

Table 17: Contract Awards and Disbursements – Ongoing Loan
(\$ million)

	Contract Awards ^a					Disbursements				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	1.50
2015	5.39	0.00	0.00	3.07	8.46	0.00	0.01	0.83	2.23	3.08
2016	7.82	0.08	1.89	0.05	9.84	0.93	1.11	0.69	0.70	3.42
2017	0.24	1.22	0.00	0.08	1.54	0.15	1.37	1.33	0.51	3.35
2018	0.00	0.00	0.00	5.26	5.26	0.61	1.00	1.19	0.25	3.05
2019	0.00	0.00	0.00	6.09	6.09	1.08	1.66	2.54	0.18	5.46
2020	3.87	4.23	0.00	0.00	8.10	1.47	1.47	1.61	1.22	5.77
2021	0.00	0.00	0.00	0.00	0.00	1.33	2.09	2.09	1.33	6.84
2022	0.00	0.00	0.00	0.00	0.00	0.57	1.84	1.14	1.05	4.60
2023	0.00	0.00	0.00	0.18	0.18	1.00	1.00	1.00	1.00	4.00
	Total Contract Awards				39.47	Total Disbursements				41.07

^a Excludes financing charges.

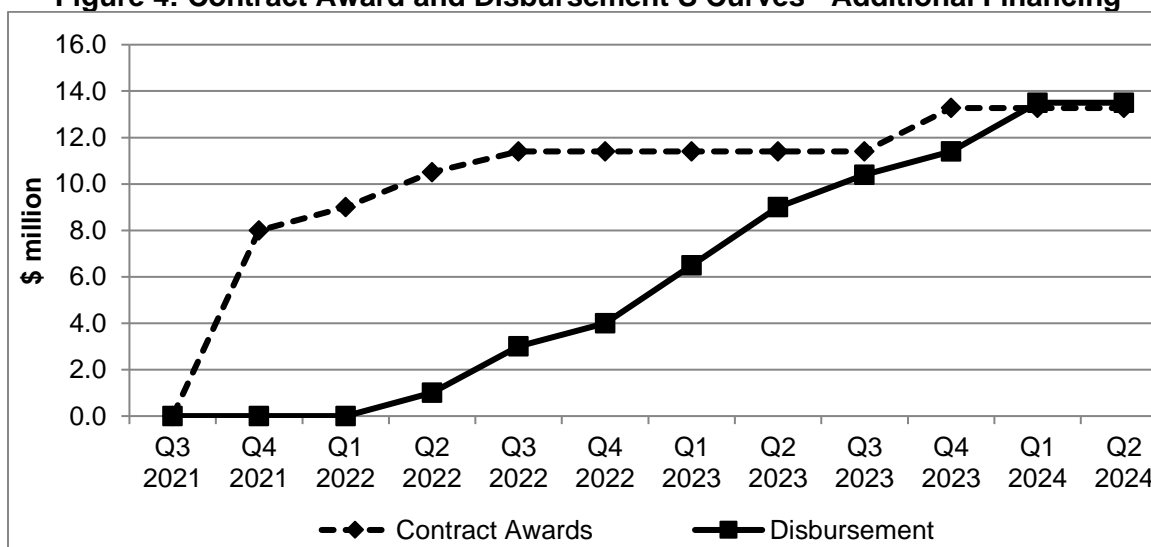
Source: Asian Development Bank estimates.

Figure 3: Contract Award and Disbursement S-Curve - Ongoing Project**Table 18: Contract Awards and Disbursements - Additional Financing**
(\$ million)

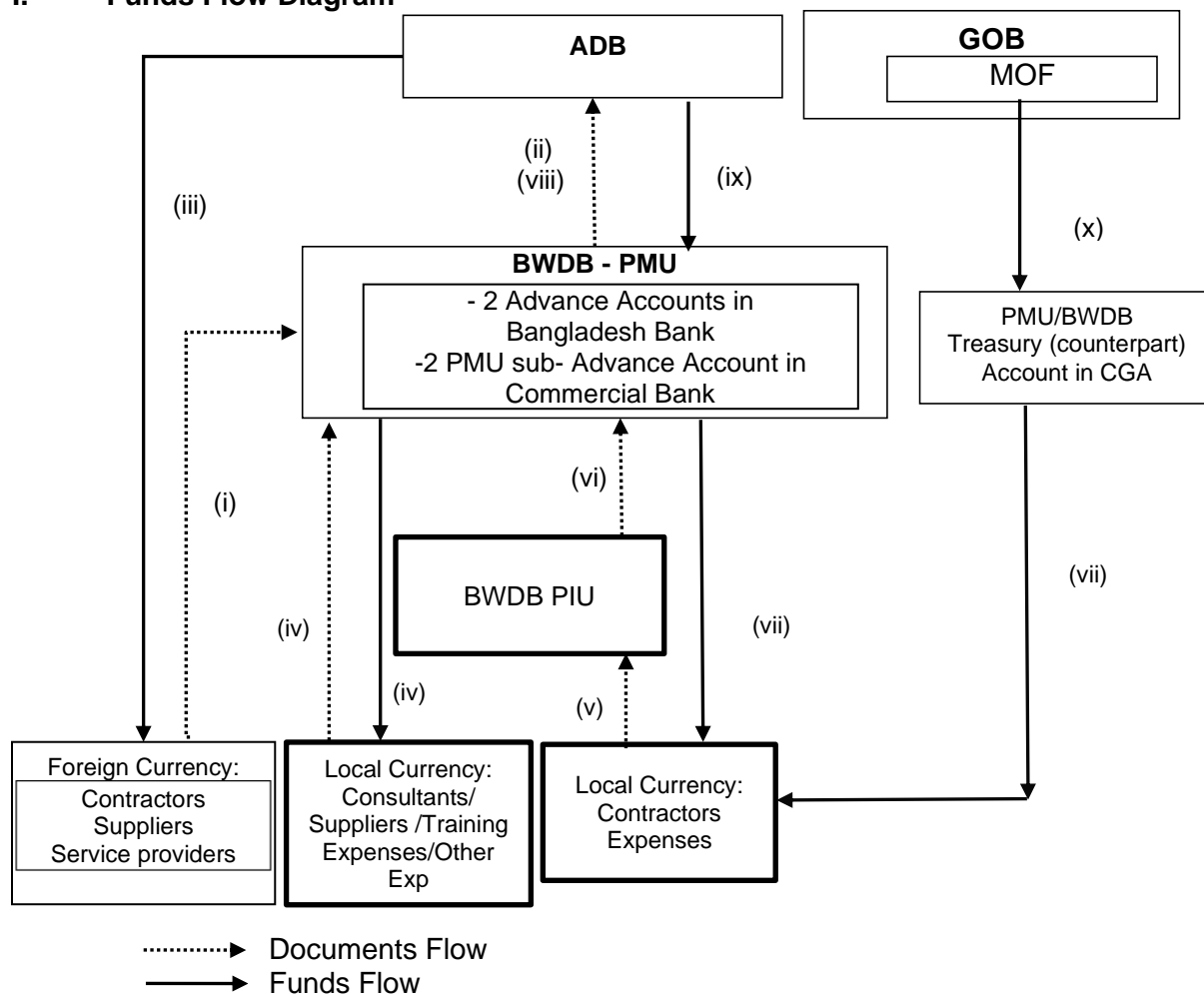
Year	Contract Awards ^a					Disbursement				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2021	0.00	0.00	0.00	8.00	8.00	0.00	0.00	0.00	0.00	0.00
2022	1.00	1.50	0.90	0.00	3.40	0.00	1.00	2.00	1.00	4.00
2023	0.00	0.00	0.00	1.87	1.87	1.50	1.50	1.40	1.00	5.40
2024	-	-	-	-	13.27	2.00	2.10	-	-	4.10
Total					13.27					13.50

^a Excludes financing charges.

Source: Asian Development Bank estimates.

Figure 4: Contract Award and Disbursement S Curves - Additional Financing

I. Funds Flow Diagram



ADB=Asian Development Bank, BWDB= Bangladesh Water Development Board, GOB= Government of Bangladesh, CGA = Controller General of Accounts, MOF =Ministry of finance, MOP=Memorandum of Payment, PMU = project management unit, PIU = Project Implementation Unit

Notes on funds flow:

For Direct Payment to contractors, suppliers, or service providers in Foreign Currency:

- (i) Contractor/Supplier/Consultants submits claims to PMU;
- (ii) PMU sends request to ADB for direct payments together with consultants' invoices and supporting documentation as necessary;
- (iii) ADB makes direct payment to consultant.

For Other Payments and Expenditures under Local Currency & Counterpart Fund payments

- (i) Service providers/suppliers/ submits claims to PMU for payments and PMU make the payment;
- (ii) Contractors submits claims to the PIU for payments;
- (iii) The PIU sends Memorandum of Payment (MOP) to PMU together with supporting documentation as necessary. All documents (or copy of such documents) to support expenditures claimed from ADB under Statement of Expenditure (SOE) are to be filed in the PMU to support ADB's SOE reviews and annual project audits;
- (iv) Based on the received documentation, PMU makes payments to Contractors in Local Currency. The payments are made from the ADB sub-advance account and from the government counterpart account in accordance with the applicable financing percentage;
- (v) PMU consolidates statement of expenditures and request ADB for liquidation/replenishment;
- (vi) ADB makes replenishment to Advance Account;
- (vii) Release of counterpart fund on a quarterly basis based on PMU/BWDB request to MOF through MOWR. MOWR will review the request and submit to MOF and funds are released to counterpart Treasury Account in CGA.

V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

32. The financial management assessment (FMA) was conducted in June-November 2020, in accordance with ADB's Guidelines.¹⁵ The purpose of the FMA is to ensure that adequate financial management arrangements are in place for the project. The FMA considered the financial management capacity of the BWDB including funds-flow arrangements, governance, staffing, budgeting, accounting and financial reporting systems, internal control procedures, financial information systems, and internal and external auditing arrangements. In addition, the FMA reviewed the financial management performance of the ongoing project.

33. The FMA found that BWDB has adequate financial management capacity to: (i) record the required financial transactions, (ii) provide reliable annual financial statements and audit reports in a timely manner, (iii) safeguard the financial assets and (iv) manage the advance fund and the statement of expenditure (SOE) procedures. As part of the ongoing project, all audited project financial statements (APFS) have been unqualified and submitted to ADB in a timely manner. However, the assessed pre-mitigation financial management risk is *substantial* mainly because of the following: (i) BWDB's internal audit function may not have the capacity to audit the project regularly, (ii) there is scope for improving project level financial reporting, and (iii) receipts and payments under the ABD financing are captured using manual accounting systems.

34. These risks will be mitigated by the following: (i) providing continuous training in ADB's financial reporting and audit requirements, (ii) requiring more comprehensive financial information to be submitted as part of quarterly progress reports, (iii) including detailed instructions and reporting templates in the PAM, and iv) adopting an accounting software at the PMU level to record receipts and payments under ADB financing. Moreover, as per the established practice, BWDB, through its PMU, will maintain separate books of account for the project in accordance with accounting standards acceptable to ADB and the project financial statement will be audited annually by an independent auditor acceptable to ADB in accordance with International Standards on Auditing. The detailed financial management risks and mitigations measures are provided in Table 18.

Table 19: Financial Management, Internal Control, and Risk Assessment and Risk Management Plan

Risk	Risk Assessment	Risk Description	Mitigation Measures or Action Plans
<i>Inherent Risk</i>			
1. Country-specific Risks	S	Partly weak PFM systems and financial management capacity.	Not applicable for this project
2. Entity-specific Risks	M	BWDB has extensive experience in implementing ADB and other externally financed projects. However, there is scope for improving the FM arrangements in place.	Specific mitigation actions listed below.
3. Project-specific Risks	M	No Particular Project Specific risks foreseen	Not applicable for this project

¹⁵ ADB. 2015. *Technical Guidance Note -Financial Management Assessment*. Manila

Risk	Risk Assessment	Risk Description	Mitigation Measures or Action Plans
Overall Inherent Risk	S		
Control Risk			
1. Implementing Entity	L	The PMU has been established under the ongoing project and is adequately staffed.	Not Applicable
2. Fund Flow	M	BWDB and the PMU has experience with ADB's disbursement procedures. However, delays in the release of government counterpart funds may delay implementation.	<p>Firm commitment from the government to be obtained as part of the legal agreement that counterpart funds will be released in a timely fashion.</p> <p>Direct Payment mechanism is to be used for major foreign currency payments for contractors and suppliers for ADB share.</p> <p>SOE threshold set at \$100,000 per individual payment.</p> <p>At least Quarterly reconciliations of advance account, sub advance account and sub accounts to be conducted.</p>
3. Staffing	M	The PMU has adequate accounts staff in place but the PIU still has one assistant accountant position which is vacant. However, training needs to be provided in financial reporting including QPRs.	Fill the vacant assistant accountant position. Continuous training to be provided in ADB's financial reporting and audit requirements as well as disbursement procedures and systems.
4. Accounting Policies and Procedures	M	Existing GOB policies and procedures are followed by BWDB. There is scope for improving project level systems and FM procedures to ensure full compliance with ADB procedures.	In order to ensure full compliance with ADB's requirements at all levels the Project Administration Manual is to include detailed FM instructions and templates.
5. Internal Audit	S	There is an Internal Audit function in BWDB. However, the internal audit is only conducted annually, and it may not include the ADB assisted projects in its audit plan.	The PMU is to request the BWDB internal audit function to include the project in its audit plan on an annual basis subject to available resources. The internal audit report is to be shared with the PMU for follow-up.

Risk	Risk Assessment	Risk Description	Mitigation Measures or Action Plans
6. External Audit	M	<p><u>Project level</u> OCAG/FAPAD may not issue a separate opinion on the use of the ADB financing, which is required by ADB.</p> <p>The scope of the audit may not include direct payments made by ADB.</p>	<p>- The project will liaise with OCAG/FAPAD to ensure the following: (i) proposed project is part of its annual audit plan, (ii) direct payments are included in the audit scope and (iii) that ADB's audit requirements are strictly followed.</p> <p>- The audit observations are to be resolved in a timely manner. The status of audit observations to be included in the quarterly progress reports.</p>
7. Reporting and Monitoring	S	<p>At the project level, there is scope for expanding the FM related information included in the quarterly financial reports and the improving the quality of the annual project financial statements.</p>	<p>Comprehensive Financial information to be included in the QPRs in a format agreed with ADB within 45 days after the end of each quarter.</p> <p>The PFS to be improved by including the following: (i) a statement of budgeted vs actual expenditures, (ii) a WA wise reconciliation and (iii) comprehensive disclosure of used accounting policies, and financial reporting framework in the notes.</p>
8. Information Systems	S	<p>Accounting systems are currently only capturing payments done through the government treasury system while direct payments and payments from the advance account will have to be recorded manually. Moreover, project financial reports are produced manually.</p>	<p>Explore and implement IT solutions to fully computerize the project accounts and automate financial reporting to the extent possible through modifying the existing systems or through a standalone software.</p> <p>Use of ADB client portal for disbursement to submit and track withdrawal applications to ensure timely availability of funds.</p> <p>Use of LFIS to reconcile ADB disbursement records with project records on a quarterly basis to ensure all withdrawal applications have been correctly reflected in the PFS</p>
Overall Control Risk	S		
Overall FM risk	S		

L = low, M = medium, S = Substantial

ADB = Asian Development Bank, FAPAD = Foreign Aided Projects Audit Directorate, FM = financial management, ISA = International Standards on Auditing, LFIS = Loan Financial Information Services, PFM = public financial management, PFS = Project Financial Statements, PMU = project management unit, QPR = Quarterly Progress Report, SOE = Statement of Expenditure, TOR = Terms of Reference, WA = withdrawal and allocation.

Source: Asian Development Bank.

35. To mitigate the identified financial management risks, BWDB has agreed to implement a financial management action plan. The agreed financial management action plan is provided in the Table 20.

Table 20: Financial Management Action Plan

Area	Agreed Action	Responsibility	Target date
Staffing	Fill the vacant assistant accountant position in the PIU.	BWDB	By Loan Effectiveness.
FM capacity building	Undertake training in ADB's FM requirements and disbursement procedures and systems (LFIS, CPD)	BWDB & ADB	Continuous
Internal audit	Request the BWDB internal audit function to include the project in its audit plan, subject to available resources. Implement internal audit recommendations in a timely fashion.	BWDB/PMU	Annually
External audit - Project level	<p>-Ensure the project is included in the audit plan of the OCAG/FAPAD and that the audit scope includes also third-party payments (direct payments) made by ADB and other financiers if applicable.</p> <p>-Cause consolidated project financial statements to be audited separately by OCAG/FAPAD in accordance with ADB's audit requirements and submit the APFS and management letter to ABD.</p> <p>-Address audit observations in a timely manner.</p>	BWDB/PMU	<p>-Within 2 months after loan effectiveness.</p> <p>-Annually throughout the project implementation.</p> <p>-Continuous throughout the project.</p>
Financial reporting	<p>-Include financial information in the quarterly progress reports in a format agreed with ADB</p> <p>-Prepare PFS template in a format agreed with ADB (including statement of budget vs actual, WA-wise reconciliation and comprehensive notes disclosures)</p>	BWDB/PMU	<p>Within 45 days after each quarter.</p> <p>Within 2 months after loan effectiveness.</p>
Information systems	Use of ADB disbursement systems (CPD & LFIS) to reconcile project accounts and ADB disbursement records on a quarterly basis. Detailed reconciliation by Withdrawal application to be included in the QPRs and the APFS submitted to ADB.	BWDB/PMU	Quarterly from loan first disbursement throughout project implementation.
Information systems	Adopt a standalone software to record receipts and payments under the ADB financing and automate the financial reporting.	BWDB/PMU	September 2021
Record keeping	All supporting documents (or copy of such documents) to support expenditures claimed from ADB under Statement of Expenditure (SOE) are to be filed in the PMU to support ADB's SOE reviews and annual project audits.	BWDB/PMU	Continuous

ADB = Asian Development Bank, APFS = audited project financial statements, CPD = Client Portal for Disbursements, FAPAD = Foreign-Aided Project Audit Directorate, FM = financial management, ISA = International Standards on Auditing, LFIS = Loan Financial Information Services, OCAG = Office of the Comptroller and Auditor General, PFS = Project Financial Statements, PMSC = project management and supervision consultant, PMO = project management unit, QPR = Quarterly Progress Report, TOR = Terms of Reference, WA = withdrawal and allocation.

Source: Asian Development Bank.

B. Disbursement arrangements

1. Disbursement Arrangements for ADB Funds

36. The ADB original loan and additional loan proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2017, as amended from time to time),¹⁶ and detailed arrangements agreed upon between the government and ADB. The PMU will be responsible for (i) collecting and retaining supporting documents, and (ii) preparing and sending withdrawal applications to ADB. Online training for project staff on disbursement policies and procedures is available. PMU staff are encouraged to avail of this training to help ensure efficient disbursement and fiduciary control.

37. ADB's disbursement procedures including direct payment, reimbursement, commitment and/or advance fund procedure) may be used for withdrawal of project funds:

- (i) Direct payment procedure will be used for foreign currency payments to contractors, suppliers and consultants;
- (ii) Reimbursement will be used for any eligible payments pre-financed by the government, including all expenditures financed under retroactive financing;
- (iii) Advance fund (liquidation or replenishment) procedures will be mainly utilized for payments to contractors, suppliers, or service providers when government pre-financing is not feasible; and
- (iv) Under the commitment procedure, ADB, at the borrower's request, provides an irrevocable undertaking to reimburse a commercial bank for payments made or to be made to a supplier against a letter of credit financed from the loan account.

38. **Advance fund procedure.** Two separate advance accounts are to be established and maintained by BWDB with the Bangladesh Bank for the ADB original loan and the ADB additional financing loan. The currency of the advance accounts is the United States dollar. In addition, two sub-accounts, one for the ADB original loan and one for the ADB additional financing loan, in Bangladesh Taka will be established in a commercial bank and maintained by BWDB. The advance accounts and the sub-accounts are to be used exclusively for ADB's share of eligible expenditures. BWDB is accountable and responsible for proper use of advances to the advance accounts including advances to any sub-accounts.

39. 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 account for the forthcoming 6 months. BWDB may request for initial and additional advances to the advance account based on an estimate of expenditure sheet¹⁷ setting out the estimated expenditures to be financed through the accounts for the forthcoming 6 months. Supporting documents should be submitted to ADB or retained by BWDB in accordance with ADB's *Loan Disbursement Handbook* (2017, as amended from time to time) when liquidating or replenishing the advance account.

40. **Statement of expenditure (SOE) procedure.**¹⁸ The SOE procedure may be used for reimbursement of eligible expenditures or liquidation of advances to the advance account. The

¹⁶ ADB. 2017. [Loan Disbursement Handbook](#). Manila.

¹⁷ Estimate of expenditure sheet is available in Appendix 8A of ADB's *Loan Disbursement Handbook* (2017, as amended from time to time).

¹⁸ SOE forms are available in Appendix 7B and 7D of ADB's *Loan Disbursement Handbook 2017* (2017, as amended from time to time).

ceiling of the SOE procedure is equivalent to \$100,000 per individual payment. Supporting documents and records for the expenditures claimed under 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 for individual payments in excess of the SOE ceiling should be supported by full documentation when submitting the withdrawal application to ADB.

41. Before the submission of the first withdrawal application, the borrower should submit to ADB sufficient evidence of the authority of the persons who will sign the withdrawal applications on behalf of the borrower, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is stipulated in the ADB's *Loan Disbursement Handbook* (2017, as amended from time to time). Individual payments should be paid (i) by BWDB and subsequently claimed to ADB through reimbursement, or (ii) through the advance fund procedure, unless otherwise accepted by ADB. The borrower should ensure sufficient category and contract balances before requesting disbursements. Use of ADB's Client Portal for Disbursements (CPD) system¹⁹ is mandatory for submission of withdrawal applications to ADB.

2. Disbursement Arrangements for Counterpart Funds

42. The government counterpart funds will be sufficiently allocated in the budget annually. BWDB will be responsible for preparing the budget and requesting budgetary allocations for counterpart funds to the Ministry of Finance. The government will provide counterpart fund as well as ADB's reimbursable fund to the project as per financing and disbursement percentage. All disbursements under government financing will be carried out in accordance with regulations of Government of Bangladesh. BWDB shall open and maintain the separate account for government's counterpart funds.

43. For the disbursement of fund from the government, the MOWR will send the fund release proposal received from BWDB to the Finance Division of MOF for their concurrence before fund is ultimately deposited into a Central Account of the BWDB. For the project, the regional accounting center office will be established in the PMU and all payment issued from the PMU RAC regional accounting center office.

44. To ensure sufficient knowledge in ADB's financial management requirements, including procedures and related systems, BWDB will ensure that each PMU financial and accounts staff assigned to the project undertake the following actions within the first three months working with the project:

- (i) Become aware of the ADB and national anticorruption policy and whistle blowing mechanisms;
- (ii) Master loan/grant agreement including the loan covenants and the relevant sections of the Project Administration Manual, as well as the ADB loan disbursement handbook; and
- (iii) Obtain user/reader rights (as required) to ADBs systems including: CPD and the Loans and Grants information Service (LFIS).

¹⁹ The CPD facilitates online submission of withdrawal applications 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>.

45. In addition, the PMU should on a yearly basis liaise with ADB to take advantage of other financial management resources and training events organized by ADB, especially in the first 2 years of project implementation.²⁰

C. Accounting

46. BWDB through its PMU will maintain, or cause to be maintained, separate books and records by funding source (ADB original loan, ADB additional loan, the government, etc) for all expenditures incurred on the project in accordance with International Public Sector Accounting Standards– cash basis of accounting or national equivalents prescribed by the Government's accounting laws and regulations. Consolidated project financial statements (of the original loan and additional financing) will be prepared in accordance with government's accounting laws and regulations which are consistent with international accounting principles and practices: Accordingly, the consolidated project financial statement will include at least the following:

- (i) Statement of cash receipts and payments; showing the funds received by each funding source (ADB original loan, ADB Additional loan, counterpart funds, etc.) and expenditures incurred by expenditure category for the current year, prior year and cumulative from inception to date;
- (ii) Statement of budget vs actual expenditures; any significant variance must be sufficiently explained in the notes;
- (iii) Statement of advance account reconciliation for each advance account and sub-advance account;
- (iv) Statement of Disbursement Claimed Under SOE Procedure;
- (v) Statement of disbursement with a breakdown for each funding source; and
- (vi) Detailed notes to the financial statements including significant accounting policies.

47. The notes of the financial statements must provide a detailed breakdown of at least the following:

- (i) Funds received from the government during the current year, previous year and cumulative to date; and
- (ii) A list of Withdrawal applications submitted to - and the amounts paid by ADB as follows: (i) financing source, (ii) WA number, (iii) the amount claimed and currency, (iv) period when expenditures were incurred, (v) date submitted, (vi) disbursement method, (vii) the amount disbursed by ADB and (viii) the exchange rate as applicable.

48. The expenditure categories and outputs used in the financial reports will be aligned with the structure outlined in the PAM. Indicative format of the project financial statements are included in APPENDIX 5. Moreover, to allow for timely and efficient monitoring, BWDB through its PMU, will ensure that comprehensive financial information is included in the quarterly progress reports to be submitted to ADB within 45 days after the end of the quarter.

49. The summary information will include at least the following:

²⁰ ADB e-learning courses include: ADB Disbursement eLearning course and International Public Sector Accounting Standards (Cash Basis) for ADB Project Financial Reporting.

- (i) Cumulative contract awards financed by the ADB loan, and counterpart funds (commitment of funds to date), and comparison with time-bound projections (targets – for ADB financing compare the actual contract awards with the contract award curve included in the PAM). Any significant variances between planned and actual contract awards are to be explained;
- (ii) Cumulative disbursements from the ADB loan, and counterpart funds (expenditure to date), and comparison with time-bound projections (targets – for the ADB financing compare the actual disbursement with the disbursement projections as per the S curve included in PAM). Any significant variances between planned and actual disbursements are to be explained;
- (iii) Reconciliation of project records and ADB disbursement records (LFIS/GFIS) for the financial year to date and cumulative from project inception to end of the reporting period. Any discrepancies and outline follow-up actions required are to be explained;
- (iv) Variance analysis including budget vs actual expenditures and physical vs financial progress, with significant deviations explained;
- (v) Summary of the status of financial management in the project including: (a) any problems in the existing financial management arrangements and /or flow of funds; and (b) any significant changes occurred during the reporting period (e.g. financial management staff turnover, implementation of new financial systems, emerging financial management-related risks and mitigation actions undertaken, etc.);
- (vi) Summary of the status of the (a) financial management action plan outlined in PAM, (b) recommendations and actions raised by ADB as part of the audited project financial statement (APFS) review (if any), and (c) financial management-related recommendations agreed during ADB review missions and Tripartite project reviews (TPRs), and;
- (vii) Summary of the status of status of past audit observations (resolved/ pending).

50. The following detailed schedules will be attached to the quarterly progress reports as annexes:

- (i) Detailed reconciliation (by withdrawal application) of project records and ADB disbursement records (LFIS) for the fiscal year to date and cumulative;
- (ii) Status of external audit observations (resolved/ pending); and
- (iii) Status of financial management action plan (complied/ongoing).

51. Indicative format of the FM information to be included in the quarterly progress report is included in APPENDIX 6.

52. **Variance analysis.** As part of the variance analysis, BWDB through its PMU will examine the differences between budgeted vs. actual expenditures as well as financial vs. physical progress. The variance analysis will pay particular attention to:

- (i) significant deviations from the budgeted engineer's estimates;
- (ii) Significant deviations between financial and physical progress;
- (iii) Significant delays on (planned vs. reported) physical and/or financial progress, and
- (iv) Inconsistent and/or delayed progress reporting.

53. Any significant variances, delays or deviations etc. shall be promptly followed-up on and explained in the financial reports.

54. **Periodic Reconciliations.** To ensure the correctness and completeness of the project's books of accounts and financial reports, BWDB through its PMU shall conduct:

- (i) Monthly reconciliations of the advance account, its subaccount as well as district subaccounts; and,
- (ii) Quarterly reconciliation of the project book of accounts, and ADB's disbursement data available in Loan Financial Information Services (LFIS) - website.

55. Any discrepancies and/or reconciliation items will be followed up on to ensure these are resolved in a prompt manner and that there are no misstatements in the financial reports. The differences between amounts claimed and the amounts disbursed will be disclosed and explained in the WA register to be included in the financial reports.

D. Auditing and Public Disclosure

56. BWDB will cause the consolidated project financial statements, including the original loan and the additional loan, to be audited in accordance with International Standards on Auditing by an independent auditor acceptable to ADB.²¹ 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 BWDB. BWDB through its PMU will ensure that total amount in APFS will reconcile with amounts disbursed by ADB during the respective fiscal year.

57. 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; and (ii) whether the proceeds of the loan were used only for the purpose of the project. The management letter will include from the second year onwards, a follow-up on previous years audit observations. In case the auditor does not issue a management letter, the auditor must issue a written confirmation that no internal control issues were identified as part of the audit.

58. 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.

59. The government and BWDB 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.²² ADB reserves the right to require a change in the auditor (in a manner

²¹ It is expected that the project financial statement will be audited by Foreign Aided Projects Audit Directorate (FAPAD) under the Comptroller and Auditor General of Bangladesh.

²² 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.

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.

60. Public disclosure of APFS, including the auditor's opinion on the project financial statements, will be guided by ADB's Access to Information Policy 2018.²³ After the review, ADB will disclose APFS 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, additional auditor's opinions, and audited entity financial statements will not be disclosed.

61. A formal request for the project to be included in the Office of the Comptroller and Auditor General (OCAG) and Foreign-Aided Project Audit Directorate (FAPAD) audit schedule should be sent through the ERD to OCAG/FAPAD office. This request is best sent when the loan and project agreements are signed, and the request should include a copy of the loan and project agreements, and any other relevant documents. OCAG/FAPAD would then advise the appropriate field office to include the project in its audit schedule.

62. In addition, to ensure that audited financial statements are submitted on a timely basis, BWDB through the PMU should submit its project financial statements for audit to OCAG/FAPAD within 3 months from the close of the financial year. PMU shall be responsible for the Project financial statements. By 1st of October of each year, OCAG/FAPAD should receive the unaudited financial statements. It will then take 3 months to complete the audit and issue an opinion no later than 6 months from the end of the financial year. A statement of audit needs is provided in Appendix 4.

E. Loan Closure

63. In order ensure a timely closure of the ADB loan accounts and to comply with ADBs requirements, BWDB will through its PMU ensure that the following measures are undertaken:

- (i) All ADB financed expenditures are incurred before or by the loan closing date;
- (ii) All withdrawal applications including liquidations of the advance account are submitted to ADB preferably by the loan closing date but in no case later the end of the winding up period; that is, within four months after the end of the loan closing date;
- (iii) Any unutilized advances are refunded to ADB within two months after the end of the winding up period;
- (iv) The final project financial statements (PFS) are prepared in a timely manner. The final PFS is to include a reconciliation of the project account and the ADB disbursement records for the fiscal year and cumulatively from inception. Any differences must be disclosed and explained;
- (v) All past external audit observations have been duly addressed;
- (vi) The final project financial statements are audited by independent auditors as agreed with ADB and the Audited Project Financial Statements (APFS) and the management letter are submitted to ADB as soon as possible after the loan closing

²³ ADB.2018. [Access to Information Policy](#). Manila

- date. The Final APFS must include all expenditures incurred up to the loan closing date as well as up to the final withdrawal application; and
- (vii) All projects financial records are filed in an orderly manner, backed up electronically and stored in a secure location for a for at least 1 year following receipt by ADB of the final audited project financial statements or 2 years after the loan closing date, whichever is later.

VI. PROCUREMENT AND CONSULTING SERVICES

A. Advance Contracting and Retroactive Financing

64. All advance contracting and retroactive financing will be undertaken in conformity with ADB's Procurement Guidelines (February 2013, as amended from time to time) (ADB's Procurement Guidelines) and ADB's Guidelines on the Use of Consultants (2013, as amended from time to time).²⁴ The issuance of invitations to bid under advance contracting and retroactive financing will be subject to ADB approval. The borrower and the BWDB have been advised that approval of advance contracting and retroactive financing does not commit ADB to finance the Project.

65. Except as otherwise agreed with ADB, the expenditures incurred for equipment, civil works, and consulting services will be eligible for retroactive financing, provided that these are incurred before the effectiveness of the related loan agreement, but not earlier than 12 months preceding the signing of the related loan agreement, and as long as they do not exceed an amount of 20% of the individual loan.

66. The additional financing will not use advance contracting and retroactive financing.

B. Procurement of Goods, Works, and Consulting Services

67. A procurement capacity assessment was undertaken by the PPTA procurement experts in mid-2013 for BWDB and concluded that BWDB had already substantial experience with external aided project procurement including with ADB. However recommendations were made to enhance BWDB staff and private sector staff capacity including training on (i) civil works technical specification and consultant TORs preparation, (ii) tender proceedings including development of procurement plan up to evaluation and approval processes, (iii) contract administration and management particularly focusing on contract variations and settlement of claims and disputes, adjudication and arbitration, (iv) private sector skill development on bid submissions, understanding of contract conditions. In addition, recommendations were made to strengthen the existing BWDB procurement unit and ensure it is supported by adequate staff number and regular training budget.

68. All procurement of goods and works will be undertaken in accordance with ADB's Procurement Guidelines.

69. In the ongoing project, procurement packages for civil works were split into nine packages. All the procurement for works packages were ICB.

70. In the additional financing, no procurement is required. The additional financing will extend the existing civil works contracts and the existing consulting services C-IMO.

71. All consultants were recruited according to ADB's Guidelines on the Use of Consultants. There are two consultancy packages under the ongoing Project.

²⁴ ADB. 2015. [Procurement Guidelines](#). Manila; ADB. 2013. [Guidelines on the Use of Consultants by Asian Development Bank and Its Borrowers](#). Manila

C. Procurement Plan

72. The updated procurement plan for the overall project (ongoing loan and additional financing) is in Appendix 2 and has been prepared based on the ADB generic templates.

D. Consultant's Terms of Reference

73. Detailed Terms of Reference for the project's two consultancy packages are in APPENDIX 3. These two consultancy packages have already been awarded.

74. **Project Management, Planning and Design:** A Project Management and Design Consultant (PMDC) is engaged to support the PMU. The PMDC will support the PMU in a range of tasks including:

- (i) Designing and supporting the procurement of the MIP civil works not included in the advance packages.
- (ii) Preparing feasibility studies, designs, and the bid documents for GKIP and TBIP modernization.
- (iii) Support and supervise the Irrigation Management Operator,
- (iv) Monitoring construction and related activities (construction supervision would be by the C-IMO).
- (v) Designing and conducting training related to managing PPP contracts, project management, and other technical areas as required.
- (vi) Preparing a review of the progress of the Muhuri C-IMO and support the preparation of bidding documents for the 2nd stage lease contract MOM for Muhuri.

75. **Muhuri Irrigation Management Operator.** A "construction phase" Irrigation Management Operator (C-IMO) is engaged by MIP; this will be the Muhuri Irrigation Management Operator.

76. The IMO will be located and operate within or near their project areas. The role of the IMO will be to develop and implement MOM of the completed works after completion of modernization and rehabilitation. During the development stage the C-IMO will also implement field level design of the piped irrigation systems and upgrading of electricity as well as being responsible for construction supervision of the investment works. It is envisaged that the IMO would seek to engage some BWDB technical staff with interest and appropriate qualifications and skills to continue to work within the respective systems. For the system modernization stage, which is proposed to have 5-year duration, the C-IMO would be contracted through a management contract by the PMU. During this period, the C- IMO will:

- (i) Develop operation, maintenance, and management systems and procedures that will carry on following completion of physical work,
- (ii) Establish a better understanding of system operating costs and revenue streams as input to the longer-term lease arrangements that follow-on the system modernization stage.
- (iii) Liaise with BWDB and the newly established Implementation Coordination Committee.
- (iv) Undertake participatory design of farmer distribution systems,
- (v) Supervise the contractors engaged for system modernization.
- (vi) Ensure compliance with environmental and social requirements.
- (vii) Conduct demonstrations and other agricultural support activities.
- (viii) Conduct pilots to investigate complementary cost recovery.

VII. SAFEGUARDS

77. **Environment.** An Initial Environment Examination (IEE) was prepared for the ongoing project and includes an Environmental Management Plan which describes mitigation measures to be adopted during design, construction, and operation of MIP. PIU will update the IEE including the Environmental Management Plan (EMP) to include the substation to comply with the Environmental Conservation Act 1995 and ADB SPS 2009 and disclose them on BWDB's website.

78. **Involuntary Resettlement.** The ongoing project has identified some resettlement impacts that have minimal livelihood implications. Any resettlement impacts will be mitigated through resettlement plan preparation and implementation in accordance with the SPS and the agreed resettlement framework for the project. The resettlement plan will be reviewed and disclosed by PMU and ADB. No civil works resulting in involuntary resettlement impacts will commence prior to implementation of the resettlement plan.

79. **Indigenous Peoples.** There are no indigenous peoples within the meaning of ADB SPS in the project areas, as such there are no indigenous peoples impacts foreseen to be addressed during the overall project implementation.

80. **Institutional Arrangements.** A safeguards cell will be established in the PMU. The safeguards cell will be responsible to oversee overall monitoring and verification of environment and resettlement activities of the IMIP. Three counterpart personnel with relevant experience will be assigned to the safeguards cell as the environmental, social safeguard and gender focal which will have responsibility for ensuring compliance of the safeguards requirements including (i) environment, (ii) resettlement and (iii) gender.

81. The MIP PIU Director will assume primary responsibility for the safeguards assessments as well as implementation of RP and EMP for their respective components. Two safeguards focal officers will be assigned to the project team under the PIU Director for environment and social safeguards, respectively. The duties of the safeguards focal officers will include: (i) oversight of construction contractors for monitoring and implementing mitigation measures; (ii) preparing and implementing environment policy guidelines and environmental good practices; (iii) preparation and implementation of resettlement plan; (iv) ensure consultation, grievance redress and other mitigation measures are implemented according to the guideline of Resettlement Framework; (v) liaising with the environmental agencies and seeking their help to solve the environment-related issues of project implementation; (vi) providing awareness training on environmental and social issues related to irrigation modernization under the IMIP; (vii) preparation of environmental monitoring reports once a year for the IEE and (viii) semi-annual social monitoring reports (as required by ADB).

82. In addition, the safeguards focal officers with assistance from the safeguards consultants engaged by the PMDC will: (ii) update the environmental assessment and prepare site-specific EMP based on detailed designs; (iii) ensure the EMP is included in bidding documents and civil works contracts; (iv) provide oversight on environmental management aspects of the project and ensure EMPs are implemented by the contractors; (v) assess social safeguards impacts according to final design and updated documentation, resettlement plan and mitigation measures as required; (vi) facilitate and ensure contractors comply with all government rules and regulations regarding permits as well as any other relevant approvals required for works; (vii) supervise and provide guidance to the contractors to properly carry out implementation occupation health and safety, and COVID-19 health and safety plan; (viii) conduct site visits, review, monitor and

evaluate the effectiveness with which the EMP and RP are implemented, and recommend necessary corrective actions to be taken as necessary; (ix) review and consolidate periodic environmental monitoring reports submit by the contractor, (x) prepare semi-annual environmental Monitoring Report (EMR) and Social Monitoring Report (SMR) and submit to ADB; (xi) ensure timely disclosure of final safeguards assessments in locations and forms accessible to the public; (xii) take corrective actions when necessary to ensure no environmental or social safeguards impacts; (xiii) facilitate in conducting ongoing consultation with the community during implementation of the project; and (xiv) conduct environmental safeguard training program for PIU and BWDB officials, and (xv) establish a grievance redress mechanism and ensure it is operated satisfactorily.

83. The C-IMO will be responsible to monitor and supervise implementation of EMP on works contracts in the irrigation systems managed by the C-IMO. During operations of these schemes the C-IMO will be responsible to implement any activities identified in the EMP.

84. **Consultation and Grievance Redress Mechanism.** Meaningful consultation will be conducted with affected persons, host communities, and other stakeholders in areas with involuntary resettlement impacts. Such consultation is an ongoing process, providing timely disclosure of relevant information in a language understandable to the affected persons, undertaken free of intimidation, responsive and incorporates relevant views of affected persons into decision making. A grievance redress mechanism, which is transparent, understandable, responsive, and readily accessible, will be established to receive and facilitate the resolution of the affected persons concerns and grievances about physical and economic displacement and other project impacts, particularly on vulnerable groups. The grievance redress mechanism should not impede access to the country's judicial and administrative remedies.

85. **Prohibited investment activities:** Pursuant to the SPS, ADB funds may not be applied to the activities described on the ADB Prohibited Investment Activities List set forth at Appendix 5 of the SPS.

VIII. GENDER AND SOCIAL DIMENSIONS

86. The Project has been categorized as a gender mainstreamed project (effective gender mainstreaming). The project components have been designed to ensure involvement and benefits for women as well as reduction of gender inequality. A Gender Action Plan (GAP) as described below has been prepared integrating action areas, targets and indicators for gender equality and women's benefits within the various components of the project. There are quotas for women's participation in consultation and trainings as well as acting as pump operators and water unit vendors in the project areas. Given the ground reality, where the local women in the area strictly observe "*pardah*" which does not allow them to work outside their home especially with men outside the family. Any social interactions with men are even more challenging. Most of the GAP activities such as working as pump operators, water unit vendor and daily laborers require working outside the home with men who are not family members. Especially the pumps are mostly installed in the distant areas from villages/localities and are operated during the night. Thus, despite many consultations and meetings with families and the community, to encourage women's participation in project activities, the current project could not achieve the targets of 30% women's participation in the design of agriculture support services and cost recovery activities, 10% women as pump operators, selection of 20% women as water unit vendors and 5% women's involvement in unskilled works, and at least 30% women's membership in labor contracting society and 30% work allocation for women groups. Therefore, the targets have been reduced to 10% women's participation, 2% women pump operators and 5% women as water unit vendors, respectively. Similarly, labor contracting society work provision and the target of inclusion of 20% poor and socially excluded groups in the labouring works have been dropped from the GAP and the DMF, respectively. A gender consultant was recruited during feasibility studies preparation of GKIP and TBIP and ensured women's active participation in consultation. A focal point on gender and development is deployed in the PMU and one IMO staff engaged to support implementation, monitoring and regular reporting of GAP. All relevant staff will be sensitized on gender and development and GAP implementation to build institutional capacity of BWDB on gender and social development. The PMU will ensure establishing the MIS system with sex-disaggregated data collection, gender-based analysis, and review and reporting on the implementation of the GAP within all reports including the project quarterly progress report (QPR). The GAP implementation, including the challenges encountered during project's implementation, will be evaluated at project completion.

87. A separate Stakeholder Consultation Strategy has been prepared for the project to provide methodology and processes for continued consultations with various stakeholders particularly the poor and vulnerable groups during project implementation. Local communities will be involved in consultations for project planning, implementation and for any safeguard issues with special attention given to include the poor and female headed households. Orientation on STI including HIV and other safety measures will be provided to the contractors and laborers in package training.

88. BWDB will ensure implementation of the GAP and Stakeholder Consultation Strategy and will be supported by the PMU and the PIU team. The deployed staff from PMU assigned as the gender focal will provide support in monitoring and reporting on gender and social aspects in close coordination with the PMU and the PIUs. Adequate budget is allocated to implement these strategies.

89. The project in its broad-based objectives will address gender issues in the following manner:

- (i) Create scope for women's participation in the activities during the project planning, implementation, monitoring and evaluation.
- (ii) Facilitate linkages of rural women beneficiaries with different resources for sustainability of their livelihood.
- (iii) Facilitate social and economic development programs aiming at women as the user groups to increase their access to the infrastructure development activities.
- (iv) Gender friendly working environment with safety and security will be ensured in implementation of all possible activities in the project.
- (v) Human resources ensured for implementation of the GAP by recruiting gender consultant and deploying gender focal point.
- (vi) Awareness among all relevant project staff about the gender and social development and project GAP

90. A GAP as described below has been prepared integrating action areas, targets and indicators for gender equality and women's benefits within the various components of the project.

Gender Action Plan (Revised) – Overall Project ^a

Activities	Targets and Indicator	Responsibility	Time Frame
Output 1: Performance-based irrigation management and agriculture support services established			
1. Self-sustaining IMO established for selected large scale irrigation projects for the general purpose of supervising the work associated with rehabilitating and modernizing the systems	One staff engaged in IMO to support implementation, monitoring and regular reporting of GAP. (baseline 2020: 1)	IMO, PMU, BWDB, Chief Engineer Zonal Office	During selection of IMO
2. Agricultural support services and pilot cost recovery activities through the IMOs will be planned and implemented by the IMO	1. At least 10% women's participation ensured in planning ASCR. (baseline 2020: 0). 2. 300 trained farmers (of whom 20% are women) adopt more productive irrigated agriculture methods. (baseline 2010: 15%). ^b	IMO, PMU, BWDB, Chief Engineer Zonal Office	During project implementation
Output 2: Irrigation system infrastructure rehabilitated and modernized			
3. Implementation of rehabilitation and modernization and investment activities	1. Women (20% of all trainees) trained as pump operators, pre-paid card water unit vendors and on other livelihood skills. (baseline 2020: 20%). ^c 2. The MIP rehabilitated and modernized with construction workers comprising 5% women. (baseline 2020: 3%). ^d 3. Women constitute minimum 2% of pump operators. (baseline 2020: 0). 4. Women constitute minimum 5% of water unit vendors. (baseline 2020: 0). 5. Provision for at least 5% women's employment as unskilled workers incorporated in the contractors' bidding document and implementation monitored	PMU, BWDB	Prior to the rehabilitation and up gradation
Output 3: Project efficiently managed with effective institutional development			
4. Planning and design of GKIP and TBIP	At least 10% women's representation ensured in consultation session, and document and address their needs. (baseline 2020: 4%).	PMU, PMDC	During project implementation
5. The project MIS established with sex-disaggregated database	M&E reports includes sex disaggregated data.	PMU, PMDC	During project implementation
6. Ensure effective participation of women in the activities of the ICC	At least one woman deployed as member of the ICC. (baseline 2020: 1).	PMU/PMDC	During project implementation

Activities	Targets and Indicator	Responsibility	Time Frame
7. Incorporation of gender aspects into the WMIMOO training	WMO training curricula developed integrating gender aspects. ^e	PMU, IMO	During project implementation
8. Deploy female staff at PMU level	25% female staff deployed at PMU level. (baseline 2020: 25%).	PMU, BWDB	During project implementation
9. Institutional development, awareness, and training of key stakeholders to incorporate training in Gender and Development issues	All relevant project staff oriented on project's gender action plan.	PMU, BWDB	During project implementation
10. Ensure gender inclusive surveying, data collection, monitoring, recording and reporting of all project activities	Sex disaggregated data collected, collated, and gender analysis-based report prepared regularly.		
Project Management Support			
11. Project support for GAP implementation	1. Gender Focal Point/ Sociologist deployed at PMU. (baseline 2020: 1). 2. One Gender Consultant included in the PMDC during feasibility studies and preparation of GKIP and TBIP. (baseline 2020: 0). 3. Evaluation of challenges encountered during the GAP implementation conducted at project completion.	PMU, BWDB, ADB	During project implementation and at project completion
12. Institutional development, awareness, and training of key stakeholders to incorporate training in Gender and Development issues	All relevant project staff oriented on project's gender action plan.	PMU, BWDB	During project implementation
13. Gender budgeting	Budget allocation for mainstreaming GAP implementation developed and shared with ADB.	PMU, BWDB	During project preparation

ASCR=agriculture support services and pilot cost recovery, BWDB= Bangladesh Water Development Board, GKIP= Ganges Kobadak Irrigation Project, ICC=implementation coordination committee, IMO= independent management operator, PMDC= program management design consultants, PMU= project management unit, TBIP= Teesta Barrage Irrigation Project, WMO= water management organization.

Note: For indicators linked to the project's design and monitoring framework, please refer to Appendix 1 of the PAM to see the indicator baseline at start of project (2013).

^a Technology substitution and socioeconomic and cultural conditions in the project area with male-out migration to the Middle East and women's unwillingness to avail of the unskilled labor opportunities provided in the Project led the EA to request a revision of selected gender-related indicators/targets. The ADB appreciates the strong rationale for this request and confirms this is not a reflection of the agency's lack of commitment but its inability to deliver, based on the rationale provided.

^b The proxy baseline is 15.16%, as obtained from the Statistical Yearbook of Bangladesh -2010 (the last published one), published by the Bangladesh Bureau of Statistics on the work force participation rate of females in Feni district. Besides, most households in the project area have men living in the Middle East working as migrant workers. This indicates that the households are relatively well off and given the prevailing conservative culture, women are neither interested nor encouraged to work outside their homes.

^c Other livelihood skills include, but are not limited to, duck rearing, poultry, fish cultivation, homestead gardening etc.

^d The project area of greater Noakhali, including Feni District, is a culturally conservative area with strict religious values and practices. As such, women's active participation in the project was discouraged and often prohibited by their families and communities. The women in the area strictly observe purdah, which does not allow them to work outside their home, especially with men outside the family. This reality and the challenges it caused to implementation is recorded in the aide memoire of the May 2017 and January 2018 project review missions. To respond to this reality, some indicators related to labor and hiring were reduced in the additional financing

^e Training curricula includes livelihood developed for women including duck rearing, poultry, fish cultivation, homestead gardening; gender mainstreaming in water sector etc.

IX. PERFORMANCE MONITORING, EVALUATION, REPORTING AND COMMUNICATION

A. Project Design and Monitoring Framework

91. The updated design and monitoring framework (DMF) is in Appendix 1. The DMF has been retrofitted to align with ADB's latest [*Guidelines for Preparing and Using a Design and Monitoring Framework: Sovereign Operations and Technical Assistance \(2020\)*](#). Output 3 of the original DMF was reclassified as project management activities.

B. Monitoring

92. **Project performance monitoring.** Within 6 months of loan effectiveness BWDB with the support of the PMDC will establish a Monitoring Cell for the Project. The Monitoring Cell will be established to provide independent verification of the performance of various stakeholders as well as assessing impacts associated with investment objectives. The monitoring cell will be linked to the existing monitoring division within BWDB under the Chief Monitoring who reports to BWDB's Director General. The monitoring cell will monitor the project progress against the outputs and targets set out in the DMF. The monitoring cell with support of the PMDC consultants will, establish a project performance monitoring system in line with the targets, indicators, assumptions, and risks described in the DMF. The monitoring cell will consolidate the results and prepare the quarterly progress reports and an annual report which will include the required indicators and provide information necessary to update ADB's project performance reporting system.

93. **Compliance Monitoring.** The status of compliance with loan covenants, including policy, legal, financial, economic, environmental, and others, will be monitored and reported by PMU through the quarterly progress reports, which will be consolidated and submitted by the PMO to ADB. The results will be reviewed in detail during ADB's review missions. In particular, the status of the implementation of safeguard measures described in EMP and RP, as well as implementation of measures described in SPRSS and GAP, will be monitored and reported by the PIU in quarterly project progress reports.

94. **Safeguard Monitoring.** Within 6 months of loan effectiveness BWDB with the support of the PMDC will establish a Safeguards Cell for the Project. The Safeguards Cell will be established to provide independent verification of the project safeguards including the environmental management plan (EMP), resettlement plan (RP), and gender and social dimensions monitoring including the gender action plan (GAP). The monitoring cell will be linked to the existing monitoring division within BWDB under the Chief Monitoring who reports to BWDB's Director General.

95. The safeguards cell which will be staffed by three Government officers (environment, resettlement and social dimensions and gender) with support of the PMDC consultants will, establish a project performance monitoring system in line with the targets, indicators, assumptions and risks described in the IEE, RP, and GAP. The monitoring cell will consolidate the results and prepare the quarterly progress reports and an annual report which will include the required indicators and provide information necessary to compliance with safeguards.

96. It is proposed that an independent third-party consultant or institute is engaged to implement safeguards monitoring. Data will be collected from the Irrigation Management Operator as well as the Implementing NGO who will be implementing the resettlement as well supported by direct collection of data to ensure adequate verification.

97. The status of the implementation of the safeguards including the initial environmental examination IEE/EMP and social dimensions including RP and GAP will be discussed at each ADB review mission and integrated into semi-annual reports for IEE/EMP, RP, and GAP implementation. These will be prepared by the safeguards cell with support from consultant and sent to the PMU to be forwarded to the ADB. PMU will ensure submission of semi-annual Environmental Monitoring Report (EMR) and Social Safeguards Monitoring Report (SMR) for ADB's review and endorsement within 1 month from the end of the reporting period.

C. Evaluation

98. Within 24 months of loan effectiveness, ADB will conduct a mid-term review to identify problems and constraints encountered and suggest measures to address them, including appropriateness of scope, design, implementation arrangements, schedule of activities and compliance with safeguard and other covenants.

D. Reporting

99. The PMU will provide ADB with (i) quarterly progress reports in a format consistent with ADB's project performance reporting system; (ii) consolidated annual reports including (a) progress achieved by output as measured through each indicator's performance targets, (b) key implementation issues and solutions; (c) updated procurement plan; (d) semi-annual safeguards monitoring reports; annually for environment and semi-annual for resettlement; (e) quarterly monitoring report on implementing the GAP and (f) updated implementation plan for next 12 months; and (iii) a project completion report within six months of physical completion of the project. To ensure projects continue to be both viable and sustainable, project financial statements and the executing agency AFSs, together with the associated auditor's report, should be adequately reviewed.

E. Stakeholder Communication Strategy

100. The project will maximize transparency by communicating relevant project information to stakeholders in various means. The PMU will set up a website within two months of loan effectiveness and disclose all key project-related information, including the scope, cost, and financial and institutional arrangements of the project, project safeguard reports such as IEE, GAP and project progress such as procurement, contract award and disbursement. The PMO will also fully disclose through the website and its information center relevant project-related information, such as subproject cost, cost-sharing arrangement, contractor's name, contract price, progress of construction, financial status of municipalities, through public briefings, bulletin boards, municipal annual reports, etc. All information should be sex-disaggregated as applicable. The safeguard documents will also be disclosed in ADB website.

101. Participation is an important aspect of the project. Public awareness programs for gender, social, and infrastructure subproject related measures will be implemented by the PMU supported by PMDC during the planning and design of TBP and GKIP and the project C-IMO during the implementation stages. The PMU with the support of the PMDC working with the C-IMO will prepare a consultation awareness and participation plan (CAPP) within six months of loan signing. The CAPP will be used to guide consultation and awareness building activities under the project to be conducted in parallel with physical investment activities. The GAP and CAPP plans will ensure sufficient consultation and participation with beneficiaries, including women, the poor and vulnerable groups.

1. Information Disclosure

102. The Stakeholders Communication Strategy implementation will engage and inform relevant IMIP stakeholders and sectors with timely, accurate, and comprehensive information shared among stakeholders. Such information sharing will help to build consensus and ensure continuous stakeholder support throughout the Project. The stakeholder Engagement and Communication Strategy (SE&C) is to significantly increase stakeholder and community awareness of the Project strategy, proposals activities and outputs in order to improve stakeholder engagement and to develop greater community support for the project proposals and the decision-making process. The guidelines for SE&C will include:

- (i) Clarify the objectives and goals of engagement and evaluate the appropriateness of techniques.
- (ii) Understand related processes and be clear about how the engagement fits in with official decision-making processes.
- (iii) Manage information in an accessible way without using complex concepts or jargon.
- (iv) Support the development of capacity in understanding and applying the research concepts.
- (v) Ensure transparent identification of stakeholder groups and invitations to be involved.
- (vi) Build trust with and between participants for the long term.
- (vii) Allocate sufficient time to develop process, build partnerships and strengthen networks.
- (viii) Encourage feedback and ensure flexibility to adapt to that feedback.

103. **Stakeholder Engagement and Communication Objectives.** The main stakeholder engagement and communication objectives include:

104. **Awareness.** The PPTA has implemented an intensive program of communication and awareness however it is assessed that the majority of farmers and other stakeholders do know about the proposed project do not know the detail of the project components. Stakeholders are somewhat disappointed in the delays in the project start for the MIP but also in TBIP and GKIP. The following aspects need to be addressed to attain the awareness among the different stakeholders including women of the project.

105. Awareness

- To raise overall awareness of the project, its intent, activities and outputs including opportunity for women employment and women development activities.
- To promote the benefits and positive aspects of the project.
- To raise awareness of the linkages between the MIP and other related projects.
- To ensure stakeholders are aware of the project and how to be involved.
- Attitude:
- To reduce communications risks by encouraging a positive view of the project.
- To manage expectations of what the project can and can't deliver.

106. Behaviors:

- To encourage public demonstrations of support for the project.
- To encourage key stakeholders to engage in project activities.

- To provide tools for project partners and collaborators to communicate the project intent, activities and outputs.

107. The SE&C will be based on a strategic approach including:

- (i) Building direct, positive relationships wherever possible
- (ii) Utilizing media and stakeholder networks where direct relationships are not possible
- (iii) Building strong linkages between MIP and other relevant projects
- (iv) Facilitating information sharing and information sharing networks
- (v) Demonstrating how MIP is contributing to a broad range and societal goals
- (vi) Using a matrix of communication tools in a sustained program

108. There are three distinct approaches to communication that can be used for successful implementation of the campaign for the implementation of the MIP as well as the planning and design activities for the GKIP and TBP:

- (i) Behaviour change communication: This approach addresses the knowledge, attitudes, behaviour and skills of individuals, families and communities as they relate to specific program goals. Within a participatory communication framework, individuals and communities gain knowledge, appreciation and skills that motivate them to develop positive and healthy behaviour and practices.
- (ii) Communication for social mobilization: This approach moves beyond the individual behaviour change communication to a more comprehensive model of communication. It provides an opportunity for greater levels of community participation in social change. It involves planned actions to reach, influence, enable, and involve key segments of the community in order to collectively create an environment that will affect positive behaviour and bring about desired social change. Segments include influential groups or individuals as well as formal and informal leaders among those who will directly benefit from the desired social change.
- (iii) Communication for advocacy: It is an organized attempt to influence the political climate, policy and program decisions, public perceptions of social norms, funding decisions, and strengthen the voices of communities and societies for social and policy change.

109. Planning and research is required to ensure the message reaches the key stakeholders with optimum impact and frequency.

110. Experience has shown that the communication plan and activities must be targeted to the proposed requirements of behavioral and social change; experience has shown that communication activities are more successful when consistent messages are conveyed through a mix of channels and tools, specially combining the community media (interpersonal communication) with mass media programs:

- (i) **Community-based communication.** A range of communication activities can be carried out using participatory and interpersonal communication tools. The success of this communication requires the active involvement of the participants in the communication development process. Informal discussion meeting and workshop with the stakeholders are proposed. Interpersonal communication tools and community media like folk media, theatre, folk songs, and festivals. The

success of this communication requires the active involvement of the participants in the communication development process. Activities suggested include farmer group discussions, courtyard meetings and group discussions.

- (ii) **Mass media campaign.** The mass media can be a strong source of information for raising awareness, building knowledge, and influencing public opinion. The following devices can be used National and local level seminar/workshop, Electronic media -Radio, Television, video, film, internet. Print media - Newspapers, newsletters, fact sheets, handouts, posters, research findings and reports.
- (iii) **Participative Planning and Design:** Farm level design will be done in participative approaches including briefing meetings and walk through with farmers.

2. Phases of Communication and Engagement Strategy and Outputs

111. It is proposed that both the PMDC and the C-IMO implement a focused program of stakeholder engagement, communication, and awareness during the Project. The PMDC will focus on the development of participative planning and design for the GKIP and TBP modernization; while the C-IMO develops a highly focused campaign to engage with farmers, WMO's and other stakeholders to implement the new initiatives for OM as well as the programs of agricultural support.

112. Planning the program:

- (i) Planning and design of the approach: this will be done in Month 3 based on an assessment of the communication work implemented under the PPTA together with consultation with Government and Non-Government stakeholders to assess current levels of knowledge and awareness of the project objectives.
- (ii) Communication and engagement with selected stakeholders to support the preparation of the project design.
- (iii) Upscaled communication and awareness to the wider stakeholders
- (iv) Monitoring and response to provide feedback on the response to the proposed project proposals.

113. The proposed communication and engagement program for the PMDC is summarized in Table 21 below. This program is designed to inform the stakeholders of the IMIP and to engage with stakeholder to support the project planning and design for TBP and the GKIP.

Table 21: Proposed Communication and Engagement Program for the PMDC

Activity	Consultation method	Participants	Objective	When Implemented
Initial Public Meeting	PM	WUA, WUF, Farmers, ~45 persons. About twenty meetings	Feedback on farmer perceptions	Initial mobilisation of the PMDC at the field sites
Media	Media	To publicise the meetings and improve the awareness of the project objectives	To widen the awareness beyond the workshops	1 month before and after the workshops
Focus Group Discussions	FGD	About 20 FGD to be held with WUG, WMA, WMF, Farmers,	Feedback on current issues and perceptions of proposed changes.	Month 3

Activity	Consultation method	Participants	Objective	When Implemented
		women, and representative stakeholder		
Individual meetings with key stakeholders	IDI	About 25 direct interviews with farmers, REB, BWDB, WMF, WMA and women	Feedback on current perceptions of the project design.	Month 3
Rapid Rural Appraisal	RRA	Teams of enumerators mobilised to support more definitive and information	Statistical information of agricultural practices, responses to change etc. Special information needs can be targeted including gender, environment poverty	Month 4 design of project Month 5 implementation
Preliminary Surveys	SVS	Farmers, WUA, WUF	Surveys to meet specific socio-economic information	Month 5
Upazila Level Public Meetings	PM	WUA, WUF, Farmers, women, and other stakeholders	Dissemination of preliminary strategies for modernization and improvement	Month 12 onwards once strategies have prepared
Focus group discussions and Individual Meetings with key Stakeholders	FGD/IDI	Government, WUA, WUF	Consultative meetings with key stakeholders to support the preparation of the detailed design.	Month 13 onwards
Participative Planning and Design	PM/FGD	Focused meetings and discussions to review specific planning and design activities	Engagement and feedback from farmers on planning and design scenarios and options.	Month 15 onwards
Final Workshops	PM	Public meetings to obtain final engagement		Month 18

114. The proposed communication and engagement program for the Muhuri C-IMO is different with the objectives for the stakeholder to better understand the project implementation objectives. The program is described in Table 22.

Table 22: Communication and Engagement Program for the IMO

Activity	Consultation method	Participants	Objective	Timing
Public Meeting	PM	WUA, WUF, Farmers, ~45 persons. One meeting proposed for each Upazilla. Brochures would be prepared to widen the information base	Create awareness of the project objectives	Month 3
Focus Group Discussions	FGD	About 20 FGD have been held with WUG, WMA,	Create awareness and obtain feedback	Month 3–6

Activity	Consultation method	Participants	Objective	Timing
		WMF, Farmers, Pump Operators, Women's groups	on current issues and perceptions of proposed changes.	
Individual meetings with key stakeholders	IDI	About 25 direct interviews held with farmers, REB, BWDB, WMF, WMA and women	Feedback on current perceptions of the project design.	Month 6
Participative design activities	SVS	Farmers, pump operators, WUA, WUF. - stage 1-reengaging with farmers for the 2000ha advance systems -stage 2 5000ha second stage	To ensure farmers previously signed up remain committed.	Month 2–3
			Participative design for the Stage 2 pipe systems	Month 3–6
Upazila Level Public Meetings	PM	WUA, WUF, Farmers, Pump Operators	To brief on the steps to initiate the pumps and prepaid meters.	Month 12
Focus group discussions and Individual Meetings with key Stakeholders	FGD/IDI	Government, WUA, WUF, Pump Operators, within each command to be taken up for pipe systems	Consultative meetings with key stakeholders to support the preparation of the detailed design.	Month 5–24
Agricultural support programs	IMO	Extension, farmer training school, demonstration plots	Activities to be planned and designed by the IMO	Year 2–5

X. ANTICORRUPTION POLICY

115. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the Project.²⁵ 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/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.

116. To support these efforts, relevant provisions are included in the financing agreements and the bidding documents for the Project. Risks associated with project management, including procurement and disbursement, will be mitigated by (i) providing consulting inputs to advise and assist in the procurement of goods and services; (ii) requiring that civil work contracts include a condition that contractors adhere to ADB's Anticorruption Policy (1998, 29 amended, from time to time); (iii) the PMU periodically inspecting the contractors fund withdrawals and settlements; and (iv) reporting on project activities and implementation on the website to foster transparency and timely awarding of contracts.

117. The government will ensure that (i) BWDB conducts periodic monitoring inspections on all contractors' activities related to fund withdrawals and settlements; and (ii) 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 BWDB and all contractors, suppliers, consultants and other service providers as they relate to the project.

²⁵ Available at: <http://www.adb.org/Documents/Policies/Anticorruption-Integrity/Policies-Strategies.pdf>

XI. ACCOUNTABILITY MECHANISM

118. 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 a good faith effort to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.²⁶

²⁶ For further information see: <https://www.adb.org/who-we-are/accountability-mechanism/main>.

XII. RECORD OF CHANGES TO THE PROJECT ADMINISTRATION MANUAL

119. The first draft of PAM has been prepared and agreed upon at the loan fact-finding of the ongoing project. All revisions/updates during the course of implementation will be retained in this Section to provide a chronological history of changes to implementation arrangements recorded in the PAM.

Table 23: Table of Major Changes to the PAM

PAM Section	Changes Made	Date of Revision
General	The following revisions were done during loan fact-finding for the additional financing to reflect updated information and implementation arrangements for the overall project, including the additional financing.	July 2021
I. Project Description	<ul style="list-style-type: none"> Updated to include information on Additional Financing Updated the output indicators 	
II. Implementation Plan	<ul style="list-style-type: none"> Updated the overall implementation plan to reflect latest project closing. 	
III. Project Management Arrangements	<ul style="list-style-type: none"> Updated the PMU Staffing table Revised Figure 2: Project Implementation Arrangements 	
IV. Cost and Financing	<ul style="list-style-type: none"> Updated overall cost to reflect current value of SDR loan. Inclusion of cost tables for the additional financing. Revised quarterly contract awards and disbursement projections for ongoing loan. Revised Figure 5: Funds Flow Diagram 	
V. Financial Management	<ul style="list-style-type: none"> Revised entire section 	
VI. Procurement	<ul style="list-style-type: none"> Removed advance action activities Updated procurement plan moved as Error! Not a valid result for table. Terms of Reference for PMDC and C-IMO included as APPENDIX 3 	
VII. Safeguards	<ul style="list-style-type: none"> Updated to include requirement of resettlement plan for identified resettlement impacts. 	
VIII. Gender and Social Dimensions	<ul style="list-style-type: none"> Gender action plan updated 	

APPENDIX 1: UPDATED DESIGN AND MONITORING FRAMEWORK

The revised design and monitoring framework strikes out content for deletion and underlines content to be added.^a

Impact the Project is Aligned with High growth of agriculture in Bangladesh sustained (Government of Bangladesh's Eighth Five-Year Plan) ^b			
Results Chain	Performance Indicators	Data Sources and Reporting Mechanism	Risks and Critical Assumptions
Outcome Productivity and sustainability of the Muhuri Irrigation Project increased	By 2019 2024: a. Dry-season irrigation area in the Muhuri Irrigation Project increased by 50% 60% to 17,000 18,000 ha (2013 baseline: 11,300 ha) (<u>OP 5.3.1</u>) b. O&M funding (from farmers and government) increased to 100% (2013 baseline: 84%) c. Average yield of irrigated winter paddy (<i>boro</i>) increased to 4 tons/ha (2013 baseline: 3 tons/ha) (<u>OP 5.3</u>)	a. BWDB project monitoring and evaluation reports b. Annual statements of cost recovery by PPP operators and government records c. BWDB annual reports for Muhuri Irrigation Project	A: Rural Electrification Board supplies power to the Muhuri Irrigation Project as per agreement (memorandum of understanding signed with BWDB). R: Future climate change impact exceeds projections in term of average annual temperature, precipitation and sea level rise and negatively affect the project
Outputs 1. Performance-based Irrigation management and agriculture support services established <u>improved</u>	By 2019 2023: 1a. Long-term performance-based lease contract signed for Muhuri Irrigation Project large-scale irrigation project (2013 baseline: Not applicable) 1b. Efficient Irrigation management in place with 100% recovery of cost of management, operation, and maintenance for levels 2 and 3 achieved. (2013 baseline: Not applicable, 63%) ^c 1c. 300 trained farmers (of whom 20% are women) adopted more productive irrigated agriculture methods; (2013 baseline: 0) (<u>OP 2.2, OP 5.3.2</u>) ^d	1a. Signed lease agreement 1b. Annual statements of cost recovery by PPP operators and government records 1c. PPP operator records, training reports	A: Government continues to promote PPP for irrigation. R: The private sector shows little interest in PPP for irrigation <u>despite government promotion.</u>
2. Irrigation system infrastructure rehabilitated and modernized ^e	By 2019 2023: 2a. Muhuri Irrigation Project rehabilitated and modernized, <u>covering</u> 17,000 18,000 ha and comprising rehabilitation of one	2a.–c. BWDB, C-IMO records, and MIS data	R: <u>Cultural barriers could limit participation of women.</u>

Results Chain	Performance Indicators	Data Sources and Reporting Mechanism	Risks and Critical Assumptions
	<p>barrage and installation of 800 850 <u>low-lift electric pump schemes</u> with prepaid meters and piped tertiary distribution <u>system</u> <u>employing at least 10% 2% women as pump operators and 30% 5% as mobile water unit vendors.</u> (2013 baseline: 0) (OP 1.3.1, OP 3.3.3, OP 5.1.1, 5.3.1)^e</p> <p>2b. 23 17 km of coastal embankment repaired, 460 373 km of canal drains re-excavated (2013 baseline: 0) (OP 1.3.1, OP 3.2.1, OP 5.1.1)</p> <p>2c. At least 40% 2% of pump operators, 30% 5% of mobile water unit vendors, and 5% of <u>construction workers employed are women and 20% poor and socially excluded.</u> (2013 baseline: 0) (OP 2.1)^f</p>		
3. Project efficiently managed with effective institutional development ⁹	<p>By 2015: 3a. The project MIS established with sex-disaggregated database <u>(2013 baseline: Not applicable)</u></p> <p>By 2018: 3b. PPP unit permanently established with adequate capacity. <u>(2013 baseline: Not applicable)</u></p> <p>By 2019: 3c. The project meets annual contract award and disbursement schedule. <u>(2013 baseline: Not applicable)</u></p>	<p>3a.–b. BWDB project progress reports</p> <p>3c. ADB records Financial records</p>	
Key Activities with Milestones 1. Performance-based Irrigation management and agriculture support services established improved 1.1 Award PPP management contract for one large-scale irrigation scheme by September 2014 (<u>completed</u>). 1.2 Establish implementation coordination committee to support scheme management for the Muhuri subproject by October 2014 (<u>completed</u>). 1.3 Assess C-IMO viability (<u>October 2017 April 2021</u>) and prepare lease bidding documents (<u>January–October 2016 July–October 2021</u>). 1.4 Award long-term irrigation management lease contract for Muhuri M-IMO (<u>April 2019 December 2022</u>). 1.5 <u>Conduct farmers' training on productive irrigated agricultural methods (December 2021).</u>			

Results Chain	Performance Indicators	Data Sources and Reporting Mechanism	Risks and Critical Assumptions
2. Irrigation system infrastructure rehabilitated and modernized 2.1 Award contract for 30% of works including (i) <i>khal</i> (channels) excavation and embankment rehabilitation and (ii) 2,000 ha pumps and pipe irrigation (September 2014) <u>(completed)</u> . 2.2 Undertake detail design for remaining works including (i) structures, river protection, and buildings; (ii) electrification; and (iii) remaining pumps and pipe irrigation (September 2014–September 2016) <u>(completed)</u> . 2.3 Award all civil works contracts (October 2017) <u>(completed)</u> . 2.4 Complete detail designs of Ganges–Kobadak Irrigation Project and Teesta Barrage Irrigation Project modernization (April 2016–August 2021). 3. Project efficiently managed with effective institutional development^g 3.1 Establish PMU (July 2014) <u>(completed)</u>. 3.2 Award PMDC contract (July 2014) <u>(completed)</u>. 3.3 Establish project MIS (August 2014) <u>(completed)</u>. 3.4 Establish BWDB PPP unit (December 2014).			
Project management activities^h <u>Establish PMU (July 2014) (completed).</u> <u>Award PMDC contract (July 2014) (completed).</u> <u>Establish project MIS with sex-disaggregated data (August 2014) (completed).</u> <u>Establish Appoint a permanent PPP unit officer under BWDB procurement cell (December 2014) (completed. A temporary PPP cell under PMU is established).</u> <u>Conduct review missions and midterm review (2014–2023).</u>			
Inputs Asian Development Bank Concessional ordinary capital resources loan: \$46.0 \$55.0 million (<u>\$13.50 million additional</u>) ^h Government of Bangladesh: \$7.6 \$8.7 million (<u>\$1.1 million additional</u>) Beneficiaries: \$4.4 million			

A = assumption, ADB = Asian Development Bank, BWDB = Bangladesh Water Development Board, C-IMO = construction-phase irrigation management operator, ha = hectare, km = kilometer, M-IMO = management-phase irrigation management operator, MIS = management information system, OP = operational priority, PMDC = project management and design consultant, PMU = project management unit, PPP = public–private partnership, R = risk.

^a The design and monitoring framework has been retrofitted to align with [ADB. 2020. Guidelines for Preparing and Using a Design and Monitoring Framework: Sovereign Operations and Technical Assistance. Manila.](#)

^b The impact statement of the ongoing loan remains aligned with Government of Bangladesh. 2020. *Eighth Five-Year Plan (July 2020–June 2025): Promoting Prosperity and Fostering Inclusiveness*. Dhaka.

^c For secondary (Level 2) and tertiary (level 3) drainage and irrigation networks, efficient irrigation management (i.e. buried-piped and metered water distribution system, leading to less water consumption while increasing crop yield) will be provided by the long-term performance-based operator.

^d Examples of more productive irrigated agriculture methods: system of rice intensification method, alternate wetting and drying technique, better control of fertilizer, use of hybrids, pest control, crop diversification, and use of drip irrigation.

^e After completion of the topographic survey and detailed reconnaissance, it was realized that the modernization of the Muhuri Irrigation Project command area could be extended to 18,000 ha (850 schemes) instead of the 17,000 ha (800 schemes) estimated during the project preparation.

^f The project area of greater Noakhali, including Feni district, is a culturally conservative area with strict religious values and practices. As such, women's active participation in the project was discouraged and often prohibited by their families and communities. The women in the area strictly observe *purdah*, which does not allow them to work outside their home, especially with men outside the family. This situation and the challenges it caused to implementation is recorded in the aide-mémoire of the May 2017 and January 2018 project review missions. To respond to this situation, some indicators related to labor and hiring were reduced in the additional financing.

^g Output 3 of the ongoing loan's original design and monitoring framework has been reclassified as "project management activities" in line with [ADB. 2020. Guidelines for Preparing and Using a Design and Monitoring Framework: Sovereign Operations and Technical Assistance. Manila.](#)

^h As of 6 April 2021, the ADB loan, which was denominated in special drawing rights, was reduced from \$46.0 million to around \$41.5 million because of the depreciation of the special drawing right against the dollar. Combined adjusted original loan and additional financing amounts to \$55.0 million.

Source: ADB.

APPENDIX 2: PROCUREMENT PLAN

Basic Data

Project Name: Irrigation Management Improvement Project	
Project Number: 45207-002	Approval Number: Loan 3135, Loan XXXX
Country: Bangladesh	Executing Agency: Bangladesh Water Development Board
Project Procurement Classification:	Implementing Agency: Bangladesh Water Development Board
Project Procurement Risk:	
Project Financing Amount: US 67,800,000 ADB Financing: US 41,500,000 ADB Additional Financing: US13,500,000 Non-ADB Financing: US 12,800,000	Project Closing Date: 30 June 2023
Date of First Procurement Plan: 30 June 2014	Date of this Procurement Plan: 30 June 2021,
Advance Contracting: No	e-GP: No

Methods, Thresholds, Review and 18-Month Procurement Plan

Procurement and Consulting Methods and Thresholds

1. 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	Comments
International Competitive Bidding for Goods	US 1,000,000 and Above	
National Competitive Bidding for Goods	Between US 100,000 and US 999,999	The first NCB is subject to prior review, thereafter, post review.
Shopping for Goods	Up to US 99,999	
International Competitive Bidding for Works	US 2,000,000 and Above	
National Competitive Bidding for Works	Between US 100,001 and US 1,999,999	The first NCB is subject to prior review, thereafter, post review.
Shopping for Works	Up to US 99,999	
Consulting Services		
Method	Comments	
Least-Cost Selection for Consulting Firm		
Quality- and Cost-Based Selection for Consulting Firm		
Individual Consultant Selection for Individual Consultant		

Goods and Works Contracts Estimated to Cost 1 Million or More

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

Package Number	General Description	Estimated Value	Procurement Method	Review (Prior/ Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comments
None							

Consulting Services Contracts Estimated to Cost 100,000 or More

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

Package Number	General Description	Estimated Value	Recruitment Method	Review (Prior/Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
None							

Goods and Works Contracts Estimated to Cost Less than 1 Million and Consulting Services Contracts Less than 100,000 (Smaller Value Contracts)

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

Goods and Works								
Package Number	General Description	Estimated Value	Number of Contracts	Procurement Method	Review (Prior/Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comments
None								
Consulting Services								
Package Number	General Description	Estimated Value	Number of Contracts	Recruitment Method	Review (Prior/Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
None								

Indicative List of Packages Required Under the Project

5. 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).

Goods and Works							
Package Number	General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement Method	Review (Prior/Post)	Bidding Procedure	Comments
Consulting Services							
Package Number	General Description	Estimated Value	Number of Contracts	Recruitment Method	Review (Prior/Post)	Type of Proposal	Comments
CS-3	Various lots for specialist Water and Land Institutes including CEGIS and IWM for Action Research, Monitoring,	1,000,000	8	LCS	Prior	STP	Assignment: National Covid-19 Response? No Comments: To be procured under Loan

	Studies and Training						3135-BAN. This includes number of local and foreign trainings, 3 out of 8 batch performed foreign trainings and local trainings are on-going. Not required monitoring contract as PMDC is responsible for monitoring.
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List of Awarded and Ongoing, and Completed Contracts

6. The following tables list the awarded and ongoing contracts and completed contracts.

1. Awarded and Ongoing Contracts

Goods and Works							
Package Number	General Description	Estimated Value	Awarded Contract Value	Procurement Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Comments
CW-8A	Construction of new water control structures, sluice; rehabilitation of structures, sluice	1,286,319.40	1,490,632.65	ICB	Q3 / 2016	12-MAY-17	PCSS 0013 Completed 7 May 2021
CW-1	Rehabilitation of coastal embankment + re-excavation of khals Group 1 + Re-excavation of khals Group 2	2,735,063.51	3,190,426.00	ICB	Q3 / 2015	10-DEC-15	PCSS 0005 Completed 11 February 2020
CW-4	Turn Key Contract - (A) Construction 1x10/14 MVA, 33/11 kVA Indoor Type Sub-Station and (B) Upgrading of Electrical Distribution (HT, LT Over Head Line) System	5,281,799.12	5,299,231.20	NCB	Q2/2018	24-JUL-18	PCSS 0015 Cost variation to be processed
CW-3	Farmers' distribution system, stage 1: 2,000 ha: pipeline	1,880,000.00	2,103,454.18	ICB	Q4 / 2015	20-JUL-16	PCSS 0009 Completed 31 January 2021
CW-2	Re-excavation of khals Group 3 + Re-excavation of khals Group 4	3,048,275.00	3,546,463.59	ICB	Q2 / 2015	02-NOV-15	PCSS 0002 Completed 2 March 2019

Goods and Works							
Package Number	General Description	Estimated Value	Awarded Contract Value	Procurement Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Comments
CW-5	Farmer distribution, pumps and prepaid meter system-stage 2: 5,400 ha	6,396,640.03	6,767,332.58	ICB	Q2/2018	25-Feb-2019	PCSS 0016 Cost variation to be processed
CW-6	Farmer distribution, pumps and prepaid meter system-stage 3: 5,025 ha	6,858,470.62	7,788,343.25	ICB	Q3/2018	14-May-2019	PCSS 0017 Cost variation to be processed
CW-8B	Repair of BWDB buildings in Feni BWDB	159,564.00	159,547.00	ICB	Q3/2016	21-Nov-2016	PCSS 0011 Completed 14 December 2017
CW-7	Farmer distribution pumps and prepaid meter system-stage 4: 5,700 ha	7,713,470.97	8,870,838.29	ICB	Q4/2018	14-May-2019	PCSS 0018 Cost variation to be processed

Consulting Services							
Package Number	General Description	Estimated Value	Awarded Contract Value	Recruitment Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Comments
CS-2	Muhuri Irrigation Management Operator (C-IMO)	6,750,000.00	6,489,636.85	QCBS	Q1 / 2015	06-OCT-15	PCSS 0004 To be extended
CS-1	Project Management and Design Consultancy for IMIP	6,680,000.00	6,841,450.62	QCBS	Q4 / 2013	14-NOV-14	PCSS 0001 To be extended

National Competitive Bidding

1. Regulation and Reference Documents

7. The procedures to be followed for national competitive bidding shall be those set forth for the National Open Tendering Method in *The Public Procurement Rules, 2008* (as updated and pursuant to *The Public Procurement Act, 2006* issued by the Government of Bangladesh) with the clarifications and modifications described in the following paragraphs required for compliance with the provisions of the Procurement Guidelines.

2. Procurement Procedures

a. Eligibility

8. The eligibility of bidders shall be as defined under section I of the Procurement Guidelines; accordingly, no bidder or potential bidder should be declared ineligible for reasons other than those provided in section I of the Guidelines, as amended from time to time.

b. Advertising

9. The posting of NCB specific notices for contracts valued at less than 1 million on ADB's website is not required but is highly recommended.

c. Location of Bid Submission

10. Submission of bids to 'primary' and 'secondary' locations, or 'multiple droppings' of bids, shall not be required or allowed. Advertisements and bidding documents shall specify only one location for delivery of bids.

d. Bid Price as Percentage of Estimate

11. Bids shall not be invited on the basis of percentage above or below the estimated cost, and contract award shall be based on the lowest evaluated bid price of responsive bid from eligible and qualified bidder.

e. Lottery

12. A lottery system shall not be used to determine a successful bidder, including for the purpose of resolving deadlocks.

f. Rejection of All Bids and Rebidding

13. Bids shall not be rejected, and new bids solicited without ADB's prior concurrence.

3. Bidding Documents

a. Anti-Corruption

14. Definitions of corrupt, fraudulent, collusive and coercive practices shall reflect the latest ADB Board-approved Anti-Corruption Policy definitions of these terms and related additional provisions (such as conflict of interest, etc.).

b. Qualification Requirements

15. Qualification criteria and specific requirements must be explicitly stated in the bidding documents and applied consistently during bid evaluation.

c. Rejection of Bids

16. A bid shall not be rejected on the grounds that its bid price is not within a percentage range above or below the contract estimate.

d. ADB Policy Clauses

17. A provision shall be included in all NCB works and goods contracts financed by ADB requiring suppliers and contractors to permit ADB to inspect their accounts and records and other documents relating to the bid submission and the performance of the contract, and to have them audited by auditors appointed by ADB.
18. A provision shall be included in all bidding documents for NCB works and goods contracts financed by ADB stating that the Borrower shall reject a proposal for award if it determines that the bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for the contract in question.
19. A provision shall be included in all bidding documents for NCB works and goods contracts financed by ADB stating that ADB will declare a firm or individual ineligible, either indefinitely or for a stated period, to be awarded a contract financed by ADB, if it at any time determines that the firm or individual has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices or any integrity violation in competing for, or in executing, ADB-financed contract.

APPENDIX 3: TERMS OF REFERENCE FOR THE CONSULTANTS¹

I. TERMS OF REFERENCE FOR PROJECT MANAGEMENT AND DESIGN CONSULTANTS

A. Purpose of Consulting Services

1. The PMDC will support the PMU over a 5-year period. It will: (i) design and support the procurement of the Project civil works not included in the advance packages;² (ii) prepare modernization strategies, feasibility studies, detailed engineering designs, and civil works bid documents for GIK and TBP and required project documents required for ADB financing included but not limited to safeguards documents, economic and financial analysis, PAM, etc. (iii) support and supervise the Irrigation Management Operator (IMO); (iv) monitor construction and related activities (construction supervision would be by the IMO); (v) plan and implement training for the PMU on ADB's project administration procedures, managing public-private partnership (PPP) contracts, and other technical issues as required; and (vi) prepare a review of the performance of the Muhuri IMO and support the development of a PPP pursuant to which the long-term management, operation and maintenance (MOM) for MIP will be transferred to a third-party IMO, including preparation of bidding and contract documents.

B. Scope of Services

2. The PMDC will support implementation of all three outputs and provide the following four main services:

1. Strengthened Project Management

3. The consultant will provide overall support to the PMU to ensure the effective and timely delivery of the project work including:

- (i) Working with the PD and PIU Director to identify the project management needs, planning, strategies and schedules for execution.
- (ii) The design and establishment of a project performance management system (PPMS) that will allow the PMU to monitor and evaluate implementation of the project, identify performance constraints, and formulate and implement practical measures to address shortcomings. Annual performance evaluations will be carried out based on assessment of the projects. Outputs of the PPMS will be supplied to the PSC and ADB.
- (iii) Establish a project financial management and accounting system within the PMU.
- (iv) Facilitating the PSC establishment and preparation of briefing materials on progress and issues.
- (v) Develop the projects through participative and integrated planning and management.
- (vi) Assisting the PMU, the PSC and ADB prepare the additional financing/ project documents for GKIP and TBP modernization financing.
- (vii) Ensuring the implementation schedules reflect the envisaged integrated approach with phasing of all the inter-related activities.

¹ The contracts for the Project Management and Design Consultant as well as the Construction-phase Irrigation Management Operator have been awarded in February 2015 and January 2016, respectively.

² The advance packages are the works designed under the PPTA and include repairs to the coastal embankment

- (viii) Assisting the PMU to manage the project implementation schedule including giving special attention to items on the critical path and ensuring these are given particular attention. Assisting with project administration, performance and monitoring and preparation of project reports.
- (ix) Assisting the PMU with preparing tender documents and support the tender processes for the MIP construction/rehabilitation program as well as the recruitment of IMO if required.³

2. Rehabilitation and Modernization of Large Irrigation Projects and preparation of follow on projects

4. Improving the sustainability and productivity of large irrigation schemes under the Project will include: preparing feasibility studies, detailed engineering designs and bid documents as summarised below:

- (i) Undertake system assessments for TBP and GKIP to identify the strengths, weaknesses, opportunities and constraints for improving their productivity.
- (ii) The system assessment will review will incorporate the findings of the ADB more food less water (MFLW) TA⁴ which has carried out studies in the GKIP during 2013/14. The analytical tools used for the GKIP by the MFLW study will be reviewed and with appropriate adjustments should be applied to the TBP. The analytical tools include benchmarking using the FAO rapid appraisal process (RAP) and participatory rural appraisals (PRA) should be applied for the TBP.
- (iii) Identify outstanding infrastructure investments required at MIP.
- (iv) For the above, prepare feasibility studies including sustainable MOM strategies, preliminary costs, safeguard assessments, and economic and financial assessments. These will be presented to the PSC and PMU for approval.
- (v) Prepare detailed engineering designs, engineering cost estimates and specifications of agreed improvement works along with civil works contract bidding documents.
- (vi) Prepare project documents to meet ADB requirement including but not limited to safeguards documents, economic and financial analysis, PAM, cost estimates, Design and monitoring frameworks, etc.
- (vii) Assist the PMU with the bidding and procurement process to verify compliance, transparency of bidding as well as ensure the quality and price selection parameters.
- (viii) Identify and organize the implementation of supporting technical, management, institutional and social studies as required for all 3 irrigation projects.

3. Support Improved Irrigation Management of Large Irrigation Projects

5. The MOM of MIP will be assigned to third-party C-IMO initially through five-year fixed-term performance-based management contracts. During this period, the PMU, the C-IMO and the Implementation Coordination Committee established for MIP ("ICC") shall jointly undertake a

³ The IMO would be selected and contracted based on their capacities and skills to deliver key outputs, keeping the water tariff at a reasonable and acceptable level for the water users.

⁴ ADB Regional Technical Assistance TA7967-REG Innovations for More Food Less Water Task 2

public consultation program to understand the service delivery requirements of the beneficiaries of the Project. Following such consultation program, the PMU, the IMO and the ICC shall collaborate with PMDC to develop a PPP pursuant to which the long-term management, operation and maintenance (MOM) for MIP will be transferred to a third-party IMO. In undertaking this task, the PMDC will:

- (i) Build capacity of the PMU to monitor IMO management contracts.
- (ii) Together with the IMO, provide support for the public consultation program and, more generally, for communication to assist the transition processes and ensure stakeholder understanding and support.
- (iii) Support the establishment of a PPP Cell within BWDB to monitor and manage the PPP contracts.
- (iv) Support the establishment of MIP ICC.
- (v) Prepare reservoir operating guidelines for MIP in agreement with BWDB and Muhuri IMO
- (vi) Assist PMU with evaluating the performance of MIP's first-term IMO.
- (vii) Assist the PMU with development of a 2nd stage public-private partnership modality, suitable for MIP, that (a) allocates risks and responsibilities among the stakeholders in the irrigation scheme in accordance with sound international practice; and (b) includes a transparent, objective and comprehensive water service tariff regulation mechanism that is aimed at cost recovery and provides for a reasonable return on equity for the IMO concerned in accordance with sound international practice.
- (viii) Assist PMU with the preparation of the contract and bidding documents and conduct of the bidding procedures pursuant to which the PPP will be tendered.
- (ix) Develop, prepare and support the endorsement of guidelines to support the long-term delegation of MOM activities for large irrigation projects to private sector operators including strategies for cost recovery.
- (x) To design a monitoring and evaluation (M&E) system appropriate for large scale irrigation projects. The M&E should incorporate irrigation efficiencies, OM funding and cost recovery, OM activities, agriculture financial and production estimates. The M&E system will be piloted by the IMO for the MIP and later incorporated into the project plan for the TBP and GKIP and other large-scale irrigation projects in Bangladesh.

4. Institutional Development Awareness and Training

6. The PMDC will provide support for a broad program of institutional development as well as informal and formal training of key stakeholders. The tasks will include:

- (i) Establish and implement an extensive program and communication and engagement; the program will build on the proposals in the Project Administration Manual (PAM). The communication and engagement plan will be defined in the inception report.
- (ii) Prepare an institutional review and assessment of the capacities and needs for sustainable MOM of large irrigation projects.
- (iii) Undertake training and resource needs assessments for the Government, WUAs and other organizations to manage and support IMOs achieve sustain MOM of large irrigation schemes. This applies to all relevant institutions at Central, District, Upazila and community levels.
- (iv) Prepare a detailed training plan, schedule and budget for training to be implemented under the Project.

- (v) Working with the PMU and the IMO, develop and implement the training program, including programming, scheduling and implementation of the training, institutional development and awareness programs.

C. Consulting Services

7. The Project Management and Design Consultancy will be for a period of five years to be provided during the Project implementation. Recruitment will be undertaken in accordance with ADB's Procurement Guidelines (2013, as amended from time to time)⁵ and ADB's Guidelines on the Use of Consultants (2013, as amended from time to time).⁶ Firms will be recruited using quality and cost-based selection with a 90:10 quality to cost ratio. This ratio is justified as the priorities for the PMDC are high quality outputs including designing and preparing innovative and modern infrastructure and management improvements for TBP and GKIP. A full technical proposal will also be required. The total international input will be for 82 person-months (pm) and 498 pm for national consultants. The overall requirement is 580 pm. Outline terms of reference for individual PMDC specialists are given below and a summary of specialist inputs is shown in Table 1.

Table 1: Summary of consulting services inputs (key experts)

Position	Person-Months	
	International	National
Irrigation Management Specialist / Team Leader	34	
Irrigation Specialist / Deputy Team Leader		53
Irrigation Planning and Design Engineers (1 international, 2 nationals)	15	50
Irrigated Agricultural Specialist	6	21
Irrigation Design Engineers (4 nationals)		84
Mechanical and Electrical Engineer		4
Hydrologist	2	4
Hydrogeologist	2	
Groundwater Modeller		22
River Morphologist	1	
Agricultural Economist	4	8
Public-Private Partnership and institutional Specialist	6	
Commercial Lawyer		2
Participatory Irrigation Management Specialists (2 nationals)		56
Procurement Specialist	3	5
Financial Management Specialist	1	2
Financial Modeling Specialist	2	
Resettlement and Social Development Specialist	2	
Resettlement Specialist		5
Gender and Social Development Specialist		5
Environmental Safeguard Specialist	2	6
Communications Specialist	2	3
Overall Total	82	338

Table 2: Summary of consulting services inputs (non- key experts)

Position	Person-Months	
	International	National
Junior Irrigation Design Engineers (8 nationals)		168
Overall Total	0	168

⁵ Available at: <http://www.adb.org/Documents/Guidelines/Procurement/Guidelines-Procurement.pdf>

⁶ Available at: <http://www.adb.org/Documents/Guidelines/Consulting/Guidelines-Consultants.pdf>

1. International Consultants (total: 82 pm)

a. Irrigation Management Specialist / Team Leader (34 pm)

8. The Irrigation Management Specialist / Team Leader will be required to work closely with PMU and will be responsible overall management of the consulting team to achieve the Project's outputs including providing the four main services described above. The specialist will have a Master's degree in water resource management or equivalent, or a related field, and will have at least 20 years of technical project experience with at least 5 of those years leading the implementation of the projects. Experience of working in irrigation and water resources development in South Asia on major irrigation systems is highly desirable. The specialist will be responsible for:

- (i) Overall direction of the TA team, coordination of inputs, and management of individual specialists.
- (ii) Ensuring the timely progress of the project implementation including planning, design, construction and institutional development.
- (iii) Ensuring timely delivery of all TA outputs as listed under Table 4 including the various progress reports.
- (iv) To support the necessary approval processes of deliverables including BWDB, ADB and stakeholders.
- (v) Guide the management and coordination with the government, and other stakeholders including the facilitation of regular management dialogue between the EA, other associated agencies and stakeholders at central and project levels.
- (vi) Support the establishment and guide the activities of the Project Management Unit (PMU), the Implementation Coordination Committee (ICC), the PPP Cell, the Safeguards Cell and other proposed institutional arrangements.
- (vii) Support the development of the PPP models for irrigation management including maintaining close liaison and supporting the Muhuri IMO and defining the roles for the proposed management operators for the GIKP and TBP including development of viable mechanisms for OM cost recovery.
- (viii) Lead policy dialogue with the Government and support the implementation of the loan covenants including the sector roadmap.
- (ix) Support the PMU in the liaison and coordination and supervision of the Muhuri IMO including the implementation of the Muhuri Management Review.
- (x) Support the Irrigation Planning and Design Engineer to assess the feasibility and prepare the detailed engineering designs for GIKP and TBP modernization.
- (xi) Undertake a review of other large irrigation schemes and outline tailored infrastructure modernization and management models incorporating early lessons learnt from MIP.

b. Irrigation Planning and Design Engineer (15 pm)

9. The Irrigation Planning and Design Engineer will be responsible for the overall preparation of feasibility studies and the detailed engineering design for GIKP and TBP. The Engineer will have at least a Master's degree in Civil Engineering, be a chartered, professional engineer, and have at least 15 years of experience in planning and designing irrigation schemes, preferably in South Asia or other geographically similarly regions. The Engineer's tasks will include:

- (i) Reviewing previous studies including the MFLW TA and understand the current norms for irrigation planning and design in Bangladesh and within the region.

- (ii) Leading and supporting the design team with: (a) assessing cropping and water use patterns; (b) review of the current water use, water allocations and water use efficiencies for surface and groundwater; (c) prepare water balances for the current water and cropping systems including surface and groundwater; (d) develop strategies to increase the water use efficiencies through modernised water management systems and infrastructure, reduction of losses, improved water allocations, and scheduling of planting; (e) develop water balances for alternative future investment and management options; and (f) assess the investment costs and management implications.
- (iii) Leading the preparation of feasibility studies and detailed designs, including working with the team to prepare the engineering cost estimates, and economic and financial appraisals.
- (iv) Preparing and managing the trial survey of using remote sensing / satellite imagery to: (a) support activities of the PMDC; (b) define water use by surface and groundwater; (c) benchmark key irrigation production and management performance indicators; and (d) assess continued use of remote sensing to assist scheme operation and facilitate improving productivity of water (POW) and water conservation at the scheme level, including its financial viability.
- (v) Compiling the technical aspects of the feasibility studies for GKIP and TBP including the investment and management interventions to improve the sustainability and efficiency of the TBPGKIP.

c. Irrigated Agriculture Specialist (6 pm)

10. The Irrigated Agriculture Specialist will have at least a Master's degree in agricultural sciences (preferably agronomy) or related subjects, with at least 15 years of experience of planning and implementing agriculture programmes, preferably within South Asia or other geographically similar regions. The Specialist will:

- (i) Engage with farmers and stakeholders to identify the main constraints to crop production in TBP and GKIP.
- (ii) Assess the scope and capacities of the existing agricultural extension services and other related organizations working in the project area. Identify gaps and possible areas of support from the project.
- (iii) Review the requirements and propose strategies for increasing agricultural productivity, increasing POW, improving farm water application efficiencies and overall scheme efficiencies, reducing water use, and assessing potentials and strategies for crop diversification for TBP and GKIP. The review will assess the irrigation needs for the main boro crop as well as supplementary irrigation during other seasons.
- (iv) From lessons learnt from MIP and other international projects, assess how new initiatives for modern irrigated agriculture could be applied in TBP and GKIP. Liaise and support the planning and implementation of the agricultural support pilots for MIP.
- (v) Identify the key requirements for efficient irrigation to meet the needs of crop productivity including: timely water availabilities, crop diversification, scheduling of planting, reduced water use. Discuss with stakeholders to identify irrigation management strategies to help meet requirements to meet targets for increased productivity.

- (vi) Prepare detailed proposals of future cropping, farm budget and cropping patterns that can be used for the analysis of crop water requirements and economic analyses.
- (vii) Work with the other specialists to develop strategies for investment and management of TBP and GKIP and show how these strategies can incorporate the requirements and help meet the needs and full potentials of irrigated agriculture.
- (viii) Identify for opportunities linked to agriculture with potentials to support the OM cost recovery mechanisms.
- (ix) Develop a plan and costs for agricultural support services to be implemented by the IMO's for TBP and GKIP. The plan should build on the existing agriculture extension and support programmes within those areas.

d. Hydrologist (2 pm)

11. The Hydrologist will be responsible for the assessment of surface water availability and leading the assessment of crop water requirements for the MIP and GKIP and TBP. The specialist will have at least a Master's degree in Earth Sciences or equivalent, with at least 15 years of experience in assessing and modelling meteorological and hydrological regimes, preferably in South Asia. Ideally the specialist will have direct experience and practical knowledge of the hydrological regimes within the Ganges and Teesta Rivers, and their respective international water sharing agreements. The main tasks of the specialist are:

- (i) Compile and analyse rainfall and river flow information for all three projects.
- (ii) Review and assess current and future international water sharing agreements, previous hydrological studies, and assessments of upstream water use.
- (iii) Assess the quality of all hydro-meteorological data and identify the needs for improving to support planned water and scheme management arrangements of the projects.
- (iv) Review recently prepared local climate change studies and assess how they will impact on future water availability and crop water requirements, with support from the Agricultural Specialists.
- (v) Using best practices, estimate average, reliable and extreme statistics for seasonal water resource availability. Assess the probability of various dry season flood events including the maximum and average flow and the period of flow.
- (vi) With the Agricultural Specialists, assess the present and future water demands at the field level and scheme level including assessments of the losses, using FAO Cropwat 8 (or other approved) and other assessment tools, based on the current and planned cropping information.
- (vii) Prepare a comparative assessment of the theoretical current crop water requirements with actual water use over the last five years.
- (viii) Assess the potential role of tube wells to support water deficits in coordination with the Hydrogeologist and Groundwater Modeller.
- (ix) Compile long-term records for water level and gate operations at the Feni Regulator to assess the water balance of the Muhuri Reservoir. If necessary use appropriate hydraulic formula to calculate water passing through and over the regulator taking note of the times, duration and numbers of gates open.
- (x) Within MIP assess the potential additional storage that could be obtained in each khal by provision of (minor) regulator gates inside the khal. These minor storage regulators would be located to provide higher level storage than the Feni regulator

through conservation of small flood flows during the boro season. Assess the potential future irrigable area of the Muhuri scheme from surface water.

e. Hydrogeologist (2 pm)

12. The Hydrogeologist will have at least a Master's degree in Earth Sciences, or equivalent, and have 15 years of experience in assessing, modelling, and developing groundwater resources, preferably with working experience of the lower Ganges Plains. The specialist will be responsible for the assessment and development of strategies for the conjunctive use of surface and groundwater at TBP, GKIP and MIP. Specific tasks will include:

- (i) Review existing geological and hydro-geological information and groundwater studies relating to hydrogeology.
- (ii) Check the conditions in the field to assess typical yields from tubewells, water quality and possible issues.
- (iii) Define the requirements for feasibility level studies including data collection and groundwater modelling to assess sustainable levels of groundwater withdrawals for MIP, GKIP and TBP.
- (iv) Prepare proposal for groundwater modelling and assessment and work with the national Groundwater Modeller to implement the groundwater studies including the development of groundwater models.
- (v) Assess the current recharge to the aquifers and identify the contribution from irrigation. Assess the potentials to improve the recharge through surface water management and other methods.
- (vi) Prepare an interpretation of the models and, in collaboration with the other specialists, prepare a development strategy for conjunctive surface and groundwater management.

f. River Morphologist (1 pm)

13. The River Morphologist will have at least a Master's degree in Earth Sciences, or equivalent, with at least 15 years of experience of studying fluvial morphology and assessing, modelling and designing river revetment projects. Preferably the specialist will have working knowledge of the fluvial morphology of the Padma River. The tasks of the specialist will include:

- (i) Compiling information on previous morphological studies and archived aerial/satellite imagery of the Teesta and Padma River, particularly in the vicinity of the intakes to the TBP and GKIP, and assess long-term period changes in the river's thalweg (deepest point theory) and likely drivers for the changes.
- (ii) Assess the general river morphology of the Teesta and Padma Rivers and identify fluvial issues affecting the intakes of TBP and GKIP.
- (iii) Prepare an assessment report of the requirements for investment in river works, assessment of OM requirements and other management measures.
- (iv) Identify the requirements for further investigations.
- (v) Prepare preliminary designs for possible river investments and assessments of requirements for dredging.

g. Agricultural Economist (4 pm)

14. The Agricultural Economist will have at least a Master's degree in Agriculture or Economics with at least 15 years of experience of undertaking economic appraisals in the

agricultural sector, preferably with experience of working in South Asia or similar geographical regions. Specific tasks for the specialist include:

- (i) Prepare detailed cost tables and investment plan for financing GKIP and TBP through additional financing or a new standalone project.
- (ii) Analyse the current and future farm budgets for the GKIP and TBP.
- (iii) Review project benefits and undertake economic appraisals for the GKIP and TBP including estimated cash flows and economic internal rate of returns, in accordance with ADB's Guidelines for the Economic Analysis of Projects (1997).
- (iv) Identify the economic and financial risks associated with the projects and carry out sensitivity and risk analyses.
- (v) With the support of the Social Specialists, identify the beneficiaries and undertake a distribution analysis of project benefits and a poverty impact analysis of the projects consistent with ADB guidelines.
- (vi) Together with other specialist prepare the design of a Project Monitoring and Evaluation (PME) system for large scale irrigation. The PME will be piloted in the MIP by the IMO.
- (vii) Prepare guidelines for project economic monitoring systems.

h. Public Private Partnership and Institution Specialist (6 pm)

15. The Public Private Partnership Transaction Specialist will have at least a Master's degree in law or finance, with at least 15 years of experience in planning and implementing PPP transactions generally, and at least 10 years of experience in planning and implementing PPP transactions in the water sector specifically. The specialist must also have special experience of the integration of PPP with the Government and water user institutions. The specialist will:

- (i) Support the establishment and provide guidance to the new PPP Cell within the PMU.
- (ii) Engage with the stakeholders to identify the key issues, causes and identify potential opportunities to improve the irrigation management systems generally and the Muhuri MIP and the GKIP and TBP specifically.
- (iii) Review the performance of the Muhuri IMO and the findings of the public consultation program for service delivery standards of the Muhuri MIP and assist in the development of a PPP pursuant to which the long-term management, operation and maintenance (MOM) for MIP will be transferred to a third-party IMO, including preparation of bidding and contract documents and support for the conduct of the bidding process.
- (iv) Assess the necessary financing for the MOM of the TBP and GKIP schemes and assess how effective cost recovery of MOM can be achieved. Support the development of pilot cost recovery initiatives for the Muhuri scheme and assess how these could be replicated for the TBP and GKIPs.
- (v) Carry out a review of the current management arrangements of the TBP and the GKIP and identify how lessons learnt from Muhuri could be applied to the planned IMO's for GKIP and TBP.
- (vi) Support the team leader and other members of the team in the design of the institutional management arrangements and the management contract for the GKIP and TBP as well the necessary institutional linkages
- (vii) Prepare a training needs assessment programme and prepare an overall training, awareness and communication plan to: (a) support institutionalisation of PPP management of large irrigation schemes within MOWR and BWDB; and (b) raise

BWDB's awareness and knowledge of managing modernized irrigation schemes as proposed under IMIP.

- (viii) Support the national Institutional Specialists to implement the needs assessment, training and awareness program.

i. Procurement Specialist (3 pm)

16. The Procurement Specialist will have at least a Degree in Civil Engineering or equivalent, with at least 15 years of experience on similar development projects in Asia, preferably South Asia, and should have demonstrated experience with procurement processes for externally financed projects, mainly those funded by ADB or World Bank. The specialist should preferably have experience of PPP contracts. The specialist's main tasks include:

- (i) Assist PMU with procurement of Project outstanding contracts, review their progress, recommend adjustments, and identify lessons learnt that can be applied to procurement under the follow-on additional financing of Project to finance GKIP and TBP.
- (ii) Undertake capacity assessment of the EA and PMU to assess what requirements are required for the procurement activities and what supplementary personnel and resources need to be provided
- (iii) Together with the Team Leader and the national Procurement Specialist, prepare of a procurement plan for the follow-on project/additional financing incorporating the procurement requirements for the various works packages and engagement of private sector IMOs.
- (iv) Review the requirements for the Muhuri stage 2 IMO contract which will be a lease contract. Design the tendering plan and prepare the tender documents for the lease contract for the Stage 2 of the MIP.
- (v) Carry out an examination of the national and/or international market capacity in the relevant sectors and recommend technically and economically sound procurement packaging.
- (vi) With the national Procurement Specialist, prepare tender documents for civil works and consultancies to be contracted through advance contracting or during project start-up phase, in accordance with ADB's Guidelines on the Use of Consultants and ADB's Guidelines on Procurement.
- (vii) Advise on procurement strategies in accordance with the Government's and ADB's procurement guidelines and identify areas of discrepancy between the two if any; advise on appropriate procurement for PPP projects;
- (viii) Advise on the timelines for procurement and develop strategies to ensure the optimum phasing of the startup of the various packages.
- (ix) Work with the national Procurement specialist and the EA to prepare and review the necessary procurement notices.
- (x) Assist the PMU prepare the procurement documents for the Muhuri Stage 2 lease contract IMO.
- (xi) The specialist will also provide specific actions for integrity, ease of fund flow, and transparency.

j. Financial management Specialists (1 pm)

17. The Financial management consultant will have, at minimum, an advanced degree in accounting, or equivalent, with at least 15 years of experience in undertaking financial evaluations of commercial entities. The tasks of the Specialist are:

- (i) Support the EA and PMU in establishing and using proper project financial management and accounting systems to support financial management of the Project and adopting the financial management improvement proposed in the PAM
- (ii) Preparation and revision of the project cost estimates, financial monitoring and financial analysis

k. Financial modeling Specialists (2 pm)

18. The Financial Consultant will have, at minimum, an advanced degree in finances, or equivalent, with at least 15 years of experience in undertaking financial evaluations of commercial entities. The tasks of the Specialist are:

- (i) Support the PPP expert in assessing the financial viability of the irrigation schemes to be placed under PPP. Including:
 - (a) Development of the financial model for the PPP transaction models: the model will have to provide results such as:
 - Simulating the distribution of public and private sector funding (and, if applicable, user funding if the users are required to make a contribution to investment funding),
 - Measuring the consequences for the price that has to be charged to the users for the water.
 - Review farmers capacities or willingness to pay the irrigation fee (including higher fee) and design/supervise necessary additional surveys as per requirement
 - (b) The financial model will be built with:
 - Estimate of CAPEX (capital expenditures) in constant and current prices,
 - Estimate of Operation and Maintenance costs (staff, energy, maintenance, renewals, etc.),
 - Estimate of volume of water to be sold by the private operator (based on water requirements and efficiency of the irrigation system),
 - Definition of main assumptions like minimum internal rate of Return for private operator, exchange rate, inflation, insurance, financial interests, taxes, dividends, depreciation of assets, etc.

19. To build his model the financial expert will have to receive support from the irrigation expert to provide CAPEX and O&M costs, volume of water to be sold by the private operator, etc.

I. Resettlement and Social Development Specialist (2 pm)

20. The Resettlement and Social Development Specialist will have at least a degree in social sciences with at least 10 years of experience undertaking similar assignments, preferably in South Asian countries. The specialist will work closely with the national safeguards and social development specialists to assess and incorporate adequate and workable measures to ensure the needs of resettlement and social development are properly provided for. Other main tasks will include:

- (i) Design, commission, and supervise the implementation of appropriate socio-economic surveys on GIK and TBP and provide inputs for the preparation of the

- follow on project, safeguard documents, summary poverty reduction and social strategy (SPRSS) and the gender action plan (GAP).
- (ii) Update the resettlement framework, if necessary, for the follow-on project/additional financing according to ADB's Safeguard Policy Statement (2009).
- (iii) Prepare subproject safeguards assessments that include resettlement plans for GKIP and TBP.
- (iv) Draw lessons to be learned from comparable projects and propose practical and implementable options for improvement in resettlement implementation.
- (v) Prepare BWDB's capacity assessment and involuntary resettlement training program if gaps are identified.
- (vi) Assist BWDB in: (a) identifying the affected persons and the impact of the project; (b) making a detailed inventory of assets for compensation; (c) making swift payments, along with other relevant agencies; and (d) keeping detailed records of progress on resettlement.
- (vii) Provide or organize training program or other support for income restoration.
- (viii) Plan and implement consultations with the affected people in accordance with the participation plan.

m. Environmental Safeguards Specialist (2 pm)

21. The Environment Specialist will have at least a Master's degree in environmental sciences, environmental engineering, or similar, and have at least 10 years of experience undertaking similar assignments, preferably in South Asia. The main tasks of the specialist will be:

- (i) Taking the lead in preparing the environmental assessments for GKIP and TBP to meet ADB's and the government's environmental safeguard requirements.
- (ii) Supporting the national environmental consultant in: (a) training and capacity building of BWDB staff on environmental management, supervision, reporting and monitoring of implementation of environmental management plans (EMP); and (b) orienting contractors on implementation of EMP.
- (iii) Guiding BWDB on reporting requirements on environmental monitoring to ADB and BWDB.
- (iv) Recommending any corrective actions on any unforeseen environmental impacts.

n. Communications Specialist (2 pm)

22. The Communications Specialist will have master degree in communication or equivalent with at least 10 years successful experience in development communication. The main task will consist in supporting the implementation of the participation and communication plan of the project.

- (i) Review and define in detail the program communication and participation plan objectives, proposed approach and deliverables
- (ii) Review the Muhuri communication program and provide guidance on how the program can be improved and effectively applied to GKIP and TBP.
- (iii) Identify Media, NGOs or other communications agencies that can efficiently support the project communications
- (iv) Supervise the preparation of the project communications campaigns and communications materials
- (v) Supervise the design of the project website
- (vi) Train PMU communication specialists

2. National Consultants (total: 498 pm)

a. Deputy Team Leader / Irrigation Specialist (53 pm)

23. The Deputy Team Leader / Irrigation Specialist will support the Team Leader with overall management duties of the team, help lead the design process, and liaise with the main government and project stakeholders. The specialist will have at least a Master's in Civil Engineering or Agricultural Sciences, with at least 15 years of experience in preparing and implementing irrigation projects. Preferably the specialist will have previously co-led international donor-funded development projects. The main tasks of the specialist will be:

- (i) Support the Team Leader in managing the overall assignment and be responsible for the national consultants' outputs.
- (ii) Collect and compile all relevant studies including designs, drawings, survey information and data for all projects under MIP, GKIP and TBP.
- (iii) To support the timely submission of the deliverables.
- (iv) To support the necessary approval processes of deliverables including BWDB, ADB and stakeholders.
- (v) Work closely with the Team Leader to guide the management and coordination with the government, and other stakeholders including the facilitation of regular management dialogue between the EA, other associated agencies and stakeholders at central and project levels.
- (vi) To ensure all the project monitoring activities are established a data is properly collected compiled and analysed.
- (vii) Support the establishment and guide the activities of the Project Management Unit (PMU), the Implementation Coordination Committee (ICC), the PPP Cell, the Safeguards Cell and other proposed institutional arrangements.
- (viii) Lead policy dialogue with the Government and support the development of the policy/institutional loan covenants including the sector roadmap.
- (ix) Support the PMU in the liaising, coordinating and supervising the MuhuriIMO including supporting the implementation of the Muhuri Management Review and the implementation of the Project Monitoring and Evaluation and safeguards monitoring programs.
- (x) Support irrigation scheme modernization analyses and review technical design outputs and costing estimates.

b. Irrigation Planning Engineers (2 positions, total 50 pm)

24. The Irrigation Planning Engineers will have at least civil engineering degrees, or equivalent, and have at least 15 years of relevant experience. The engineer's will work closely with the international Irrigation Planning and Design Engineer to support the overall planning and preparation of feasibility studies and detail designs. Their tasks will include:

- (i) Collect and compile all relevant data for the project.
- (ii) Review of previous studies and current norms for irrigation planning and design.
- (iii) Assess current patterns of water use and cropping including the application of satellite imagery to define water use by surface and groundwater.
- (iv) Support the international Hydrologist with assessing crop water requirements.
- (v) Work with other specialists to develop a review of the current water use, water allocations and water use efficiencies for surface and groundwater.

- (vi) Prepare a water balance for the current water and cropping systems including surface and groundwater.
- (vii) Working with the various specialists to develop strategies to increase the water use efficiencies through reduction of losses, improved water allocations, scheduling of planting.
- (viii) Develop water balances for alternative future investment and management options. Assess the investment costs and management implications.
- (ix) Compile the technical aspects of the feasibility studies for GKIP and TBP including the investment and management interventions to improve the sustainability and efficiency of TBP and GKIP.
- (x) Prepare specific water management guidelines for TBP and GKIP to guide the respective IMOs on improved water management systems and procedures accounting for investment works implemented under the follow-on project/additional financing.

c. Irrigated Agriculture Specialists (21 pm)

25. The Irrigated Agriculture Specialists will have at least advanced degrees in agricultural sciences and at least 15 years of experience in working on similar projects. The specialist's will closely with the international specialist including:

- (i) Undertaking rural appraisal and engaging with farmers in TBP and GKIP to identify the main constraints to their crop productions.
- (ii) Assess the scope and capacities of existing agricultural extension services and other related organizations working in the project areas. Identify gaps and possible areas of support under the follow-on project.
- (iii) Review the requirements and propose strategies for increasing agricultural productivity, reducing water use and assessing potentials and strategies for crop diversification for TBP and GKIP. The review will assess the irrigation needs for the main boro crop as well as supplementary irrigation during other seasons for all crop types and varieties.
- (iv) Review progress and lessons learned from MIP and other projects internationally and assess how these could be applied in TBP and GKIP. Liaise and support the planning and implementation of agricultural support pilots for MIP.
- (v) Identify the key requirements for efficient irrigation to meet the needs of crop productivity including: timely water availabilities, crop diversification, scheduling of planting, reduced water use. Discuss with stakeholders and to identify irrigation management strategies to help meet requirements to meet targets for increased productivity.
- (vi) Work with other specialists to develop strategies for investment and management of TBP and GKIP and show how these can incorporate the requirements and meet the full potential needs of irrigated agriculture.
- (vii) Develop a plan and costs for agricultural support services to be implemented by the Irrigation Management Operators for TBP and GKIP. The plan should build on the existing agriculture extension and support.
- (viii) Develop and establish systems for agriculture monitoring compile and prepare monitoring analysis reports.

d. Irrigation Design Engineers (4 positions, total 84 pm)

26. The Irrigation Design Engineers will have civil engineering degrees, or equivalent, at least 10 years of experience designing irrigation schemes and similar hydraulic structures, and practical experience of using AutoCAD design software. They will support the senior international and national irrigation design engineers. Their main tasks will include:

- (i) Review the original design standards of TBP and GKIP, the current status of the schemes.
- (ii) With the other specialists, develop proposals for adjustments changes in the design standards incorporating international best practices for modernizing canal designs, hydraulic structure designs, gate systems, and measurement facilities.
- (iii) Develop the design criteria for the rehabilitation and modernization of the projects. Present the criteria to the BWDB and obtain their and other government agency's approvals.
- (iv) Plan the necessary surveys and investigations for the design for rehabilitation and modernization including remote sensing surveys, topographical surveys, geotechnical investigations, and structural condition assessments.
- (v) Assess the potential for conjunctive use of groundwater in TBP and GKIP and prepare structural and water management proposals that can integrate tubewells into the existing system layouts.
- (vi) Prepare the feasibility studies, detailed engineering designs, bill of quantities, engineering cost estimates and specifications for rehabilitation and modernization of TBP and GKIP.

e. Participatory Irrigation Management Specialists (2 positions, 56 pm)

27. The Participatory Irrigation Management Specialists will have at least degrees social sciences or civil engineering and at least 10 years of experience on PIM/IMT projects. They will be responsible for consulting with farmers and stakeholders during project and design preparations and ensuring their requests are appropriately addressed by the project. The main tasks of the specialists will include:

- (i) Review the performance status of WUAs, WMOs and their federal structure of GK and Teesta irrigation schemes.
- (ii) Implement Focal Group Discussions (FGDs) and Participatory Rural Appraisals (PRAs) to assess and understand current constraints and bottlenecks to improve irrigation management.
- (iii) Review the options and approaches for OM cost recovery. Undertake dialogue with stakeholders as to how these could be effectively achieved.
- (iv) Identify training and support measures required to strengthen the organizational capacity of the WUAs
- (v) Identify specific institutional arrangement required to facilitate the working collaboration between the WUAs and the future IMOs
- (vi) Undertake necessary dialogue and training with WUAs of GKIP and TBP to facilitate the transition from public MOM to private MOM
- (vii) Support the formation of MIP, GKIP and TBP Implementation Coordination committee and assist the organization of the quarterly meetings.
- (viii) Support design team in implementing participatory design with the farmers
- (ix) Support the works supervision team and IMO in implementing participatory works supervision with the farmers. Apply lessons learnt to GKIP and TBP.

- (x) Identify potential areas of conflict between the farmers and IMO and develop mechanisms to reduce conflict. Work with IMO in Muhuri and provide support as required and identify lessons learnt to be incorporated into the project design for TBP and GKIP.
- (xi) Support the establishment and review the performance of the customer's support services of the IMO at Muhuri. Analyse the data and prepare evaluation reports.
- (xii) Support the implementation of the Project communication and participation plan at field level.

f. Commercial lawyer (2pm) [intermittently]

28. The lawyer will be a partner or senior lawyer with a commercial law firm and have at least 10 years of experience in structuring, negotiating and drafting bidding and/or contract documentation for PPP transactions, including relevant experience in PPP transactions or regulatory matters involving the water sector. The lawyer will:

- (i) Work closely with the Public Private Partnership Transaction Specialist and the PMU on the structuring of a PPP transaction pursuant to which the long-term management, operation and maintenance (MOM) for MIP will be transferred to a third-party IMO.
- (ii) Identify and advise on any legal issues and risks arising from the proposed PPP transaction.
- (iii) Prepare, draft, negotiate and finalize all contract documents required for the PPP transaction and work with the international and national procurement specialists to incorporate these in bidding documents, as required;
- (iv) Identify all governmental or regulatory approvals, third party approvals, consents, registrations or permits required in connection with the PPP transaction and assist in obtaining any such approvals, consents, registrations or permits;
- (v) Advise and assist in all legal and documentary arrangements required for completion of the PPP transaction, including the satisfaction of conditions precedent to the effectiveness of the PPP transaction.

g. Hydrologist (4 pm)

29. The Hydrologist will support the International Hydrologist with assessing surface water availability for all three projects. The specialist will have at least a Master's degree in Earth Sciences or equivalent, with at least 15 years of experience in assessing and modelling meteorological and hydrological regimes. Ideally the specialist will have direct experience and practical knowledge of the hydrological regimes within the Padma and Teesta Rivers, and the international water sharing agreements of these rivers and those affecting MIP.

h. Groundwater Modeller (22 pm)

30. The Groundwater Modeller will work closely with the Hydrogeologist to prepare the groundwater models for MIP, GKIP and TBP projects. The specialist will have an advanced qualification in earth sciences, or equivalent, and at least 15 years of experience in assessing and modelling groundwater reservoirs. Ideally the specialist will have experience in assessing groundwater within the lower Ganges Plains. The main tasks of the specialist will include:

- (i) Review existing information geological and hydro-geological and groundwater studies relating to hydrogeology of the MIP, GKIP and TBP.

- (ii) Check the conditions in the field to assess typical yields from tubewells, water quality and possible issues.
- (iii) Define the requirements for feasibility level studies, including data collection and groundwater modelling to assess sustainable groundwater abstraction levels.
- (iv) Develop and undertake groundwater modelling and assessment for MIP, TBP and GKIP areas.
- (v) Assess the current recharge to the aquifer and identify the contribution from irrigation. Assess the potential to improve the recharge through surface water management and other methods.
- (vi) Prepare an interpretation of the model and workings with the other specialists prepare a development strategy for conjunctive surface and groundwater management for TBP and GKIP.

i. Mechanical and Electrical Engineer (4 pm)

31. The Mechanical and Electrical Engineer will have at least an advanced degree in mechanical engineering, or equivalent, and at least 15 years of experience in designing and implementing similar projects. The main tasks of the Engineer will include:

- (i) Support the planning and design for the electrical aspects of MIP, GKIP and TBP.
- (ii) For MIP, coordinate with the REB Central Office and the REBs Feni and Mirsheraï to keep them informed and engage support for the proposed expansion of the electrical distribution system to energize the pumps and pre-paid smartcard systems. Prepare the associated detailed engineering designs, bill of quantities, engineering cost estimate, specifications and contract documents.
- (iii) Liaise and support the MuhuriMO with the electrification of the low lift pumps and operating systems.
- (iv) For TBP and GKIP, support the assessment, feasibility studies and detailed engineering designs of electrical aspects of the project rehabilitation including: electrical control systems for the gates, rehabilitation of the pumping units, electrical requirements for flow measurement, telemetry etc.
- (v) Support the assessment of the requirements for gate and pump rehabilitation and modernization.
- (vi) Prepare detailed engineering designs, specifications, bill of quantities, and cost estimates for rehabilitation and modernization of mechanical equipment including transport, dredgers and other requirements.

j. Resettlement Specialist (5 pm)

32. The Resettlement Specialist will have an appropriate social sciences qualification and at least 10 years of relevant work experience, preferably with at least 5 years of experience working on international donor-funded projects. The Specialist will work closely with the international Resettlement and Social Development Specialist to assess and incorporate adequate and workable measures to ensure resettlement needs are properly addressed. The main tasks will include assisting the international resettlement specialist with:

- (i) Updating the resettlement framework, if necessary, for GKIP and TBP according to ADB's Safeguard Policy Statement (2009);
- (ii) Preparing subproject safeguards assessments that will include resettlement plans.
- (iii) Drawing lessons to be learned from comparable projects and propose practical and implementable options for improvement in resettlement implementation.

- (iv) Prepare BWDB's capacity assessment and involuntary resettlement training program if gaps are identified.
- (v) Assist BWDB in: (a) identifying the affected persons and the impact of the project; (b) making a detailed inventory of assets for compensation; (c) making swift payments, along with other relevant agencies; and (d) keeping detailed records of progress on resettlement.
- (vi) Provide or organize training program or other support for income restoration.
- (vii) Plan and implement consultations with the affected people in accordance with the participation plan.

k. Gender and Social Development Specialist (5 pm)

33. The Gender and Social Development Specialist will have at least an advanced social sciences degree or equivalent, with at least 10 years of experience working international development projects. The main tasks of the specialist will include:

- (i) Take the prime responsibility for analyzing GKIP and TBP from a gender perspective (with reference to the relevant ADB gender sector checklists) and developing project components and implementation mechanisms to ensure women's and girl's participation in the project.
- (ii) Designing, commissioning, and supervising the implementation of appropriate socio-economic surveys on GKIP and TBP and provide inputs for the preparation of the follow-on project, safeguard documents, summary poverty reduction and social strategy (SPRSS) and the gender action plan (GAP).
- (iii) Conduct a social impact assessment through a combination of field appraisal, stakeholder consultation and review of existing studies/projects to collect sex disaggregated data with which to inform the Project Poverty Reduction and Social Strategy.
- (iv) Contribute a gender perspective to the activities and outputs of other team members, particularly the institution and resettlement specialists.
- (v) Undertake a comprehensive review of gender and women's development opportunities that may be considered for inclusion under the project.
- (vi) Monitor the implementation of the GAP under MIP and report on the GAP on a regular basis, consistent with the GAP.
- (vii) Prepare case studies on the impact of the project's intervention in individual and community level;
- (viii) Contribute to preparing the project completion report; and
- (ix) Any other activities as necessary

l. Environmental Safeguards Specialist (6 pm)

34. The Environment Specialist will have a Master's degree in environmental sciences, engineering or a related field, and at least 10 years of relevant work experience, preferably with at least 5 years of experience working on international donor-funded projects. The Specialist will work closely with the international Environment Specialist to: (i) prepare environmental assessments as per ADB requirement and formats for GKIP, TBP under the follow-on project; (ii) train BWDB on supervision and management and contractors on implementation of EMP; (iii) carry out periodic monitoring on implementation of EMP; and (iv) support the BWDB in its reporting requirements on environmental monitoring to ADB and the Government.

m. Agricultural Economist (8 pm)

35. The Agricultural Economist will have at least an advanced degree in Economics or Agriculture Sciences and have at least 10 years of appropriate work experience. The specialist will support the international Agricultural Economist.

n. Procurement Specialist (5 pm)

36. The Procurement Specialists will have at least a civil engineering degree or equivalent, with at least 10 years of experience on similar development projects. Preferably the specialist will have demonstrated experience with procurement processes for externally financed projects, mainly those funded by ADB or World Bank. The specialist will support the international Procurement Specialist.

o. Financial Management Specialist (2 pm)

37. The Financial Consultant will have, at minimum, an advanced degree in accounting, or equivalent, with at least 10 years of experience in undertaking financial evaluations of commercial entities. The tasks of the Specialist is to support the international financial specialist including (i) support the EA and PMU in establishing and using proper project financial management and accounting systems to support financial management of the Project and adopting the financial management improvement proposed in the PAM, (ii) Preparation and revision of the project and program cost estimates, financial monitoring and financial analysis and (iii) Support the PPP expert in assessing the financial viability of the irrigation scheme to be placed under PPP.

p. Communication Specialist (3 pm)

38. The Communications Specialist will have master's degree in communication or equivalent with at least 10 years successful experience in development communication. The main task will consist in supporting the international specialist in the implementation of the participation and communication plan of the project including (i) Review and define in detail the project communication and participation plan objectives, proposed approach and deliverables, (ii) Review the Muhuri communication program and provide guidance on how the project can be improved and effectively applied to GKIP and TBP, (iii) Identify Media, NGOs or other communications agencies that can efficiently support the project communications, (iv) Supervise the preparation of the project communications campaigns and communications materials, (v) Supervise the design of the project website, (vi) Train PMU communication specialists.

q. Junior Design Engineers (8 positions, total 168 pm, non-key experts)

39. The Junior Design Engineers will have civil engineering degrees, or equivalent, with at least 2 years of post-graduation experience including practical experience with using AutoCAD design software. They will support the Irrigation Design Engineers.

3. Supporting Office Staff

40. PMDC will also provide adequate office support staff to meet the needs of the central office as well as the establishment of field offices in TBP and GKIP. Suggested positions are shown in Table 2.

Table 2: Project Support Staff

Position	No.	Qualification /experience	Tasks
Office Manager	1	At least 10 years of good office management experience preferably with an international company for international development projects	Office management, team logistics, support for field trips, preparation of workshops, etc.
Accountant	1	Degree in accounting, or equivalent with 5 years bookkeeping experience	Maintaining project financial statements and submission of invoices and payment requests to the PMU according to government and ADB's standards.
Assistant Office Manager / Secretary	3	Good English and computing skills (with appropriate certificate)	Office support, data entry, preparing letters, organising printing. There will be one position in each office.
Computer Operators Office Assistants	3	Good English and computing skills (with appropriate certificate)	Support the Office Manager, Secretary and Accountant. There will be one position in each office.
Office Caretaker / Messengers / Guard	3		Maintaining the office, carrying messages, and other minor tasks. There will be one position in each office.

4. Procurement of Additional Studies, Equipment and Training

41. Provisional sums have been included in the consultancy agreement for the procurement of various requirements to support the project. The exact implementation arrangements, specifications and detailed costs estimates of the procurement will be approved by the Project Director and procurement procedures will follow ADB Procurement Guidelines. The tentative scopes of works for the additional studies are summarized in Table 3.

Table 3: Additional Procurement

Name	Tasks
Surveys and studies	Supporting surveys and specific studies including topographic surveys, geotechnical investigations, flow monitoring, and resettlement and socio-economic surveys.
Remote Sensing	Trialling remote sensing systems for assessing crop growth, yields and water consumption for TBP and GKIP. The results will be used for supporting feasibility studies and designs. The long-term viability for using remote sensing for managing these projects will be assessed with the aim of lowering pumping needs and improving crop rotations to increase command areas.
Procurement of office equipment	Procurement of office equipment including computers, printers, photocopiers, GPS power inverter, etc. for central and field offices using shopping, mode of procurement following ADB Procurement Guidelines.

Name	Tasks
Training and awareness	Costs for the implementation of the training and awareness program including workshops.

D. Reporting and Other Deliverables

42. The list of main deliverables by PMDC is summarized in Table 4. Other occasional deliverables maybe required from time to time on an informal basis.

Table 4: List of Deliverables

No	Output	Description	Due Date ^{/a}
A Project Management and Institutional Development			
1	Inception Report	(i) Confirmation, elaboration and adjustment of the consultant's approach and methodology based on information received during the inception phase. (ii) Detailed plan of the consultant's activities and confirmation and adjustment to the tasks of each expert with further elaboration as required. (iii) Detailed implementation plan for the project's activities. (iv) Issues identified during the inception phase and. (v) procurement plan and timeframe for items under provisional sums	3
2	Mid-Term Report	Scheduled approximately halfway through the consultancy period and should be produced prior to the ADB mid-term mission. The contents would include: (i) summary of the progress including issues, confirmation elaboration and/adjustments to the consultant's program; and (ii) detailed implementation plan.	30
3	Draft Final Report	Summary of the project progress and other aspects to be agreed.	55
4	Final Report	Not later than the completion of the consultants' contract.	60
5	Monthly Reports	Concise mainly tabular report with 2-page maximum summarizing monthly progress of the project, implementation status and highlighting any critical issues that require government or ADB support with resolving.	1-60
6	Quarterly Reports	Concise reports giving more details of the project and key issues. For every year, the first three reports will be incremental reports detailing activities, progress and issues during the previous quarter, and planned activities for the next quarter. The fourth report (which will become the Annual Report) will also be cumulative for the full year period.	Every 3 months
7	Briefing Reports	Special briefing reports as requested by the EA and/or ADB	As required
8	Project documents for the follow-on Project	Project documents for the follow-on project including technical, safeguards, economic, social due diligences based on standard ADB format including the cost estimates and financial management assessment	15
9	Environmental Monitoring Reports	Annually after start of construction to meet ADB requirements and as and when required by GOB. PMDC to work with the Muhuri IMO to prepare and analyse monitoring reports.	Once every 12 months/ as required by GOB
10	Project Monitoring and Evaluation (PME)	Design of a project monitoring and evaluation (PME) system appropriate for large scale irrigation projects. The M&E should include irrigation efficiencies, OM funding and cost recovery, OM activities, agriculture financial and production estimates. The M&E system will be piloted by the IMO for the MIP and later	ME Design by month 12 Annual M&E report for MIP (in

No	Output	Description	Due Date ^{/a}
11	Training and awareness plan	incorporated into the project plan for the TBP and GKIP and other large-scale irrigation projects in Bangladesh. Institutional review and training needs assessment of MOWR and BWDB to support their needs for managing IMOs and improving MOM for large scale irrigation. Prepare a training and awareness plan for IMIP which should be based on the integrated roles of IMOs working in coordination with the Government and WUAs.	coordination with IMO) 12
12	Implementation of the training and awareness program	Working closely with the PMU to support the implementation of the training and awareness program, including programming, scheduling and implementation of the training program.	15 onwards
B Planning and Design for Rehabilitation and Modernization			
1	Detailed feasibility studies for TBP and GKIP	Feasibility studies including: (i) surface and groundwater availability; (ii) cropping assessments and water requirements; (iii) studies and proposals for rehabilitation, modernization, and strategies for increased efficiency and productivity; (iv) economic and financial assessments; (v) institutional assessments including proposals for the PPP management model; (vi) proposals for OM cost recovery mechanisms; and (vii) environmental, gender, social and resettlement safeguard frameworks and documents.	12
2	Detailed Engineering Design (DED) for MIP	For outstanding works to be implemented under the Project , prepare DED including geotechnical investigations, specifications, bills of quantities, and engineering cost estimates for new and rehabilitated structures, and building rehabilitation for MIP (excludes pipe design and upgrading of the electrification which is being undertaken by the Muhuri IMO). Assist BWDB obtain the necessary design approvals.	6
3	Detailed Engineering Design (DED) for TBP and GKIP.	Prepare DED including geotechnical investigations, specifications, bills of quantities, and engineering cost estimates for investment works selected for TIK and GKIP. Assist BWDB to obtain the necessary design clearances and prepare detailed resettlement plans.	24
4	Preparation of bid documents for out-standing Project works	Prepare bid documents according to Government and ADB guidelines for the Project outstanding civil works. Assist BWDB with bidding and selection process, and approval procedures.	12
5	Preparation of bid documents for Project 2 works Bidders contracted	Prepare bid documents according to Government and ADB guidelines for the follow-on project works. Assist BWDB with bidding and selection process, and approval procedures.	24
C Efficient Project Management and Effective Institutional Development			
1	Institutional frameworks and strategies for PPP for large scale irrigation.	Based on current Government policy and lessons learnt under the IMIP, prepare a review and recommendations for third-party MOM of large irrigation projects by private sector. The strategies should include the necessary mechanisms to support OM cost recovery. Develop a strategy document for official endorsement by MOWR and BWDB.	18
2	Establishment of the PPP Cell	Facilitate establishment and provide support for the PPP cell to monitor and supervise the activities of the IMOs.	6
3	Establishment of the ICCs	Facilitate the establishment and support strengthening and activities of the ICC for each project.	MIP: 6 TBP and GKIP: 30

No	Output	Description	Due Date ^{/a}
4	Review of Muhuri IMO	Working BWDB, an independent panel of experts, and other stakeholders including the ICC, undertake a review of the Muhuri IMO's performance. Recommend improvements and prepare options and preferred strategies for the Stage 2 lease contract.	36
5	IMO Management Contracts for TBP and GKIP	With the PPP Cell, assist PMU with preparation of bid documents, tendering and approval processes for the TBP and GKIP IMO management contracts.	Bid Docs: 18 IMO engaged: 24
6	IMO Lease Contract for MIP	With the PPP Cell, assist PMU with preparation of the bid documents for the Muhuri Stage 2 IMO lease contract. Support the bidding processes and award process.	Bid Docs: 40 IMO engaged: 60

Notes: a/ months from project start date

E. Support to be provided by the client:

43. The Client will provide:

- (i) Adequate office space free of cost with electricity, telephone and water supply connections for the establishment of the PMU office in Hasan court, 23/1 Mothiheel, Dhaka. However, the office space will only be sufficient for the BWDB support staff. Hence the consulting firm will rent an office nearby (if possible, walking distance) that will be big enough to host the PMDC team. In order to facilitate the working collaboration PMU staff and PMDC will be dispatched in both offices according to their specialities, etc. The consulting firm will be described proposed arrangement in their proposals.
- (ii) Adequate office space free of cost with electricity, telephone and water supply in Muhuri irrigation project, Teeta barrage project and GK project.
- (iii) Data and information related to the projects as available

II. TERMS OF REFERENCE FOR MUHURI IRRIGATION MANAGEMENT OPERATOR (C-IMO)

A. Introduction

1. The Muhuri Irrigation Project (MIP) is located in the middle of the Southeastern Region of Bangladesh adjacent to the coastal belt of the Bay of Bengal.⁷ It has an approximate a total area of about 43,900 ha and covers the four Upazilas of FeniSadar, Sonagazi, Chagalnaiya and ParsuramUpazilas under Feni District, and the MirsaraiUpazila of Chattogram District. The Muhuri project (MIP) overlaps with the Muhuri-Kahua Irrigation Project (MKIP) which was developed in the 1990s. The area of MuhuriKahua outside the original Muhuri has a total area of about 21,700 ha and is contiguous with MIP. Both schemes rely on the same water supply and hence will be considered combined under IMIP and referred to as the Muhuri Irrigation Project (MIP) (Figure 1). The scope of this service will cover the extended areas incorporating both projects with a gross area of around 65,000ha with a cultivated area of around 38,500 ha. A summary of their total, settled, cultivated and commanded areas is shown in Table 1.

Table 1: Muhuri and Muhuri-Kahua Areas

Irrigation Project	Land Use (ha)			Rabi Season Cropping (ha)		
	Total	Settlements	Cultivated	Other	Boro Rice	Fallow
Muhuri	43,892	15,265	24,776	3,851	11,843	9,773
Muhuri-Kahua lying outside Muhuri	21,731	7,168	13,783	780	6,108	7,136
Total Project Area under MIP	65,623	22,433	38,559	4,631	17,951	16,909

Source: Analysis of 2011 satellite imagery prepared for the project by CEGIS, 2013

2. Topographic relief of the project area is generally low lying with ground elevations varying from 8m PWD in the north to 4m PWD in the south; and 5.3m in the west to 6m PWD in the east. The area comprises smooth, broad ridges and basins which are underlain by silty-soil deposits. Land types classified according to seasonal depth of flooding are shown in Table 2 which shows about 70% of the area floods to a depth of 0.9 m or more during the Kharif season.

Table 2: Geographic and Crop Data

Land Type	Description	Flood depth (cm)	Percentage (%)	Remarks
F0	High land	0 - 30	20	Triple cropping possible with irrigation during Rabi
F1	Medium high land	30 – 90	51	
F2	Medium low land	90 – 180	21	Double cropping possible with deep water
F3	Lowland	>180	8	Aman and irrigation during Rabi
Total			100	

Source: CAD-II Agriculture Report 2008

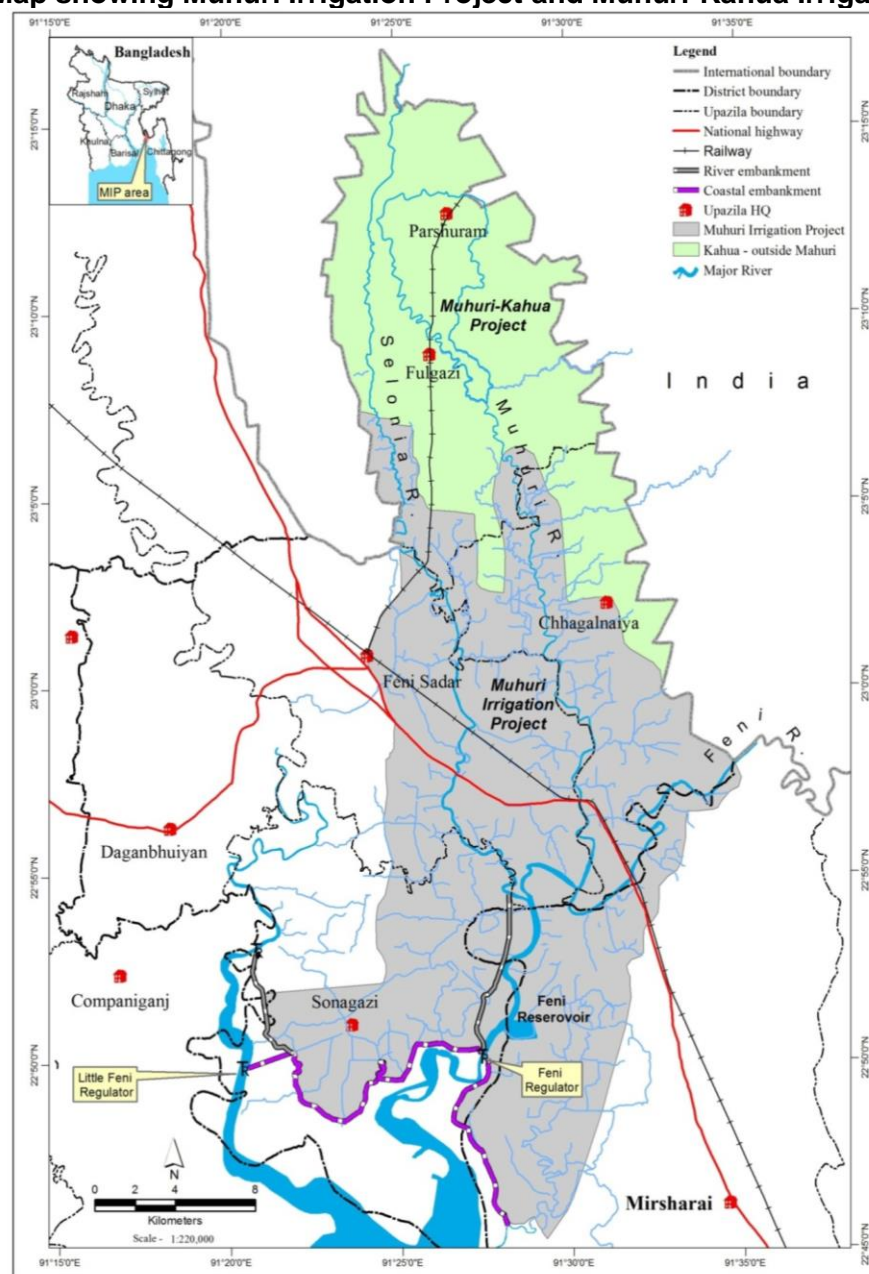
3. Geologically, MIP comprises parts of the physiographic unit of Meghna Estuarine Flood Plain, Chittagong Coastal Plain, and the Northern and Eastern Hills. The area has the following soil characteristics:

- (i) Old Meghna Estuarine Flood plain: Silt-loam soils predominate on highlands and silty-clay to clay in lowlands. Non-calcareous Dark Grey Flood plain soils are the only general type of the area. Organic matter content of the soils is moderate,

⁷ Between latitudes 22°45'N to 23°09'N and longitudes 91°21'E to 91°35'E

- moisture holding capacity is medium. Topsoils are moderately acidic but sub soils neutral in reaction. General fertility level is medium.
- (ii) Chittagong Coastal Plain: Non-calcareous Grey Floodplain Soils, Non-calcareous Alluvium and acid sulphate soils are the major components of general soil types of the area. Generally, the fertility level of soils is medium. Organic matter content is low to moderate.
4. Based on sample surveys, landholdings comprise: (i) 37% are landless or functionally landless with less than 0.2 ha of landholdings; (ii) 47% have small or marginal land holdings ranging from 0.2 ha to 1.0 ha; (iii) 13% have medium landholdings ranging from 1 ha to 3 ha; and (iv) 3% have large landholdings greater than 3 ha.⁸
 5. The MIP area experiences three seasons:
 - (i) Southwest Monsoon, usually starting in May and lasting until October. Almost 90% of the total annual rainfall occurs during this period, when temperatures and relative humidity are high.
 - (ii) Northeast Monsoon, usually lasting from November to March. This is the dry, cold season but occasionally rainfall occurs.
 - (iii) Hot Season, usually a short period that extends from about late March to May. The highest daily temperatures generally occur at this time and, owing to cloud burst events, flash floods often occur from the rivers flowing from the Tripura Hills located in the eastern region.
 6. MIP has a three tiered system: (i) the Level 1 primary system comprises the coastal embankment, main regulator structures, the Feni Reservoir and the Feni, Muhuri and Kalidash-Pahaliain river channels; (ii) the Level 2 secondary system comprises the khals; and (iii) the Level 3 tertiary system comprises the low lift pumps (LLPs) and farm distribution systems. The embankment and regulator raise water levels in the upstream rivers which in-turn flood the khals. LLPs are positioned along the khals and raise the water from the khal into the farm distribution systems, each servicing command areas ranging from 5 ha to 40 ha. In addition to irrigation, the Level 1 system also manages the risk of both river and tidal flooding.

⁸ CAD-II Agriculture Report 2008

Figure 1: Map showing Muhuri Irrigation Project and Muhuri-Kahua Irrigation Project

Source: PPTA, 2013

B. Main Issues Affecting MIP Productivity

7. MIP has lost productivity, in terms of irrigated area and cropping intensities, owing to limited access to water and poor drainage. The main causes are complex and include:

- (i) Major siltation in the khals and rivers which: (a) limits sufficient irrigation water in the khals from reaching the LLPs; and (b) restricts drainage from flowing back to the rivers.
- (ii) Significant reduction in Feni Reservoir storage due to siltation. The original reservoir storage was about 32Mm³ but this has reduced to about 7Mm³. The current overall storage in reservoir, rivers and khals is 54Mm³ of which 18Mm³ is live storage.

- (iii) There are large annual climatic variations which are affecting water availability. Delayed planting due to cold winters and slow mobilisation of the pumps are delaying the planting dates of boro rice and putting additional pressure on the scarce water resources during February and March which coincide with the lowest river flows.
- (iv) The low prices of rice and high prices of inputs including pumping has resulted in many farmers not planting rice.
- (v) Pump operators find it too expensive to provide water to plots located far from the pumps and most of the irrigated land is a nucleus around each pump.
- (vi) There is a significant drop in the number of operational pumps and the irrigated areas. Pump inventories in 2013 show there are only about 440 operational pumps from an original 800 pumps. The irrigated area from surface water based on 2013 satellite imagery is estimated to be 11,300 ha in MIP (including the Muhuri-Kahua area) reduced by 50% from the original target of 23,000ha.

8. Other issues include deterioration of the coastal embankment and associate's structures which are causing salinity intrusion and impediments to drainage as well as risk from sea water inundation during high sea level periods.

C. Planned MIP Infrastructure Investments

9. In the framework of the IMIP an investment plan is designed to increase the productivity and long-term sustainability of the MIP. The investments have been targeted to improve the irrigation performance and cost recovery and include:

- (i) Repair of the coastal embankment and associated structures to prevent saline intrusion and ingress of sea water during storms.
- (ii) Repair of 10 existing flow control structures including the main Regulator and provision of 8 new small water/ flood control structures.
- (iii) Excavation of about 3.8 million m³ from the 460km of khals to provide full access to irrigation water for all irrigation water users and to improve drainage.
- (iv) Upgrading and modernization of the Level 3 system including: (a) the replacement of existing (mostly diesel) pumps with electric pumps; (b) replacement of the existing open canals with buried PVC pipe distribution system; and (c) installation of a prepaid meter system to allow water allocations to be based on a volumetric basis and ensure full and transparent payment and accounting.
- (v) Upgrading and expansion of the local electrical distribution system to energize all new pumps to reduce operation costs and allow for the introduction of prepaid card meters and control systems. Four pilot solar power pumping units will also be installed to irrigate 60ha.
- (vi) Provision of the prepaid card meters and control systems.
- (vii) Repair of BWDB office space for use by BWDB and the IMO.

10. The investment to modernize the tertiary (farmer) distribution system forms about 40% of the investment and is designed to increase the water efficiencies to maximize the irrigable area, as well as reduce operation and maintenance (OM) costs. The prepaid metering and piped distribution will enable provision of on-demand water to farmers throughout the year. It will open opportunities for farmers to increase cropping intensities, support crop diversification and facilitate collection of water charges. The use of low-pressure pipes offers the best to solution to meeting the needs of water and power efficiencies.

11. All the existing diesel pumps will be replaced with electric pumps to reduce the operating costs and improve efficiencies. For about 60 ha (4 schemes), provision of solar panels will also be installed as pilots to demonstrate the potential for supplementary electric power.

12. To advance project preparedness and allow construction activities to begin during the IMO's first year of operation, detailed designs of new Level 3 systems have been prepared and approved by the government. These cover about 2,000 ha of MIP, including a 60ha pilot with solar pumping as well the preparation of designs for the earthworks (khal excavation and repairs to the coastal embankment).

D. Planned Pre-paid Smartcard Pump Operation and Revenue Collection System

13. Prepaid smartcard meter and control systems offer a highly efficient and transparent collection of service fees from farmers. The system also allows the farmers to pay based on the volume of water received which has shown to result in significant water use reduction over current systems that charge on seasonal payments per area basis. Prepaid meter have been tested and are proving very effective under the Barind Multipurpose Development Authority Project.⁹ In conjunction with a buried pipe tertiary distribution system, this modernized system is expected to result in the following: (i) water use efficiency gains; (ii) flexible on-demand irrigation supply to farmers; (iii) 100% financial cost recovery from users (farmers) according to amount of water each uses; and (iv) elimination of possible "rent seeking" from pump owners and operators, corruption, or loss of project funds. These in turn will enable: (i) considerable expansion in cropped area; (ii) reduced pumping volumes and costs; (iii) a variety of crops to be cultivated with different planting dates, crop durations and irrigation water requirements, to suit individual farmers; (iv) improved crop yields arising the individual farmers being able to control timing and amounts of irrigations; and (v) sustainable funding for operation and maintenance.

E. Planned MIP Management Arrangements

14. The MOM of the Level 1 will remain with the BWDB; although there is some discussion that the OM of some minor structures (including minor sluice gates in the coastal and river embankment) might be assigned to the IMO. This transfer of the responsibility will however not occur during the stage 1 management contract.

15. Under the IMIP it has been agreed that the MOM of Levels 2 and 3 will be assigned to the IMO. The IMO will be contracted by BWDB in two stages: (i) Stage 1 IMO will be a performance-based management contract for Years 1 to 5 (inclusive) during which the IMO will design and supervise construction of the investment works while also managing, operating and maintaining Levels 2 and 3 of the project; and (ii) Stage 2 IMO will be a 15 year lease contract for years 6 to 21 (inclusive) to undertake MOM of Level 2 and 3 of the project. The Stage 1 IMO will be financed by IMIP according to the terms of the contract, whereas the Stage 2 IMO should be financed solely from water tariff revenues. During Stage 1 there will be an independent review of the IMO arrangements and terms of reference (TOR) for Stage 2 will be prepared with support from PMDC. The present TOR applies to the Stage 1 IMO only.

16. The stage 1 IMO will be a private company or consortium contracted by BWDB through international competitive bidding based on a two-envelope technical and financial offer. The contract will be for a five-year period. During this period, the IMO will be responsible for MIP's

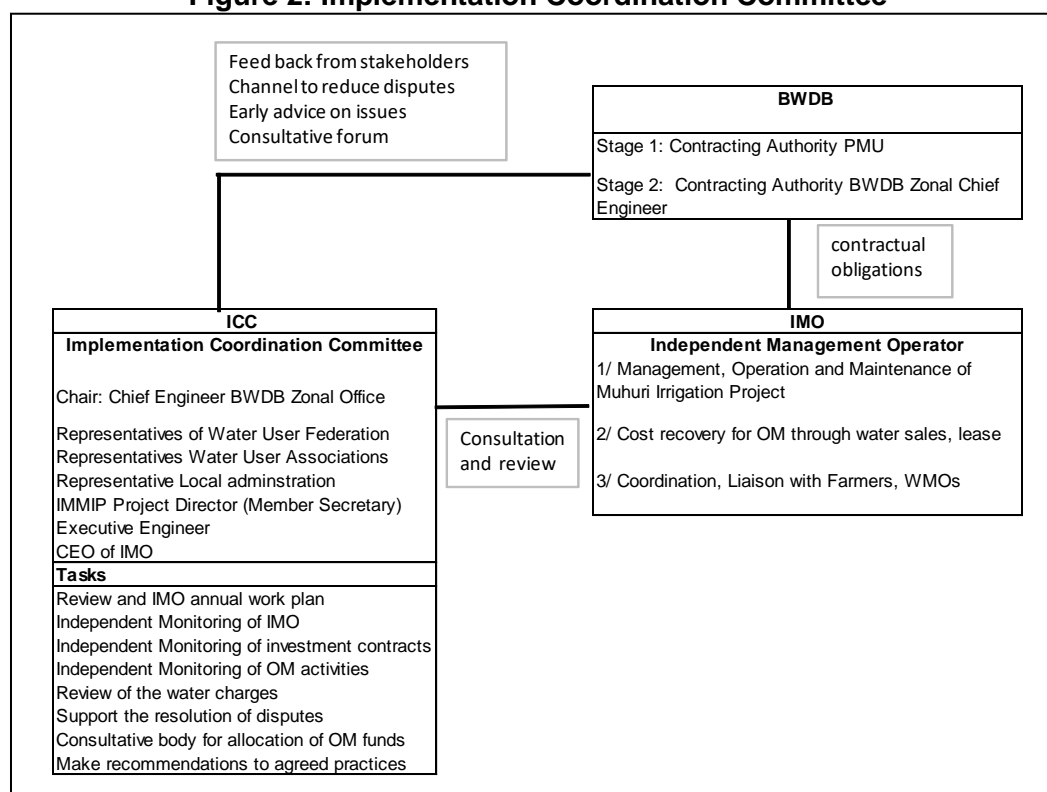
⁹ <http://www.bmda.gov.bd/>

MOM (Levels 2 and 3) and will include the establishment and management of efficient revenue collecting through the prepaid meter systems. The IMO would also be responsible for: (i) the design for tertiary level infrastructure (LLPs with prepaid smartcard systems and water distribution system), (ii) supervision of construction of all the investment contracts (including those for the Level 1 system that will be designed by the PMDC); and (iii) the development of pilot agricultural demonstrations and pilot cost recovery activities. All MIP assets will remain in the ownership of the Government. A summary of the design and construction supervision responsibilities are summarised in Table 3 below.

Table 3: Summary of Design and Supervision Responsibilities

Works Package	Design	Construction Supervision
CW-1; Excavation of khal-1, rehabilitation of coastal embankment	PPTA 2013/14	IMO 2014-18
CW-2; Excavation of khal-1	PPTA 2013/14	IMO 2014-18
CW-3; Farmer distribution, pumps and prepayment meters-stage-1: 2,000ha	PPTA 2013/14	IMO 2014-15
CW-4; Upgrading of electrical distribution	IMO 2014	IMO 2015-17
CW-5; Farmer distribution, pumps and prepayment meters-stage 2 :5,000 ha	IMO 2014/15	IMO 2015-16
CW-6; Farmer distribution, pumps and prepayment meters-stage 3: 5,000 ha	IMO 2014/15	IMO 2016-17
CW-7; Farmer distribution, pumps and prepayment meters-stage 4: 5,000 ha	IMO 2015/16	IMO 2017-18
CW-8; New structures, rehabilitation of structures, rehabilitation of BWDB buildings	PMDC 2014	IMO 2015-16

17. The Water Management Organizations (WUG, WMA and WMF) will play a supporting and guiding role for the IMO through the Implementation Coordination Committee (ICC) as shown in Figure 2. The ICC would meet quarterly. The costs including honorarium of the ICC would be paid through the ISC fund.

Figure 2: Implementation Coordination Committee

F. Financing of Operation and Maintenance

18. The recovery of operation and maintenance (O&M) costs at MIP will be via irrigation charges levied through the prepaid meters. The irrigation charge will be based on a tariff per cubic meter (m³) pumped measured against the volume of water pumped by each farmer. The financial analysis incorporates an evaluation of the current and future O&M costs at 2013 prices. The current costs of O&M are estimated to be USD26/ha for Level 1, USD20/ha for Level 2, and for Level 3 USD99/ha for electric pumps and USD137/ha for the diesel pumps. The estimated future costs of O&M for Levels 2 and 3 under Stage 2 (year 7 onwards) are summarised in Table 4 below¹⁰.

¹⁰ Under Stage 1, a construction-phase IMO will be recruited through a 5-year performance-based management contract to supervise the modernization works and bring the scheme to the required level of efficiency and profitability. Under Stage 2, a management-phase IMO will be contracted for 15 years through a public private partnership.

Table 4: Estimated Future Costs of Operation and Maintenance of Levels 2 and 3

Category	Annual Outgoings (USD million)	Cost (USD/ha)	Cost (Tk/ha)
1. O&M Level 3 Pumps Pipe Distribution	0.912	53.6	4290
2. O&M Level 2 Khals and other secondary structures	0.338	19.9	1592
3. Irrigation Service Charge Tk260/ha (USD3.25/ha)	0.055	3.3	260
4. IMO Organisation Costs	0.399	23.5	1876
5. IMO Margin (10%) on Operational Costs (1, 2 and 3)	0.131	7.7	614
6. VAT 15%	0.275	16.2	1295
Total Outgoings	2.110	124.1	9,928

19. The estimated annual volume of water pumped is around 200 million m³ mainly to meet the requirements of 17,000 ha of boro rice at a water requirement of 11,600 m³/ha. It is anticipated that additional pumped irrigation would take place outside the boro season, but this has not been included in the estimates. To meet the needs of full O&M cost recovery for Levels 2 and 3 requires an annual revenue of USD2.1 million (Tk168 million) per year which requires the water tariff to be set at USD10.55 per 1,000 m³ based on 200 million m³ pumped per year.

20. A comparison of current levels of charging and the estimated future costs of O&M is in Table 5. The full O&M cost recovery tariff is equivalent to USD124/ha, equal to approximately 90% of the current water charge for diesel pumps (USD138/ha) and 25% higher than the charge for electric pumps (USD99/ha).

Table 5: Comparison of Current and Estimated Future Costs

Table 6: Comparison of Current and Estimated Future Costs							
Category	Basis of Charges	Analysis of Costs				Estimated Current Charges (Data from Field Surveys)	
		Cost (USD per '000 m3)	Volume pumped (m3/ha)	Equivalent Cost (USD per ha)	Equivalent Cost (Tk/ha)	USD/ha	Tk/ha
Current Levels of Charging							
Diesel Pump	Level 3 only	8.46	16,274	137	10,960	138	11,000
Earth Canal							
Electric Pump	Level 3 only	3.02	16,274	49	3,920	99	7,900
Earth Canal							
Estimated Costs of O&M Levels 2 and 3 (based on full recovery of O&M costs in stage 2 year 7 onwards)							
New Electric	Levels 2						
Pumps Pipes,	and 3	10.55	11,760	124	9,928		
Prepaid							
Meters							

21. Farmers have reported difficulty in meeting current water charges due to the low price of rice. The new irrigation system will improve opportunities to increase crop returns. While keeping tariffs low may seem desirable, an underfunded IMO will not deliver an adequate service. In theory, keeping the tariff below the full cost recovery level can be compensated by periodic government transfer. In practice however, budgetary allocations are very often subverted resulting in operators not being able to meet their operational obligations. A strategy of self-financing of the IMOs was adopted. Alternative and supplementary cost recovery mechanisms will be investigated and piloted by the IMO during the first stage of MIP development including the lease of land and water assets, agricultural services, and royalties from sand abstraction.

22. During Stage 1 the IMO staffing and administration costs would be paid for by the loan with no linkage to the irrigation charges. This will allow the IMO to operate and establish the O&M systems independent of revenue. However, six months' operational revenue will be built up during Stage 1 to as a fund for Stage 2 to cover, for instance, the requirements of deferred maintenance and renewals. The irrigation service charge (ISC) is currently USD3.25/ha (Tk260/ha) which is about 2% of the cost of the O&M of levels 2 and 3. It is proposed that out of the ISC, the IMO would be paid a fee of 20% for collection, 50% would support Level 2 and 3 maintenance costs, and the remaining 30% would be split between the water users' association (WUA) and BWDB. The costs of the Implementation Coordination Committee (ICC) would be paid from BWDB's share.

23. Based on an analysis of 2013 prices it is recommended that initial water charge is set at USD9.00 (Tk720) per '000 m3, which is 15% less than the requirement for full O&M cost recovery. This will have to be adjusted annually incorporating escalation especially with respect to electricity tariffs. Future adjustments to the irrigation tariff would be determined by BWDB working in close liaison with the IMO and the ICC. By year 6, however, the tariff should be at an adequate level to meet the needs of full O&M cost recovery. The IMO will be working in Stage 1 to support increased crop productivity as well as investigating alternative and supplementary opportunities for cost recovery. For Stage 2 the level of the irrigation tariff can be incorporated into the evaluation of bids for MIP operation. This provides a clear incentive for the IMO to reduce costs and establish supplementary cost recovery mechanisms.

24. For Level 1 infrastructure, current annual maintenance costs are estimated at USD0.5 million (Tk40 million), excluding BWDB costs estimated at USD0.3 million (Tk24 million) per year. Current government allocations are sufficient to meet these requirements. The estimated overall O&M budgets for MIP are shown in Table 6. Under the project BWDB will transfer the responsibility for Level 2 O&M to the IMO and BWDB allocations for Level 2 O&M will be transferred to Level 1. With this reallocation of resources and recent increases in O&M funding it is estimated that government funding would be sufficient to meet the requirements of Level 1 O&M.

Table 6: Overall Operation and Maintenance Budgets for MIP (USD million)

Level	Current Requirement ^a			Current Allocation ^b			Future Requirement ^c		
	O&M	Estab	Total	O&M	Estab	Total	O&M	Estab	Total
1	0.5						0.5	0.3	0.8
2	0.3	0.3	1.1	0.5	0.3	0.8	0.3		
3	2.1	-	2.1	1.3		1.3	1.0	0.5 ^d	1.8
Total	2.9	0.3	3.2	1.8	0.3	2.1	1.8	0.8	2.6

Estab = establishment costs. O&M = physical O&M costs. Future Levels 2 and 3 O&M costs funded from irrigation revenues. USD0.055 million costs for ISC incorporated into the Level 3 costs

^a. Based on 17,000 ha 75% diesel pumps, earth canals, full management by BWDB

^b. Based current area of boro crop 11,300 ha 75% diesel pumps, full management by BWDB

^c. Based on 17,000 ha full electric pumping, pipe distribution, Level 1 managed by BWDB, Levels 2 and 3 managed by IMO. Excludes VAT.

^d. Costs of IMO.

SCOPE OF SERVICES

G. Introduction

25. The IMO will be engaged under a Management Services Contract for the provision of services for design, construction supervision, MOM, and agricultural support services for MIP. A general schedule of the following activities is shown in Figure 2:

- (i) Activity 1: Establishment of efficient and sustainable MOM of Level 2 and 3 infrastructures on rehabilitated areas.
- (ii) Activity 2: Construction supervision of MIP investment works.
- (iii) Activity 3: Participatory design of the Level 3 distribution systems.
- (iv) Activity 4: Agricultural support services, pilot cost recovery activities, and implementation of training and awareness programmes.

Figure 3: Activity planning during over the contract time

	Year 1	Year 2	Year 3	year 4	year 5
Activity 1 : Establishment of Efficient and Sustainable Management Operation and Maintenance of level 2 and 3 infrastructure					
Activity 2 : Supervision of the Construction of the Tranche 1 Investment Contracts					
Activity 3 : Participative Design of the Pipe Distribution Systems					
Activity 4 : Agricultural Support Services, Pilot Cost Recovery Activities and Training and Awareness					

26. Given the importance of all aspects of the contract in the long-term sustainability of the provision of irrigation services for MIP, bidders should submit as part of their technical proposal a detailed plan showing their proposed approach to the integration of the four activities, an appreciation of the key issues involved, and their approach to staffing and project management. The services and outputs of the IMO are described in detail below. Any urgent tasks evolved during contract period and not mentioned in the TOR should be accomplished by the IMO if it is in accordance with the Contract.

1. Activity 1: Efficient and Sustainable MOM of Level 2 and 3 Infrastructure

a. Scope of Services

27. Efficient and sustainable MOM for MIP is the core activity for the IMO and includes:

- (i) The establishment and implementation of effective OM systems of the Levels 2 and 3. Costs of maintenance would be paid for through water tariffs. Physical maintenance activities would be done by the most appropriate method as decided by the IMO.
- (ii) Effective OM on the rehabilitated structures, after completion of the works, accordingly to the provisional schedule.
- (iii) Annually agreeing with BWDB and ICC the water tariff rate.
- (iv) Once investment works are completed ensure full cost recovery for MOM activities are achievable through tariff collection using the prepaid meter systems.
- (v) Maintain close coordination and liaison with water users and other stakeholders and implement programs of communication and awareness to ensure stakeholders are well informed and engaged with the project process. This will include the close liaison and support for the implementation coordination committee (ICC) which comprises of the BWDB, Key Stakeholders including the WUA and the IMO.

- (vi) Establishing transparent and open systems of financial management through an Escrow¹¹ bank account for the project which would be used for collected revenue and payment of pump operations including pump operators, payment of electricity and telecom tariffs, and seed money for financing the IMO in Stage 2.
- (vii) The water tariff will incorporate the collection of the irrigation service charge. A portion of the ISC currently levied at USD3.25/ha will be paid to BWDB, the Implementation Coordination Committee (ICC) and to the WUAs. The allocation of the ISC funds will be decided by the ICC.
- (viii) Preparation of an annual report and work plan, preparation of quarterly progress reports showing revenues and disbursements.
- (ix) Maintaining a professional approach to undertaking all tasks and keeping the highest possible level of cooperation and relationship with water users and other stakeholders.
- (x) Selecting and contracting individual pump operators. The IMO will prepare a standard form of contract for engaging all pump operators which will be amended and updated as necessary on a collective basis. Selection will be based on their skills, attitude and experience. The experience of existing pump operators will be taken into account.
- (xi) For OM works funded by revenue engage for small works or service contracts as required. Procurement will follow government and ADB Procurement Guidelines (2013, as amended from time to time) and ADB's Guidelines for the Use of Consultants (2013, as amended from time to time).
- (xii) Monitoring, developing and maintaining a water resources management plan for the project area that includes surface and ground water. The plans will be developed in coordination with the PMDC consultants who will undertake hydrological and hydro-geological studies for MIP and the IMO will be responsible to apply the outputs of the technical studies and engage with stakeholders to develop long-term sustainable management including balancing and optimising the available water resources with the cropping systems. The management plan will include; (i) working with BWDB hydrology unit to improve the quality of flow measurement (budget has been allocated to the PMU to procure ADCP flow measurement equipment); (ii) to apply the outputs of the PMDC hydrological studies to improve the operation procedures for the MIP including the operation of the main barrage gates; (iii) applying rainfall and flow monitoring information provide annual forecasting information to farmers of likely dry season flow conditions which can be applied to improve crop planning; (iv) apply the outputs of the hydrological studies to develop mechanisms for farmers better fit cropping to the water availabilities, these could include adjusting the water tariffs during certain months to encourage/discourage water use; (v) develop improved assessments of trends of river flows and engage with farmers to adapt cropping patterns to meet possible future water shortages; (vi) based on the hydro-geological assessments by the PMDC improve the conjunctive management of surface and groundwater in the MIP.
- (xiii) Liaise with the Rural Electrification Board (REB) and PalliBidyutSamity (PBS) to ensure the best quality of service is made available for irrigation including reducing wherever possible power cuts especially during the periods of peak irrigation requirements and the sensitive periods of crop growth. The provision of power for

¹¹ Escrow refers to money held by a third-party on behalf of transacting parties. The escrow manager has the duty to properly account for the escrow funds and ensure that usage of funds is explicitly for the purposes intended.

- the MIP will be based on a Memorandum of Understanding (MOU) between the BWDB and the REB; the MOU will be signed in early 2014.
- (xiv) Supporting the farmers to manage pumping to meet the needs of crops within the constraints of electrical power outages. Mitigation measures to meet power shortages will include; (i) the optimum use of the two pumps to be provided at each location. (for each irrigation unit, two pumps will be provided-the main pump will meet the peak irrigation requirements based on 24 hours electricity supply, a second booster pump will provide additional capacity to allow the peak water requirements to be met within 16hours of power per day which is the current average power availability); (ii) organising some staggering of the peak requirements especially land preparation in case of severe shortages; (iii) preparation of emergency contingency plans in case of very severe power cuts including the use of farmer owned portable pumps, existing diesel pumps and tubewells; payments for emergency supplies would be paid for through the water charges, the details to be agreed with farmer pump owners.
 - (xv) Ensuring environmental, social and gender safeguard compliances are maintained during implementation of investment works and regulation MOM activities.
 - (xvi) In coordination with the PMDC develop an Project Monitoring and Evaluation System (PME) including the necessary management information systems (MIS) to meet the needs of project management. The PME would include, among other things: (i) GIS spatial database of infrastructure, assets and landholdings;(ii) time-series database of operational data including rainfall, water levels and flows throughout the Level 1 to 3 system including pump flows;(iii) records of maintenance needs and actions detailed by their nature, type, and location; (iv) record of all tariff and ISC revenues collected; (v) records of all OM expenses; and (vi) records of crops, yields and marketed surpluses based on the monitoring of a representative sample of farmers and other sampling methods; and (vi) cost recovery.
 - (xvii) Preparing OM Manuals to meet all OM needs and procedures based on an assessment of requirements as well as lessons learnt during the initial four years. The manuals will be the key documents to support the bidding process for the Stage 2 IMO. Three manuals will be prepared: (i) scheme operational manual; (ii) scheme maintenance manual; and (iii) a scheme administration manual.

b. Management of the Operation and Maintenance of Level 2 and 3

28. The IMO will be required manage, operate and maintain the Level 2 and 3 infrastructures including:

- (i) OM of the LLPs and smart card metering system.
- (ii) Management of revenue collection using the smartcard metering systems.
- (iii) Maintenance of the pipe distribution systems.
- (iv) Maintenance of the khals and other secondary infrastructure.

29. There are an estimated 450km of khal within the overall MIP project area, most but not all will be re-excavated under the project. The selection of priority khal for maintenance will be a key task of the IMO; optimising and efficient use of the limited maintenance funds will be essential. Priority will be given to ensuring access to irrigation water for the 17,000ha development area; other requirements will be to maintain adequate drainage capacity. The secondary infrastructure will be limited to the small structures (small hydraulic structures, bridges and protection works on the secondary and tertiary water courses currently owned by the BWDB (excluding the main river and coastal embankments). The IMO will also play an important role in controlling other structures

erected or to be erected in the khal waterways; this includes structures built by various government departments as well as privately owned structures. Special action is required for structures that are encroaching into the canal hydraulic section and are obstructing the irrigation flows and/or drainage flows. The IMO will liaise with BWDB and the local government organizations to ensure appropriate design of new infrastructure and removal of structures affecting the hydraulic flow.

30. The estimated OM requirements for the Level 2 and 3 systems are summarized in Table 7. The IMO will establish an escrow account for all the revenues and OM expenditures including the collection and allocation of the irrigation service charges (ISC). The IMO will be responsible for the technical and financial management for the operation and maintenance of the level 2 and level 3 irrigation facilities. The IMO Project Manager and the Deputy Project Manager will be signatories to the escrow account. The revenue for the OM will be derived from the cost recovery for the OM derived from the water revenues from the smart card systems as well other supplementary revenue systems to be established. The allocation of funds for OM must follow the approved Annual Work Plan and would follow the administration procedures defined in the Project Management and Administration Manual. The payments for OM work will include: (i) electricity payments; (ii) pump operator fees; (iii) smartcard vendor fees; (iv) maintenance of the Level 2 and 3 irrigation systems; and (v) other miscellaneous payments relating to the field activities. During stage 1 all the operational costs of the IMO including staff costs, transport, office costs, training and meetings would be paid through the IMO contract. The IMO will be required to prepare independently audited accounts which will be incorporated into the annual report to be prepared by 30th of June each year and presented to the Annual General Meeting of Implementation Coordination Committee.

Table 7: Estimated OM Costs for Years 1 to 5

Cost Categories		Year						
		1	2	3	4	5	6	7 onwards
		Stage 1 Management Contract					Stage 2 Lease	
Area of Irrigation under new management		500	2,000	6,000	12,000	17,000	17,000	17,000
Volume Pumped	Mm3	6	24	71	141	200	200	200
Income \$ million								
Tariff \$/000m3	10.6	0.062	0.248	0.745	1.489	2.110	2.110	2.110
Outgoings \$ million								
OM/depreciation Level 3 pumps/pipe distribution		0.027	0.107	0.322	0.644	0.912	0.912	0.912
OM Level 2 Khals and other costs		-	0.100	0.100	0.100	0.100	0.150	0.338
Irrigation Service Charge Tk260/ha (\$3.25/ha)		0.002	0.007	0.020	0.039	0.055	0.055	0.055
IMO Organisation Costs		-	-	-	-	-	0.399	0.399
IMO margin 10% on operational costs							0.112	0.131
VAT 15%		0.004	0.032	0.066	0.117	0.160	0.244	0.275
Total Outgoings		0.033	0.246	0.507	0.900	1.227	1.871	2.110
Net Balance \$ million		0.029	0.002	0.237	0.589	0.883	0.238	-
Cum Balance \$ million per year		0.029	0.032	0.269	0.858	1.741	1.979	1.979

c. Tasks Required for Bid Submission

31. A methodology for MOM of MIP to ensure a consistently high standard of service for delivery of irrigation water services to the farmers that also takes into account the issues discussed in the following paragraphs.

32. With the proposed Level 3 system with pipes and prepaid meters, the operation of the rehabilitated areas may become relatively simple; however, the Bidder should describe in their technical proposal the main aspects of the work to be undertaken. The methodology should: (i) demonstrate that the Bidder understands the tasks needed to be carried out and their ability to plan, manage and guarantee dependable, efficient and cost-effective water delivery service; (ii) describe the organization of its team to guarantee the water services during irrigation season (Rabi season and Kharif 1 and 2 seasons). and the organization of the team and their activities during the non-irrigation season (Kharif 2 season: July to December). The Bidder will: (i) specify the level of labour intensity they intend to apply for scheme operation and how local staff (pumps operators) will be hired/contracted and supervised, to ensure quality of service; (ii) propose how the electrical pumps can be effectively managed including actions to mitigate against severe power shortages; (iii) describe the procedures to cooperate with BWDB that will keep the responsibility of MOM of the Level 1 system; and (iv) describe the mechanisms for data collection from the prepaid meter system.

33. Draft maintenance Manual: The proposed mechanisms for routine, emergency and preventative maintenance should be developed by the IMO as part of its bid. It should demonstrate a planned approach to maintenance of the infrastructure with a planned program of activities, and measurable parameters to ensure potential for effective monitoring and control as well as record keeping system. The Draft Manual to be presented as part of bid submission will be used to evaluate the Bidders' approach and methodology. During the contract period the successful bidder has the task of updating and developing fully this draft.

34. Draft Maintenance Program: a fully resourced and time bound maintenance program for the completed Scheme including resources to be mobilized by the IMO, e.g. use of own labour, equipment, renting or outsourcing to local or regional contractors; the bidder will specify the level of labour intensity he intends to apply for maintenance works and how local labour would be hired and supervised to ensure adequate quality of works; detailed specifications, time-bound and priced proposals for items of major plant and equipment that the bidder intends to purchase or hire to carry out maintenance are to be provided by the bidder in the respective technical and financial forms of the bid.

35. Information system proposals to develop the data bases and SIG linked to infrastructures, O&M, water users; agricultural situation; hydraulic and climatic data collection; etc. The bidder will describe its staff organization and effective means of implementation.

36. Management reporting approach: To show the items of financial, technical and operational data collection and reporting that will be provided on a regular basis. This to show the program and procedures for reporting both internally and to BWDB.

37. Customer Service Plan to include levels of service response, dispute resolution, interaction with farmers and IWUA, as well as to incorporate approaches to office staffing, equipment.

38. The bidder will describe the effective means of implementation to guarantee efficient and sustainable operation and maintenance of the rehabilitated infrastructures (transport means for operation staffs, organization chart; office requirement at Upazila level; workshop; etc.)

2. Activity 2: Construction Supervision of MIP Investment Works

a. Scope of services

39. The construction contracts for the MIP rehabilitation will be let by BWDB through the nominated Project Director who will act as the "Employer". The BWDB will appoint the IMO as the resident engineer with full responsibilities for the supervision of the construction contracts under the IMIP. The General Manager of the Irrigation Management Operator, or the Deputy General Manager in the absence of the General Manager will be the nominated "Resident Engineer".

40. The IMO will be responsible for the supervision of construction of all the investment contracts under IMIP (including the coastal embankment, khal excavation, rehabilitation and new structures, pipe distribution/pumps/prepaid meters, upgrading of the electricity network, rehabilitation of offices). The proposed works for MIP are summarised in Table 8 below. Payments would be made by BWDB based on progress certificates by the IMO. The IMO staff supported surveyors will develop a very high level of supervision to international ISO or equivalent standards which can form a model for future supervision under the IMIP. The construction time schedule is as shown in Figure 4.

Figure 4: Construction Implementation Schedule

	Year 1					Year 2				Year 3				Year 4				Year 5			
	2014	2015				2016				2017				2018				2019			
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
Wet Season			x	x			x	x			x	x			x	x			x	x	
Coastal embankment works ^{a/}	x	x			x	x			x	x			x	X							
Khal excavation ^{b/}	x	x			x	x			x	x			x	X							
New and rehabilitation of hydraulics structures and BWDB offices ^{c/}	x	x			x	x															
Level 3 system works ^{d/}	x	x	x	x	x	x	x	x	x	x	x	x	x	x							
Upgrading of the electricity network ^{e/}	x	x	x	x	x	x	x	x	x	x	x	x	x	x							

Notes:

^a Number of km of coastal embankment works = 22.4 km;

^b The new and structures proposed for rehabilitation include (i) the rehabilitation of coastal sluice structures 05,06, 06/07 and 08; (ii) rehabilitation of river sluices including the main Feni regulator and the little Feni river sluices 10 and 11; (iii) new coastal protection/drainage structures sluice 07 and Sluice 09; and (iv) new water and flood control structures, north Daulatpur, South Daulatpur and water retention structures BhalukiaKhal, Madhya Khal and IchakhaliKhal; and (v) rehabilitation of the BWDB offices and houses at Feni.

^c Excavation of Khal to support irrigation and drainage, estimated volume is 3.8 million m³;

^d 17,000 ha need to be modernized, 2000ha advance systems have been designed through the PPTA

^e estimated to be about 160km of new electrical distribution of which it is estimated 70% would high tension and 30% low tension.

41. The scope of services of the IMO for construction supervision will include the following:
- Represent the interests of BWDB under the Works Contracts, in any manner related to the Works Contracts and the proper execution thereof.
 - Review and comment or recommend acceptance of Contractor's performance security, insurances and other legal documents.

- (iii) Deliver instructions to commence or suspend works according to the provisions of the contract on behalf of BWDB.
- (iv) Review and comment or approve the Contractor's work program, method statements, proposals for materials sources, quality management plan
- (v) Review and comment or approve the Contractor's testing laboratories and procedures for testing, Environmental Management Plan (EMP), Health and Safety Plan (HSP), Public Health and Public Safety Awareness (PHPSA) Plan, including HIV/AIDS Awareness Program, Traffic Management Plan, and other deliverables that the Contractor is obliged to furnish for the Engineer's approval.
- (vi) Prepare and submit to BWDB for approval a disbursement schedule based on the Contractor's proposal in accordance with the requirements of the construction contract.
- (vii) Verify the Contractor's pre-construction survey and setting out.
- (viii) Prepare a quality assurance plan, in consultation with the Contractor, including arrangements to check the quality of materials brought to the site, to ensure that the quality of construction is consistent with the technical specifications, and to maintain test records.
- (ix) Prepare a program for inspections and load testing of existing structures (as applicable), review test results and make recommendations for any further actions.
- (x) Review and approve the Contractor's construction drawings, and drawings for temporary site works.
- (xi) Review and approve the as-built construction drawings prepared by the contractor. The as-built drawings will be based on detailed design drawings with amendments for changes during construction.
- (xii) Visit the site on a routine basis to observe the progress and quality of the Contractor's work, and maintain representatives at the site in such a manner that adequate supervision of construction works is provided at all times the Contractor is working.
- (xiii) Organize the supervision of the works with proper allocation of responsibilities to individual inspectors and supervise their work to ensure effective execution, including proper conduct, attendance and performance of their duties.
- (xiv) Ensure the Contractor supplies to the site all material, equipment and machinery that have been committed in its bid and ensure that all items remain on site until their release has been authorized. Ensure that the Contractor properly records all equipment, materials and labour which have been supplied under the Works Contract.
- (xv) Assess the adequacy of all inputs, such as equipment, labour and materials provided by the Contractor and its methods of work in relation to the required rate of progress and, when required, take appropriate action in order to maintain agreed schedule.
- (xvi) Inspect and evaluate all Contractor's installations, shops and warehouses and other accommodation to ensure compliance with the terms and conditions of the Contract.
- (xvii) Provide timely assistance and direction to the Contractor in all matters related to the interpretation or clarification of the Works Contract, ground survey controls, quality control testing and other matters related to Works Contract compliance and progress of the Works; and ensure prompt responses when the Contractor calls for inspections and approvals.
- (xviii) Issue instructions, in accordance with the authority specified in the Conditions of Contract, to Contractors to ensure Works will proceed according to agreed schedule.

- (xix) Collect, track and furnish BWDB with indicators of Construction Performance, against contractual requirements as enumerated in the Construction Contract.
- (xx) Ensure that the Works are executed in accordance with the detailed design drawings and that the quality of workmanship and materials is in compliance with the technical specifications. Evaluate and determine acceptability of substitute or "equal" materials and equipment proposed by the Contractor.
- (xxi) Perform or oversee all laboratory and field testing of Contractor's work, materials and products required to ensure that the quality as specified in the Contract is attained. The Construction Contractor will provide testing facilities and will establish routine testing related to construction works. Review all certificates of inspections, tests and approvals.
- (xxii) Assure the receipt of, and maintain as permanent records, all warrants required under the terms of the Construction Contract for materials and equipment accepted and incorporated in the Scheme. All local materials incorporated in their source are also to be approved.
- (xxiii) Monitor implementation of Environmental and Social Management Plan of the Scheme during construction phase.
- (xxiv) Monitor implementation of the Health Safety Plan. Check and ensure that the Contractor has taken suitable measures with regard to the safety and health of its workers (e.g., provision of potable water, lodging, mosquito nets, and first aid kits), site safety, and accident prevention measures. Inspect the security and safety aspects of construction and temporary works to ensure that every reasonable measure has been taken to protect life and property.
- (xxv) Monitor implementation any public health requirements including HIV/AIDS awareness and prevention.
- (xxvi) Liaise with communities and businesses affected by any of the works undertaken under the Project.
- (xxvii) Ensure that Contractor complies with its contractual obligations in respect of labour standards (including the monitoring of trafficking in persons), mitigation of impacts on the environment, health and safety, by withholding payment against appropriate items in applications for interim payment, as applicable in accordance with the provisions of the Works Contract.
- (xxviii) Prepare and maintain inspection and engineering reports and records to adequately document the progress and performance of the works.
- (xxix) Prepare incident reports, covering accidents, environmental and other incidents, and take appropriate follow-on action.
- (xxx) Perform all survey measurements of completed or partial works where required for the determination of quantities. Compute quantities of approved and accepted work and materials and check, certify and make recommendations to BWDB on the Contractor's interim and final payment certificates. All payment certificates shall be checked and countersigned by the IMO.
- (xxxi) Review and comment on, or recommend approval of, Contractor's proposals for variations.
- (xxxii) Propose and present for the approval of IMO any variations in the Works Contract that may be deemed necessary for the completion of Works, including information on any effect that the variations may have on the Works Contract amount and the time for completion of the Scheme, and prepare all necessary variation orders, including alterations of plans, technical specifications, and other details for the approval of BWDB.

- (xxxiii) Inform BWDB about problems or potential problems, which may arise in connection with the Works Contract and make recommendations for possible solutions.
- (xxxiv) Examine and make recommendations to BWDB on all claims from the Contractor for extension of time, additional compensation, extra work or expenses or other similar matters. Attend claims meetings between BWDB and Contractor.
- (xxxv) Arrange and preside at periodic coordination and progress meetings on site and prepare the minutes of meetings.
- (xxxvi) Review reports and documents submitted by Contractor.
- (xxxvii) Prepare and submit reports on the progress of the Works, the Contractor's performance, quality of works and the Project's financial status and forecasts.
- (xxxviii) Keep on site full and complete records of all matters pertaining to the Works including, but not limited to, programs, correspondence, instructions, variations, revised drawings, site sketches, minutes of meetings, testing, inspections, approvals, measurements, interim payments, progress reports, insurances, visitors to site, completion certificates, day works, Contractor's labour and equipment, site diaries and inspector's daily reports.
- (xxxix) Arrange and make public presentations of the work done to date at the request of BWDB.
- (xl) Upon completion of the Works, carry out the necessary inspection, specify and supervise any remedial works to be carried out and, upon completion, propose to BWDB a date for a joint inspection, prior to the issuance of the Certificate of Substantial Completion.
- (xli) Review and comment on or approve as-built drawings prepared by the Contractor.
- (xlii) Submit supervision Plan for Investment Works and supervision progress report.
- (xlili) Perform all other tasks, not specifically mentioned above, but which are necessary and essential to ensure the successful supervision and control of all the construction activities, in accordance with the terms of the Works Contract.

Table 8 Summary of the Proposed Civil Works for MIP

Ref	Item	Unit	Qty	Cost (Tk Million)	Cost (\$ Million)	Sub Total Tk million	Sub Total \$ million	%
1	Coastal Flood Protection							
1.1	Repairs to the coastal embankment Polder 60	m3	325,000	66.625	0.833	66.6	0.8	2.7
1.2	Coastal Flood Protection Structures							
1.2.1	Rehabilitation of Coastal Protection/Drainage Structures							
	1 Polder 60 Sluice 05 Rehabilitation	nr	1	0.826	0.010			
	2 Polder 60 Sluice 06 Rehabilitation	nr	1	0.839	0.010			
	3 Polder 60 Sluice between 6 and 7 Rehabilitation	nr	1	1.774	0.022			
	4 Polder 60 Sluice 08 Rehabilitation	nr	1	10.925	0.137			
1.2.2	New Coastal Protection/Drainage Structures							
	1 Polder 60 Sluice 07 New 2 Vent	nr	1	23.485	0.294			
	2 Polder 60 Sluice 09 New 2 Vent	nr	1	21.136	0.264	59.0	0.7	2.4
2	Main River System							
2.1	Repairs to Water and Flood Control Structures							
	2.1.1 Feni Regulator Structure-gate and lifting system	Ls	1	9.900	0.124			
	2.1.2 Little Feni River Sluice 10 Rehabilitation	nr	1	2.640	0.033			
	2.1.3 Little Feni River Sluice 11 Rehabilitation	nr	1	0.350	0.004			
2.2	New Water and Flood Control Structures							
	2.2.1 North Daulatpur New 2 Vents	nr	1	23.340	0.292			
	2.2.2 South Daulatpur New 4 Vent	nr	1	42.639	0.533			
	2.2.3 Bhalukia New 2 Vent	nr	1	28.340	0.354			
	2.2.4 Madhya Khal New 4 Vent Water Retention Structure	nr	1	41.672	0.521			
	2.2.5 Ichakhali Khal New 7 Vent Water Retention Structure	nr	1	62.571	0.782	211.5	2.6	8.7
3	Excavation of khals	m3	3,825,000	688.500	8.606	688.5	8.6	28.4
4	Repair of BWDB Offices, stores	Ls	1	15.000	0.188	15.0	0.2	0.6
5	Farmer Canal Systems							
5.1	New low lift pumps with electric motors	ha	17,000	81.600	1.020			
5.2	Buried UPVC Pipe and associated structures	ha	17,000	952.000	11.900			
5.3	Prepaid meters and system	ha	17,000	68.000	0.850			
5.4	Pilot solar pumps and panels	ha	60	14.400	0.180	1,116.0	14.0	46.0
6	Upgrading of electrical distribution system							
6.1	Upgrading of electrification	ha	17,000	272.000	3.400	272.0	3.4	11.2
	Total			2,428.562	30.357	2,428.6	30.4	100.000

42. The IMO will also be responsible for post construction services that take place during the Contractor's defect liability period. Also, during the defect liability period the Contractor should provide an active maintenance program to maintain the elements of the scheme in good order until Final Acceptance. During this period, the IMO will act on behalf of the Employer in all matters related to the full performance by the construction contractor of its obligations under its defect liability warranty. The IMO's tasks shall include the following:

- (i) Inspect the Works at appropriate intervals during the Contractor's Defects Liability Period and ensure that the Contractor is maintaining all scheme elements in good condition.
- (ii) Inspect the Works at appropriate intervals during the Contractor's Defects Liability Period; and, prior to expiration of the Defects Liability Period, prepare a final deficiency list, supervise remedial works and recommend to BWDB the date of the Final Inspection of the Works.
- (iii) Carry out the Final Inspection of Works together with representatives of BWDB, and the Contractor.
- (iv) Prepare and issue the Final Acceptance Certificate in consultation with BWDB and the collaborating agencies.
- (v) Prepare the Final Payment Certificate.

b. Tasks Required for Bid Submission

43. A methodology and program of work will be submitted as part of the bid submission including:

- (i) Detailed methodology for supervision of rehabilitation work (preparation of construction; technical management; administrative management; communication with stakeholders; financial management; agreement with quality, health, environmental plans); Post construction services (periodical inspection of infrastructure and reparation of defects; issuing of final certificates).
- (ii) Scoping: A statement confirming limits of work, including: (a) a clear definition of the work to be carried out for the various components of the activity (coastal embankment; khal excavation; rehabilitation of new structures; distribution system; electricity network; rehabilitation of offices), noting any difficulties that may be expected and how they may be overcome; (b) proposed timetable of each component; and (c) IMO team and specialist needs.
- (iii) Outline program of work, showing expected time, duration and personnel as well as the interrelationship between components.
- (iv) Regarding excavation of the khal, the bidder shall describe in their proposal the best method to estimate and control the amount of sediment excavated from the khal.

44. The bidder will describe the effective means of implementation to guarantee efficient and supervision of work (transport means for field staffs; organization chart; etc.)

3. Activity 3: Participatory Design of the Level 3 Distribution Systems

a. Scope of services

45. The IMO is responsible for preparing the detailed engineering design, bill of quantities (BOQ), engineering cost estimates, specifications and contract bidding documents for the Level 3 distribution systems for the remaining 15,000ha which includes: (i) the LLPs and associated civil structures; (ii) the buried pipe distribution network including storage tanks, pressure risers,

and outlet valves and associated civil structures; (iii) expansion and necessary upgrading of the electricity distribution network; and (iv) installation of the smartcard prepaid meters and control systems. The designs should generally follow the design criteria for the advance designs already prepared for the initial 2,000ha. Upgrading of the electricity will require following the requirements and specifications of the Rural Electrification Board (REB). The IMO will prepare the layout designs of the distribution systems with participation of the farmers, landowners, local water user associations, ICC and local communities. The participatory approach to be followed by the IMO during the design consultation process will be firstly agreed with ICC and BWDB. A tentative schedule for the design and implementation of Level 3 works is shown in Figure 4 which shows the design and implementation of investment works taking a phased approach with the initial 2,000 ha systems being implemented in the first year followed by three phases of participatory design and implementation of 5,000ha units of investment works. The preparation of the tender documents and the tendering will be implemented by the PMU with the support of the PMDC.

Figure 5: Tentative Design and Implementation Schedule for Level 3

	Year 1				Year 2				Year 3				Year 4				Year 5			
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Wet Season			x	x			x	x			x	x			x	x			x	x
Phase 1 (2,000 ha)																				
Construction	x	x																		
Defects Period			x	x	x															
Phase 2 (5,000 ha)																				
Consultations	x	x																		
Design		x	x																	
Bidding				x																
Construction					x	x														
Defects Period							x	x	x	x										
Phase 3 (5,000 ha)																				
Consultations					x	x														
Design						x	x													
Bidding								x												
Construction									x	x										
Defects Period											x	x	x	x						
Phase 4 (5,000 ha)																				
Consultations									x	x										
Design										x	x									
Bidding												x								
Construction													x	x						
Defects Period															x	x	x	x		

46. The design process will generally follow:
- (i) Review of existing data and reports made available to the consultant including: (a) available topographical information and digital elevation models; (b) layout map of MIP showing the reservoir, rivers, khal, roads, etc., and boundaries of project area; (c) design criteria for the buried pipe system including cropping patterns, and crop water requirements and design duties; and (d) specifications and a blank (sample) Bill of Quantities.
 - (ii) Identification of pumped systems for about 15,000 ha (net) irrigation based on the current layout of pumps and farm distribution systems in consultation with the farmers and needs for improvements. The number of systems will depend on their size but is likely to be about 600 assuming an average of 25ha/system. Selection of the schemes to be taken up for investment will include a technical assessment of the viabilities including; avoiding areas where there is risk of flood damage, good soils, avoiding schemes where khal siltation will be very problematic, minimising the costs of the electrical interconnections, minimising the length of pipelines, avoiding high pumping lifts etc..
 - (iii) Organise and undertake consultations with farmers, landowners, land holders, ICC and WUAs, including detailed stakeholders' identification for consultations, providing awareness campaigns, organising meetings, and signing of Memorandum of Understanding (MOU) for every system for which detailed designs are prepared. On signing of the MOU's, each farmer must commit to making an upfront payment of BTK1, 500 prior to construction of the buried pipe systems. Payment would be made at the time of mobilisation of the contractor to the IMO who will deposit the payments into the escrow account.
 - (iv) Preparing detailed engineering designs of each distribution system including preparation of drawings, bill of quantities, and cost estimates that are disaggregated for each scheme. Drawings shall be done showing for: (a) layouts of the khal, pumps and pipe systems; (b) long sections for systems; (c) all for associated civil structures; and (d) all associated electro and mechanical equipment. However, except for the header tank and any other one-off structures, all drawings should be standardised as much as possible.
 - (v) Assessment of required electric power supply and LLP requirements including pump and motor capacity, control systems, and power and energy requirements for the systems for which detailed designs are prepared. Design and specifications of electricity distribution extensions to energize the LLPs shall be prepared. Extensions to the electric distribution system will include extension to existing substations, if necessary, distribution lines, poles and transformers, if required.

b. Tasks Required for Bid Submission:

47. A methodology and program of work and staffing schedule will be submitted as part of the bid. This will include the participative approach proposed to plan and design the distribution system, along with undertaking the detail designs. The Bidder will also provide a detailed time schedule for this activity to guarantee that the participative design will be in accordance with the proposed deadline for the rehabilitation of the distribution system.

4. **Activity 4: Agricultural Support Services, Pilot Cost Recovery Activities, and Implementation of Training and Awareness Programs**

a. **Scope of services**

48. Provisional sums have been allocated to support this work and the IMO is required to arrange the engagement of appropriate organizations to implement Activity 4 as sub-contractors.

49. **Agricultural Support Services** are a responsibility of the IMO with the objective of enabling small farmers to take up more efficient water use, crop diversification through sustainable practices, and developing opportunities for commercial farming and agribusiness. The intention is for IMO to offer a nucleus of localised self-financing support services either directly or by interacting and engaging with existing government and non-government organizations. Pilot programs will be established for MIP under the Project to assess viabilities and response agriculture support programs before up-scaling under the next phase IMO.

50. The objective of the agricultural services is to directly involve the IMO in agriculture extension services and providing technical support to farmers. The IMO will be required to prepare an annual training plan which, on approval by PMU, will be implemented by the IMO. The training will focus on, among other things: optimizing water use, expanding the service area, promoting and facilitating crop diversification, and increasing cropping intensity. The result of the training should raise farmer incomes and therefore their ability to pay the ISC and for irrigation services. The training program will be implemented using both in-house training capacities of the IMO, BWDB and DOA as well as subcontracting to local, regional and national qualified training institutes and individual specialists.

51. **Development of Pilot Cost Recovery Activities:** Opportunities for increasing the cost recovery of providing irrigation services, over and above revenue from water charges, will be explored to minimize the burden on farmers as well as minimize or avoid the need for Government subsidies. There are various opportunities that can be researched including, but not limited to: leasing of BWDB land assets; leasing of areas within the khal, rivers and reservoir for fisheries including stocking; royalties from sand abstraction; and agriculture support enterprises. Their concepts and viabilities will be studied by the IMO and presented to BWDB and ICC for endorsement. The most promising, viable and sustainable opportunities would be taken up as pilots by the IMO. A provisional sum within the IMO contract has been allocated to support this work.

52. **Awareness and Training:** The need for a strong program of awareness, communication and engagement with stakeholders has been identified as a key role for the IMO. This component is designed to provide continued support for the stakeholders including BWDB, Department of Agriculture, Local Government, Water Management Organizations, ICC, and most important the farmers to achieve the targets described in the project design. The roles of these supporting organizations are critical and how the stakeholders can work most effectively with the IMO is an essential requirement. Selected and focused training will be provided by the IMP and will include a mix of informal on-the-job training and formal institutional training to key stakeholders. The mechanisms to establish and develop effective engagement with the project stakeholder will form a key part of the IMOs responsibilities as part of the awareness and training program. The IMO will prepare and submit an awareness and training plan to the PMU, which on their approval, will be implemented under the IMO. It is anticipated that training and awareness would be a mix of; (i) activities implemented directly by the IMO staff without additional cost, (ii) direct engagement of individuals or procurement of materials to support the training which would be reimbursed at

cost; (iii) subcontracted to third party organizations and (iv) establishment and development of training financed through commercial organizations.

53. The training plan and program must develop new initiatives to ensure the long-term sustainability of training, including initiatives to reduce the dependencies on project funded training. The outline requirements for communication and awareness are described in the Project Administration Manual (PAM).

b. Tasks Required for Bid Submission

54. A methodology and program of work for undertaking these activities will be submitted as part of the bid submission. The Bidder will provide the method it will adopt to identify and carry out or subcontract: (i) agricultural support services; (ii) training and awareness programs including initiatives to effectively engage with the stakeholders aligned with the Project communication strategy; (iii) pilot cost recovery activities; and (iv) capacity building and capacity strengthening programs of the main stakeholders. The Bidder will provide an outline work program and staffing schedule.

DELIVERABLES

55. The deliverables of the IMO contract will be in two parts: (i) reporting deliverables; and (ii) project deliverables.

A. Reporting Deliverables

56. The reporting deliverables are summarized in Table 9. All reports will be submitted in English, in both editable and fixed electronic form, and hard copies. All deliverables shall be uploaded to an electronic sharing network such as an File Transfer Protocol (FTP) site or Share point site that BWDB and their representatives can access. In addition, the IMO shall submit all backup Excel spread sheets and computer based analytical models, including models that are developed using specialized software applications. The format for AutoCAD and GIS data to be submitted by the IMO shall be agreed with BWDB.

57. The IMO shall establish and maintain a comprehensive inventory, both hard copy and electronic, of all relevant documents made available and collected. All such documents, which are considered confidential, will be compiled in usable form and delivered in an organized fashion to BWDB at the end of the contract.

Table 9: IMO Reporting and Documentation Deliverables

Ref.	Report	Description	Submission (month)
A	Establishment of Efficient and Sustainable MOM		
1	Project Management and Administration Manual	The Project Management and Administration Manual (PMAM) will be prepared at the beginning of the IMO contract and will be routinely updated as required. It will present the MIP development and MOM arrangements including documenting arrangements for, but not limited to: asset management; staffing logistics; financial management; stakeholder liaison and engagement; operational methodologies; maintenance and administrative procedures; extension services; cost	1 and as needed

Ref.	Report	Description	Submission (month)
		recovery activities, and social and environmental requirements. It will also detail how assets will be catalogued, assessed and maintained. The initial and amended contents of the PMAM will be agreed by PMU and ICC. The PMAM will also present procurement plan and timeframe for items under provisional sums	
2	Water Resources Management Plan	Monitoring, developing and maintaining a water resources management plan for the project area that includes surface, ground water and agricultural water demands. The plans will be developed in coordination with the PMDC consultants who will undertake hydrological and hydro-geological studies for MIP.	12 with annual updates
3	Quarterly and Annual Reports	Progress reports to be submitted to BWDB on a quarterly and annual basis. The reports would show actual expenditures, revenues and MOM outputs. The quarterly reports will be concise and will report only on the previous three months. The annual report will be comprehensive and present cumulative results throughout the preceding year. The annual report will be supported by an external independent audit. The annual report will include progress of the Key Performance Indicators (KPI).	Annual report: 12, 24, 36, 48, 60; Quarterly reports: every 3 months
4	Annual Work Plans	Annual work plans (AWPs) will be prepared in liaison with WUAs through the ICC and agreed with the PMU. The AWP will present the IMO's plans for the year ahead, including: MOM activities; design and construction supervision activities; and agricultural support services and pilot cost recovery activities. The AWP will also present estimated revenues and costs and will present the agreed tariff for that year. The annual reports and annual work plan will be presented to the PMU and ICC annually by 30th June. The annual reports and work plan will be presented to the PMU and the ICC at the Annual General Meeting to be held by 31st July. The annual work plan would be approved not later than 15th August to allow the IMO to initiate the implementation. The year 1 work plan will be produced within 3 months of contract signing.	3, 12, 24, 36, 48
5	Asset Management Plans	Asset Management Plans (AMPs) will be an inventory of all scheme assets and will present their current conditions and indicate if maintenance or replacements are required. The AMPs will be prepared annually, three months prior to submitting the AWP. The AMPs will be used to support planned OM activities presented within the AWP. The IMO will routinely inspect the condition of all Level 2 and 3 scheme assets which will be documented within the AMPs. The initial AMP will outline the inventory reference and GIS database system.	9, 21, 33, 45, 57
6	Information System Report	Annual report on main data collected and updated in the data base: rainfall, level and flow in the Khal, volumes pumped; land register; agriculture; etc.	Annual report
7	Implementation and monitoring of the	Working with PMU, Stakeholders, the ICC and contractors to ensure the environmental management	Annual and periodic

Ref.	Report	Description	Submission (month)
	environmental management and gender action plans.	(EMP) and gender action plans (GAP) are effectively implemented and monitored.	reports as described in the EMP and GAP
8	Project Monitoring and Evaluation (PME)	Implementation of the project monitoring and evaluation activities. Including setting up the system according to the system design (to be developed by PMDC) and preparing annual PME reports	PME established by month 6. Annual PME reports
B	Construction Supervision of MIP Investment Works		
1	Supervision Plan for Investment Works	Detailed plan for the supervision activities including requirements for surveys, quality control to ISO standards or equivalent	3
2	Supervision Progress Report	Monthly construction progress reports	monthly
3	Progress Certificates	Payment certificates as required.	monthly
C	Participatory Design of the Level 3 Distribution Systems		
1	Detailed Design Reports and Drawings	Detailed engineering design reports are prepared for the Level 3 Distribution system detailing the design process, assumptions, parameters, formulae, results, specifications and costs of the designs. The report will be accompanied by detailed designs drawings for all components. A single document will be prepared that will be updated and expanded following design of each implementation phase. The design and design reports will need to be submitted for design approval by the BWDB and the REB for the electrification works.	12, 24, 36
2	Design Progress Reports	Periodic reports on the progress of design and accounts of farmer participation in the design process.	Quarterly
D	Agricultural Support Services and Pilot Cost Recovery Activities		
1	Awareness and Training Plan	The Awareness and Training Plan (ATP) will present the results of IMO's needs assessment of awareness and training of farmers, pump operators, WUAs, BWDB and other relevant stakeholders. It will outline an awareness and training programme that the IMO will implement during its term, using either internal or external resources.	4
2	Agricultural Support Services Plan	The Agricultural Support Services Plan (ASSP) will review of the scope and potential for agricultural support and present strategies and recommended plan for engaging external support for implementing the services. The plans should be prepared in detail with agricultural support pilots and demonstrations and include budget estimates. These will be prepared in consultation with the WUA and ICC, and approved by BWDB.	6
3	Cost Recovery Opportunities Plan	The Cost Recovery Opportunities Plan (CROP) will identify and assess alternative cost recovery opportunities. It will present approaches and strategies for development of the pilot projects, for approval of BWDB.	6
4	Recruitment Documents	Prepare, in consultation with WUAs and ICC, contract documents and scope of works for agricultural support	9

Ref.	Report	Description	Submission (month)
		services and pilot cost recovery activities. These will be approved by BWDB.	
5	Monitoring Reports	Quarterly monitoring reports of the agriculture support services, cost recovery pilot activities, and training and awareness activities.	quarterly
6	Agricultural Support Evaluation Report and Strategic Plan	The Agricultural Support Evaluation and Strategic Plan (ASERSP) will present the evaluation of the agricultural support pilots and preparation of strategies and recommend proposals for the long-term development of agriculture and water saving systems and the provision of agricultural support services.	36
7	Cost Recovery Opportunities Assessment Report	The Cost Recovery Opportunities Assessment Report (CROAR) will present the evaluation of the pilot cost recovery activities and recommend proposals for long-term cost recovery activities.	36

B. Project Deliverables

58. In addition to the reporting deliverables, the IMO is required to take a lead support role of the key project deliverables which as described in Table 10 below.

Table 10: IMO Project Outputs

Ref	Output	Description	Submission (months)
A. Establishment of Efficient and Sustainable MOM			
1	Pumps and pipe irrigation commissioned	17,000ha of piped irrigation including pumps, pipe distribution and prepaid meters are installed commissioned and operating. These will be constructed in a phased approach with 2,000ha completed in Year 1, and 5,000ha completed each year in Years 2 to 4.	12, 24, 36, 48
2	OM of pumps, pipes and prepaid meters	Efficient OM of the pumps, pipe distribution and prepaid meters. Breakdowns are repaired within 24 hours. Over the year all the pumps are operable 95% of the time.	Continuous
3	Cost Recovery	OM cost recovery systems are established and 100% of the OM costs are recovered for 17,000ha	48
4	Maintenance works	Maintenance work is properly planned and implemented.	Continuous
5	Irrigation Areas	Target cropping patterns and yields as estimated in the economic analysis are achieved.	60
B. Construction Supervision of MIP Investment Works			
1	Investment Works	All investment works for MIP are constructed according to the target schedules and international standards and norms have been followed. Progress and final payments have been agreed and paid by BWDB.	48
C. Participatory Design of the Level 3 Distribution Systems			
1	Designs of Level 3 Distribution System	Participatory designs of the Level 3 distribution systems	30
D. Agricultural Support Services and Pilot Cost Recovery Activities			

Ref	Output	Description	Submission (months)
1	Agricultural Support Services	Agricultural support services and demonstrations are implemented. Long-term sustainable and viable cropping systems are identified to increase farmer incomes and reduce water use. Up-scaling of improved systems models over 1,000ha are achieved.	36
2	Supplementary cost recovery pilots	Supplementary cost recovery pilots are identified and implemented. Supplementary cost recovery is achieved to fund 10% of the overall OM costs.	36
3	Awareness and training	Implementation of awareness and training based on the awareness and training plan	36
4	Farmer and Stakeholder Engagement	Farmers are fully aware of the project and support the objectives. The ICC is established and meets four times per year, the WUA and the WUF representatives attend the ICC meetings. Farmer and stakeholder complaints are compiled, assessed, and adequately addressed	36

TERMS OF REFERENCE FOR PROFESSIONAL STAFF

59. The Irrigation Management Operator (IMO) consultant will be for a period of five years to be provided during the Project implementation. The total international input will be for 47 person-months (pm) and 821 pm for national consultants (key experts) and about 911 pm of non-key experts & support staff. The overall requirement is 1,779 pm. Outline terms of reference for individual IMO specialists are given below and a summary of specialist inputs is shown in Table 11.

Table11: Estimated Requirements for Professional and Support Staff

Position	Person-Months Key Experts		Person-Months non key expert and staff
	International	National	National
MIP Management General Manager / Chief Irrigation Engineer Deputy General Manager / Executive Engineer Office Manager Assistant Office Manager/Secretary Accountant / Procurement Specialist Safeguards / Public Relations Specialist Computer / MIS Database Manager	36	55 50 50	55 55 50
Upazila Field Offices (6 nos) Field Officer Managers (6 positions) Field Office Staff (Assistant OM Engineers and Agriculture Support- 6 Positions)		300	300
Agriculture Extension Office Agricultural Management Specialist Extension and Training Specialist	10	50	
Design Office			

Position	Person-Months Key Experts		Person-Months non key expert and staff
	International	National	National
Senior Irrigation Planning and Design Engineer Irrigation Design Engineers (2 positions) Assistant Design Engineers / AutoCAD Operators Mechanical / Electrical Engineer ^{a/}	1	28 56 12	112
Construction Supervision Office Chief Resident Engineer Assistant Site Engineers		36	240
Senior Topographic Surveyor Assistant Surveyors / Chain-persons Mechanical / Electrical Engineer (Supervision and OM)		50 48	99
OM Office Senior OM Engineer OM Engineer		39 47	
Overall Total	47	821	911

Notes: The national Mechanical / Electrical Engineer can fulfill the responsibilities for both the design and supervision roles with a total input of 60 pm.

A. KEY EXPERTS

1. International Specialists (47 person months)

a. General Manager/ Chief Irrigation Engineer (36 person months)

60. The General Manager / Chief Irrigation Engineer will be required to work closely with PMU and will be responsible of the overall management of the IMO to achieve the four main activities describe in the scope of works above. The specialist will also lead the design team. The specialist will have a Master's degree in Civil or agriculture engineering, or a related field, and will have at least 20 years of technical project experience with at least 5 of those years leading the implementation and management of projects. Experience of working in irrigation and water resources development in South Asia on major irrigation systems is highly desirable. The specialist will be responsible for:

- (i) Represent the IMO in all its contractual obligations and be in charge of the relationship with the PMU/BWDB and the regional authorities.
- (ii) Overseeing the implementation of the various activities including design, construction supervision and MOM and be responsible for the preparing and maintaining quality insurance plans.
- (iii) To act as the resident engineer for supervision of construction. As the employers (BWDBs) representative to take full responsibility for the quality control and effective supervision of the construction works.
- (iv) Manage the teams of the four activities and specifically supervise the recruitment and evaluation of the operation and management local staff

- (v) Overall direction of the team, coordination of inputs, and management of individual specialists.
- (vi) Ensuring the timely progress of the project implementation including planning, design, construction and institutional development as well as the programmed Project and Safeguards Monitoring Systems.
- (vii) Ensuring timely delivery of all deliverables as listed in Table 4 including the various progress reports.
- (viii) To take overall charge of the development and updating of the water resources management plan for the project area that includes surface, ground water and agricultural water demands. The plans will be developed by the various technical specialists of the IMO in coordination with the PMDC consultants who will undertake hydrological and hydro-geological studies for MIP
- (ix) To provide strong and effective management support to help guide the BWDB, other stakeholders and contractors to achieve the targeted project deliverables identified in Table 5.
- (x) To support the necessary approval processes of deliverables including BWDB, ADB and stakeholders.
- (xi) Guide the management and coordination with the government, and other stakeholders including the facilitation of regular management dialogue between the EA, other associated agencies and stakeholders at central and project levels.
- (xii) Support the establishment and guide the activities of the Implementation Coordination Committees (ICC) and other proposed institutional arrangements.
- (xiii) Supervise and organize the irrigation services with the national experts during the irrigation season. During the first years he/she will have to strengthen the capacity of the national irrigation engineers. He/she will also provide technical inputs to the O&M manuals with regard to irrigation management. With the deputy team leader and the national irrigation O&M engineer, he/she will organize the operation services, maintenance services, customer relationship services.
- (xiv) Be responsible for the review of distribution system prepared by the construction Contractor, and for the overall supervision of the structural components of the Works.
- (xv) Coordinate the design review of distribution system gathering inputs from other subject specialists.
- (xvi) Contribute to propose relevant training related to best irrigation practices on plot.

b. Agricultural Management Specialist (10 person months)

61. The Agricultural Management specialist must have a background in Agronomy or related field/discipline and a Master of Science in Agro-economics or related field/discipline. She/he must have a minimum of 12 years of experience in agro-economics/agronomy with a minimum of at least two (2) successful agriculture development projects in the sub-region, with Bangladesh preferred. The Agricultural Management Specialist should have experience in the development of irrigated agriculture projects, economic value chains and market-based crop production analysis. The Agricultural Management Specialist should have experience working in multi-disciplinary teams. Fluency in written and spoken English is mandatory.

- (i) To take the lead role, in coordination with the other specialist to develop and maintain the project data collection and data base.
- (ii) Agricultural aspects will be a core requirement for the data base including at the scheme level (record of crops, yields and marketed; other sampling methods for monitoring agriculture development within the scheme).

- (iii) He/she will have to liaise with other agriculture, local government, WUA and other stakeholders and support agencies.
- (iv) He/she will have to propose and assess the requirements of pilot cost recovery activities. He/she will advise the ICC and PMU on water tariff. He/she will contribute to the establishment of the training plan. He/she will o build capacity of the local Extension officer/training specialist /agriculture extension, regarding the optimal use of the irrigation infrastructure (rise the cultural intensity) and diversification of crops (rise the ability of the farmers to pay for the water services).
- (v) Engage with farmers and stakeholders to identify the main constraints to crop production in MIP.
- (vi) Assess the scope and capacities of the existing agricultural extension services and other related organizations working in the project area. Identify gaps and possible areas of support from the project.
- (vii) Review the requirements and propose strategies for increasing agricultural productivity, increasing POW, improving farm water application efficiencies and overall scheme efficiencies, reducing water use, and assessing potentials and strategies for crop diversification for MIP. The review will assess the irrigation needs for the main boro crop as well as supplementary irrigation during other seasons including Aman crop.
- (viii) Identify the key requirements for efficient irrigation to meet the needs of crop productivity including: timely water availabilities, crop diversification, scheduling of planting, reduced water use. Discuss with stakeholders to identify irrigation management strategies to help meet requirements to meet targets for increased productivity.
- (ix) Work with the other specialists to develop strategies for investment and management of MIP and show how these strategies can incorporate the requirements and help meet the needs and full potentials of irrigated agriculture.
- (x) To work with the other specialists and the PMDC to design and establish a Project Monitoring and Evaluation System for MIP.
- (xi) Develop a plan and costs for agricultural support services to be implemented by the IMO's for MIP. The plan should build on the existing agriculture extension and support programmes within those areas.

c. Mechanical / Electrical Engineer (1 person months)

62. The international Electro-mechanical Engineer will be a highly qualified professional electrical and mechanical engineer, (at least BSc degree) with a minimum of 10 years of experience in all aspects of pumping station design and construction, in the design and rehabilitation of irrigation electromechanical equipment including but not limited to pumps, valves, modules, maintenance, operation. Fluency in written and spoken English is required:

- (i) Contribute to drafting the OM manuals with regard to electro-mechanical maintenance activities and related training. With the support of other members of the team he/she will have to propose the best option for electrical pumps backup system. He/she will have to organize with the Computer IT specialist/Data base, the data collection regarding individual Low lift Pump at the scheme level.
- (ii) To review the requirements for the upgrading and extension of the electricity network. To liaise with REB regarding the norms and standards for the electrical works to ensure the contract complies with the specification and standards of the REB.

- (iii) Be responsible for the review and production of all pump, electrical materials design and drawings, and for the overall supervision of the electro-mechanical components of the Works. He/she will work with the Computer IT specialist/Data base to fulfil the pumps register and define the average efficiency of each pump that will be used for operation KPI.
- (iv) The Electro-mechanical engineer will undertake the design review for all electro-mechanical components of the Scheme.
- (v) The Electro-mechanical engineer will contribute to propose relevant training related to pumps operation and maintenance.

2. National Specialists (821 person months)

a. Deputy General Manager / Executive Engineer (55 person months)

63. The Deputy General Manager (DGM) will have either a Degree in Civil Engineering, or equivalent, or at least a Diploma of Business Management, or equivalent. The DGM will have at least 12 years of business management experience and will be fluent in both English and Bengali. The DGM will work in closely with the General Manager / Chief Engineer and is responsible for the day-to-day management of the team, and relationship with the local authorities and project beneficiaries. It is intended the DGM will take over the role of General Manager following completion of the IMO's design activities. The main tasks of the specialist will include:

- (i) To support the General Manager in all aspects of the management of the levels 2 and 3 of the Muhuri Irrigation Project.
- (ii) In the absence of the project manager to act as the resident engineer for supervision of construction. As the employers (BWDBs) representative to take full responsibility for the quality control and effective supervision of the construction works
- (iii) Ensuring the IMO undertakes the four main activities according to schedule, meeting key performance indicators and with inputs targeted on the design of the OM system and capacity building of stakeholders in the first years.
- (iv) Monitoring and developing overall water resources management plan for the project area including surface and ground water.
- (v) Liaising with the Rural Electrification Board (REB) and negotiate the best quality of service is made available for irrigation.

b. Accountant / Procurement Specialist (50 person months)

64. The Accountant Specialist will have at least a Degree in Accounting, and have at least 10 years of experience in project/private business accounting and at least 5 years of experience in accounting and procurement of works, goods, services, preferably on international donor projects. The main tasks of the specialist will include:

- (i) Preparing, developing, maintaining and using an accounting database system to maintain all transaction and procurement records of the IMO.
- (ii) Setting up an Escrow Account in the name of the IMO
- (iii) Making payments to suppliers, pump operators and smartcard vendors.
- (iv) Preparing and submitting payment invoices to BWDB and ADB.

- (v) Support the design team with packaging and procurement of civil works and the supply and installation of mechanical and electrical equipment.
- (vi) Support the team with procuring additional surveys and studies.

c. Safeguards and Public Relations Specialist (50 person months)

65. The Safeguards and Public Relations Specialist will have at least an advanced social sciences degree or equivalent, with at least 10 years of experience working international development projects. The main tasks of the specialist will include:

- (i) Be guided by ADB's Safeguard Policy Statement (2009) guidelines, procedures and best practices.³⁸
- (ii) Supporting BWDB and IMO staff with: (a) training and capacity building on environmental management, supervision, reporting and monitoring of implementation of environmental management plans (EMP); and (b) orienting contractors on implementation of EMP.
- (iii) Guiding IMO staff on reporting requirements on environmental monitoring to ADB and BWDB.
- (iv) Recommending any corrective actions on any unforeseen environmental impacts.
- (v) Plan and implement consultations with the affected people in accordance with the Support the implementation of the stakeholder communication strategy that was prepared during the PPTA.
- (vi) As part of the annual work plans, prepare communications plan for disseminating information on consultation, design, construction and MOM activities throughout the project area.
- (vii) Support IMO staff to implement the communications plan and facilitate consultation meetings.
- (viii) Train and support the field office managers with customer relation skills and handling of complaints.

d. Field Office Managers (6 positions, 50 person-months each, total: 300 person-months)

66. The Field Office Managers will have graduate qualifications in engineering or agriculture with at least 10 years of irrigation management experience. They will be the managers of the Upazila Field Offices and are responsible for day-to-day customer relations and provision of irrigation services. They will also be responsible for:

- (i) Acting as the IMO representative at the Upazila level and being the focal point for all customer services issues, complaints, information dissemination, training activities, payment of services, etc.
- (ii) Coordinating between the customers and technical and OM staff in main IMO office.
- (iii) Liaising between the farmers and the irrigation design and OM engineers.

³⁸ Refer to <http://www.adb.org/documents/safeguard-policy-statement> for a copy of the SPS; and <http://www.adb.org/site/safeguards/main> for a copy of Involuntary Resettlement Safeguards: A Planning and Implementation Good Practice Sourcebook, and Environment Safeguards: A Good Practice Sourcebook.

- (iv) Catalogue and respond to customers' complaints and ensure prompt service and technical support is provided by the IMO.
- (v) Provide support to the main IMO office on design, construction supervision, MOM activities, and agriculture support.
- (vi) Assist IMO with preparing and implementing training activities for the farmers.
- (vii) Plan and manage the work plan of ex-BWDB staff placed in the field offices.

e. Extension and Training Specialist (50 person months)

67. The Extension and Training Specialist will have an extended experience with regard to capacity building of farmers (at least 5 years of experience dedicated to this type of training). Experience with specific training requirements for irrigation scheme management and WUAs is a plus. Fluency in English and in Bengali is required. The national extension officer/training specialist will:

- (i) Design the training program and supervise its implementation, including recruitment of trainers, training logistics, training materials.
- (ii) Will support of the other members of the team he/she will specifically assess the training requirements for farmers as well as other stakeholders, with regard to OM of large-scale irrigation scheme. He/she will then establish a detailed training program, and organize its implementation based on locally available training capacities or establishing them when required.

f. Senior Irrigation Planning and Design Engineer (28 person months)

68. The Irrigation Planning and Design Engineer will support the Chief Engineer with the overall preparation of detailed engineering designs and contract documents for the modernised Level 3 system. The Engineer will have at least a Master's degree in Civil Engineering, be a chartered, professional engineer, and have at least 15 years of experience in planning and designing irrigation schemes, preferably on international donor assisted projects. The Engineer's tasks will include:

- (i) Reviewing previous studies and understand the current norms for irrigation planning and design.
- (ii) Review of the current design criteria and design of the advance 2,000ha and propose adjustments as considered necessary
- (iii) Support the Chief Engineer with leading and supporting the design team with: (a) consulting the farmers; (b) assessing cropping and water use patterns; (c) reviewing current water use, water allocations and water use efficiencies; (d) preparing water balances for the current water and cropping systems; and (e) assessing future water balances based on the new system layouts and cropping patterns on which to base the system designs.
- (iv) Develop standard designs, drawings and specifications for the modernised Level 3 systems based on the designs for the initial 2,000ha and incorporating international best practices for using pipes, LLPs and smartcard control systems. Present the criteria to the BWDB and obtain theirs and other necessary government approvals.

- (v) Planning, preparing and managing all necessary surveys and investigations for the design for rehabilitation and modernization of infrastructure including surveys, geotechnical investigations, and structural analysis.
- (vi) Leading the preparation of detailed designs, including working with the team to prepare the engineering cost estimates, specifications, BOQs and contract documents.
- (vii) Assisting BWDB with packaging, tendering and awarding civil works and equipment supply and installation.

g. Irrigation Design Engineers (2 positions, 28 person-months each, total: 56 person months)

69. The Irrigation Design Engineers shall be a qualified and competent Irrigation Design Engineer (MSc degree) with a minimum of 10 years of experience and at least 4 years of experience in charge of the design of secondary or tertiary level irrigation schemes including some experience of pipe distribution. The Engineers will support the Senior Irrigation Planning and Design Engineer and will be responsible for the preparation of the pipeline design and pipe designs for 15,000ha, as well as coordination of design aspects of the main rehabilitation works including:

- (i) Engage with farmers and surveyors to ensure a high level of participation to define the pipe layouts and locations of the pumps
- (ii) Prepare the detailed design for the 15,000ha including the drawings, bills of quantities, specifications and cost estimates.
- (iii) Liaise with the PMDC relating to the other design activities including upgrading of electrification, new and rehabilitation of structures, riverbank protection and repairs to buildings.
- (iv) Supporting training programmes related to best irrigation practices on plot.

h. Mechanical / Electrical Engineer (12 person months)

70. The Mechanical/Electrical Engineer shall be a qualified Mechanical Engineer (at least BSC degree) with a minimum of 5 years of experience in maintenance and operation of water pump or in the design and rehabilitation of irrigation electromechanical equipment. The Engineer must also be able to communicate in English. The Engineer will support the design as of the electro-mechanic systems. Main tasks of the Engineer include:

- (i) Will support the international electromechanical engineer and the irrigation design engineers to undertake the design of the piped irrigation systems with special responsibility for all electro-mechanical components of the new modernized scheme.
- (ii) To identify and requirements for extending the electrification for any new pump schemes.
- (iii) To prepare the detailed specifications for the proposed electrical works.

i. Mechanical/Electrical Engineer - Supervision & OM (48 person months)

71. The Mechanical/Electrical Engineer shall be a qualified Mechanical Engineer (at least BSC degree) with a minimum of 5 years of experience in maintenance and operation of water pump. The Engineer must also be able to communicate in English. The Engineer will support the

implementation and OM of the electro-mechanic systems. The same consultant can hold the position of the mechanical/electrical design and OM engineer as the inputs would be consecutive. The main tasks of the Engineer include:

- (i) Providing support to the pump operators for maintaining the pumps, the prepaid meter system and electrical pump backup system.
- (ii) Will periodically collect the pump data on behalf of the Computer IT specialist/Data base. He/she will also provide technical inputs to the OM manuals with regard to Pumps maintenance.
- (iii) Supervise the construction of the pumps and transmission upgrading

j. Chief Resident Engineer (36 person months)

72. The Chief Resident Engineer (CRE) will have at least a Master's degree in Civil Engineering, and have at least 10 years of experience supervising the construction of civil works, preferably as the CRE. The main tasks of the CRE will include:

- (i) Leading the overall supervision of the structural components of the implementation works (coastal embankment, khal excavation, rehabilitation and new structures, pipe distribution/pumps/ prepaid meters, upgrading of the electricity network, rehabilitation of offices)
- (ii) Contributing to the preparation of the OM manuals with regard to regular structural checks to be included in the preventive maintenance program.
- (iii) Support the design engineers with improving designs based on lessons learned during earlier construction.
- (iv) Manage the site supervision engineers.
- (v) To report to the General Manager/Deputy General Manager all construction supervision and construction quality issues.

k. Senior Topographic Surveyor (50 person)

73. The Senior Topographic Surveyor will have at least a Degree in Land Surveying and at least 10 years of surveying experience. The specialist will be responsible for leading the surveying team, preparing work plans, and undertaking topographical surveys to support the design team and monitoring dredging works within the khals.

l. Senior OM Engineer (39 person months)

74. The Senior OM Engineer shall be a qualified and competent Irrigation Engineer (MSc degree) with a minimum of 10 years of experience. At least 4 years of experience in a service in charge of the Operation and Maintenance of Water scheme will be a plus. He shall be fluent in English and Bengali. With the deputy team leader and the international irrigation engineer the O&M Engineer will:

- (i) Design the OM system. He/she will be in charge of writing the OM manual. He/she will be one of the main interlocutors with the final users. He/she will be in charge of the water services field team management. With the electromechanical engineers he/she will be in charge of organizing a reliable electrical pumps backup system. He/she will be in charge of organizing the team of water dealers.
- (ii) Because of his close contact with Upazila irrigation engineers and with customers it will be particularly involved in the participative design review.

m. OM Engineer (47 person months)

75. The Senior OM Engineer shall be a qualified and competent Irrigation Engineer (MSc degree) with a minimum of 10 years of experience. At least 4 years of experience in a service in charge of the Operation and Maintenance of Water scheme will be a plus. He shall be fluent in English and Bengali. With the deputy team leader and the international irrigation engineer the OM Engineer will:

B. Non-Key Experts and Supporting Staff

76. Table 12 presents the supporting staff requirements for the IMO required to be included in the technical proposal but would form a part of the financial proposal. The CVs of the supporting staff are however required to be approved by the executing agency prior to mobilization.

Table 12: Supporting Staff

Ref.	Role	Qualification / Experience	Tasks	Inputs (person months)
1	Office Manager	At least 10 years of good office management experience preferably with an international company. Good English and computing skills	Office management, logistics, support for field trips, workshops etc.	55
2	Assistant Office Manager / Secretary	Good English and computing skills.	Office support, data entry, preparing letters, organising printing.	55
3	Computer /MIS Data Base Manager	Degree in computing science or relevant degree Experience in information systems including GIS	In coordination with other team member to develop the scheme information system. To maintain the scheme information systems including the preparation of the key outputs and reports. Maintain customer feedback and complaints mechanisms,	50
3	Field Office Staff	Good experience in MOM of MIP irrigation infrastructure and experience with support agriculture services	Report to the Field Office Managers and support MOM operations, respond to farmer issues and complaints, etc.	300
4	Assistant Design Engineers / AutoCAD Operators	Degree in Civil Engineer, or equivalent, with practical experience in using AutoCAD	Report to the senior irrigation design engineers, prepare design drawings, bill of quantities, cost estimates.	112
5	Assistant Site Engineers	Degree in Civil Engineer, or equivalent, with construction site experience	Report to the CRE and monitor construction activities.	240
6	Assistant Surveyors / Chain-persons	Diploma in Surveying, or equivalent with some experience in field surveying	Report to the Senior Topographic Surveyor, carry out topographic surveys.	99
7	Assistants and guards	None	Office cleaners, guards etc as required	

C. PROCUREMENT OF ADDITIONAL STUDIES, EQUIPMENT AND TRAINING

77. Provisional sums have been included in the IMO contract for the procurement of various additional studies, equipment and training to support the project. The exact implementation arrangements, specifications and detailed costs estimates of the procurement will be approved by the PMU Programme Director. The tentative scope of works for the additional studies are summarized in Table 13.

Table 13: Additional Procurement

	Name	Tasks
1	Procurement of office and field equipment	Including internet equipment, software, computer, laptop, printer, photocopier, air conditioner, fax, office furniture, power inverter, field equipment including GPS, ADCP Flow meter,
2	Agriculture Support Services	To support the objective of enabling small farmers to take up more efficient water use and improved cropping through sustainable practices and developing opportunities for commercial farming. The fund will be used to support farmer training, crop demonstrations in close coordination with the Department of Extension and BWDB.
3	Pilot cost recovery programs	Opportunities for increasing the cost recovery of providing irrigation services, over and above revenue from water charges, will be explored to minimize the burden on farmers as well as minimize or avoid the need for Government subsidies. Concepts and viabilities will be studied by the IMO and taken up as pilots. Provisional sum for studies and seed money for pilots.
4	Training, capacity building and awareness	Costs for the implementation of the training and awareness program including workshops.
5	Surveys and studies	Supporting surveys and specific studies including topographic surveys, geotechnical investigations, flow monitoring, agriculture support, pilot cost recovery activities.
6	Secondment of BWDB or other Government Staff to the Irrigation Management Operator	<p>To build on the existing skills of the BWDB staff or other Government staff at MIP. BWDB or other agencies should allow appropriate skilled personnel to provide services to the IMO on 'lien'³⁹ with remuneration of the staff to be paid by the IMO as per the organizations own salary structure. The period of lien would be guided by the government's existing rules.</p> <p>The IMO would review the qualifications and experience of potential staff and prepare proposals for secondment. Recruitment of the staff on lien would be initiated at the time of mobilization of the IMO and would be outside the bidding process. Bidders would however present proposals in their bid how the staff on lien could be effectively incorporated into the IMO. The IMO would have the rights whether or not to accept any Government staff on lien and also has the right to terminate the lien agreement for any person assigned to the IMO by providing 30 days' notice. The provisional sum would be used to pay seconded staff salaries.</p>

D. ADDITIONAL REMUNERATION

78. In addition to the remuneration paid according to the standard ADB time-based contract, the IMO will also receive management fee and performance-based bonus payments.

³⁹ Lien is leave of absence from Government with the job and salary level kept open for a pre-agreed period. The remuneration package would be provided by the new/host organization.

1. Management Fees

79. The IMO may charge a management fee of up to 5% of the total value of additional procurement activities as listed in Table 13. The management fees will be presented as a part of the Bidder's financial proposal. The estimated value of additional procurement is USD1,788,000.

80. The IMO will manage the project Water Revenue and OM Expenditure Account. The following routine payments will be made solely from revenue collected from the irrigation service tariffs: (i) electricity tariffs; (ii) pump operator fees; (iii) smartcard vendor fees; (iv) maintenance of the Level 2 and 3 distribution system; and (v) and other miscellaneous field expenditures. No management fee will be payable for these activities. The IMO management costs including staff costs, office costs, training, transport will all be paid under the IMO contract and not from the Water Revenue and OM Expenditure Account.

81. The consultant shall maintain two accounts; (i) a consultants account that will be related to all payments in relation to the contract with the BWDB for the C-IMO for Muhuri Irrigation Project; (ii) an escrow account which will be maintained for all the operation and maintenance costs relating to level 2 and 3 and will be paid for from revenue from water tariffs and other cost recovery sources.

82. The consultant will be responsible for meeting the cost of items for the consultants account whether or not the consultant's remuneration is sufficient to cover the cost, or whether or not the cost was anticipated, and whether or not the consultant has the funds available.

83. The escrow account will be funded by payments made in advance by the farmers through the prepaid meters to meet the cost of operation and maintenance of the level 2 and 3 irrigation. The general manager and the deputy general manager will be the only authorized signatories to this account. The consultant will work with the BWDB and the Water User Associations to ensure the tariff is set at an appropriate level to meet the OM costs. The tariff would be reviewed annually and endorsed by the BWDB and the WUAs through the Implementation Coordination Committee. The consultant would not have any financial liability for any shortfall of the funds in the escrow account. The exception to this would be if it is shown that the consultant had used the escrow account without authorization for any personal gain or for expenditures outside the approved work plan or authorized amendments to the annual work plan.

2. Performance Based Remuneration

a. Basis of Remuneration

84. To enhance the delivery of the IMO's outputs and the outcome of the project, additional payments will be paid to the IMO if key milestones or Key performance indicators (KPI) are met. The objective of the performance-based remuneration is to support the serious engagement of the IMO as a stakeholder in the MIP and shares some of the benefit of achieving the project targets according to the time schedule. Table 14 presents the Performance Targets and Criterion Values.

85. Payments will be triggered based on the measurement of milestones/KPI as described below:

- (i) The performance-based remuneration will not exceed the equivalent of USD250,000 over the period of the contract.

- (ii) Only in exceptional circumstances will the performance-based remuneration in any one contract year exceed the equivalent of USD50,000 (the Maximum Annual Performance Remuneration [APR]).
- (iii) The actual amount paid to the IMO shall be determined by the extent by which the IMO achieves the performance criteria set out in the performance indicator tables and by the application of the calculations set out in the performance procedure notes for the applicable contract year.
- (iv) The performance-based remuneration would be assessed at the end of every contract year.
- (v) All the activities of the IMO are to varying degrees influenced by externalities outside the control of the IMO. The payments of the KPIs have been designed to be triggered when selected key project deliverables are achieved. Key management tasks of the IMO include working with the various stakeholders to take a lead role in ensuring that the various the outputs defined in the project design targets are met according to the schedule.
- (vi) The milestones/KPIs have been carefully selected and designed so that they can be easily verified; they also include a mix of more complex deliverables which are influenced by external factors as well as ones with less external influence. Criterion values have been set to allow for some level of delays or unforeseen circumstances.
- (vii) Appropriate weightings have been assigned to each milestone/KPI to reflect its importance.
- (viii) If the amount of the Annual Performance Remuneration (APR) is equal or less than zero, the IMO shall neither receive nor pay any amount to the EA for the applicable contract year.
- (ix) Except in exceptional circumstances (such as delays very substantially outside the control of the IMO) whereas judged by the EA if the IMO fails to achieve the maximum annual performance remuneration in any one year the shortfall will not be available to the IMO in subsequent contract years.
- (x) The milestones/KPIs and the performance values would be discussed and agreed during the contract negotiations. Although the KPIs would not change some refinements to the measurement can be considered during the project period.

b. Method for Calculating Performance Based Remuneration in Each Contract Year

86. The basis of calculating the Performance Based Remuneration shall be as follows.

Annual Remuneration payable =	Performance (APR)	<u>3.5- Composite Score X</u> 2.5	Maximum Performance Remuneration	Annual
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87. The composite score for each contract year shall be as follows.

Composite Score =	Total of All Weighted Scores for the Performance Criteria
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Where:

- (i) The weighted score for each performance criterion equals the indicator weight x indicator value.
- (ii) The performance indicator value is measured from 'Excellent' to 'Poor' with corresponding values as set out in Table 10. The raw scores range from 1 for excellent to 5 for poor. For simplicity 9 raw scores are considered 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5 and 5.
- (iii) If the actual performance is in between the performance standards for two indicator values, then the score for that performance shall be rounded to the nearest 0.5.
- (iv) A composite score of 3.5 (between good and fair) is the cut off for performance remuneration, a score of above 3.5 results a zero-composite score
- (v) A composite score 'excellent' would have a composite score of 1 and would qualify for the full maximum annual performance remuneration.

Table14: Performance Targets and Criterion Values

	Reference	Description of service	Milestones/ Key Performance Indicators	5-year project targets.	Yearly Target					Performance Indicator Weight	Performance Indicator Values				
					Year 1	Year 2	Year 3	Year 4	Year 5		1 Excellent	2 Very Good	3 Good	4 Fair	5 Poor
A	Establishment of Efficient and Sustainable OM														
1	Annual Reports and Work Plans	Annual reports and work plans reporting on the previous year performance , and proposed activities,	Annual report Work plan to be submitted by 30 June. Annual general meeting held by 31 July.	5 annual plans and reports and AGMs prepared as per schedule= 100%, 0.5month delay deduct 10%.	100%	100%	100 %	100%	100%	0.1	100 %	90%	80%	70%	60%
2	Pumps and Pipe Irrigation Commissioned	17000ha of piped irrigation including pumps, pipe distribution and prepaid meters installed, commissioned and operating	Commissioned area as a percentage of the target 17000ha	Y1:0ha Y2: 2000ha, Y3: 7000ha, Y4:12,000 ha Y5:17000ha	100%	100%	100 %	100%	100%	0.15	100 %	90%	80%	70%	60%
3	OM of pumps pipes and prepaid meters	Efficient OM of pumps, pipe distribution. Breakdowns repaired in 24 hours.	All pumps are fully operational, repairs carried out within 24hours	Over the year 95% of the pumps in operating condition with 100% of repairs completed in 24 hours.	95%	95%	95%	95%	95%	0.15	95%	90%	80%	70%	60 %
4	Cost Recovery	OM cost recovery systems are established using	90% of the estimated OM costs for levels 2 and 3 are	Target annual revenue USD million	90%	90%	90%	90%	90%	0.15	90%	80%	70%	60%	50%

	Reference	Description of service	Milestones/ Key Performance Indicators	5-year project targets.	Yearly Target					Performance Indicator Weight	Performance Indicator Values				
					Year 1	Year 2	Year 3	Year 4	Year 5		1 Excellent	2 Very Good	3 Good	4 Fair	5 Poor
		prepaid meters.	recovered by year 5.	Y1:USD0.05M Y2:USD0.25M Y3:USD0.75M Y4:USD1.5M Y5:USD2.1M											
B Design and Construction															
5	Participatory Design of the Piped Irrigation Systems	Participatory detailed designs are prepared for the pumps, pipe and electrification.	17,000ha (100%) completed by year 3	Y1 7000ha (includes 2000ha already completed) Y2 12000ha Y3 17000	100%	100%	100%	100%	100%	0.1	100%	90%	80%	70%	60%
C Agriculture Support Services and Pilot Cost Recovery															
6	Agriculture Support Services	Agriculture support services are implemented and new improved long-term cropping systems to increase farmer incomes and reduce water losses are identified.	Successful upscaling of 1000ha of new farming systems by Year 5.	Target area of upscaling Y1 0ha Y2 5ha Y3 20ha Y4 500ha Y5 1000ha	100%	100%	100%	100%	100%	0.15	100%	90%	80%	70%	60%
7	Supplementary Cost Recovery Pilots	Supplementary pilot cost recovery in addition to water delivery charges are	Supplementary cost recovery systems are identified and implemented to reduce	10% of OM costs are collected through supplementary cost recovery is achieved	100%	100%	100%	100%	100%	0.1	100%	90%	80%	70%	60%

	Reference	Description of service	Milestones/ Key Performance Indicators	5-year project targets.	Yearly Target					Performance Indicator Weight	Performance Indicator Values				
					Year 1	Year 2	Year 3	Year 4	Year 5		1 Excellent	2 Very Good	3 Good	4 Fair	5 Poor
		identified and pilot programs taken up	burden on farmers of water charges	by year 5 (10% =USD200,000) Y1 USD10,000 Y2 USD50,000 Y3 USD100,000 Y4 USD150,000 Y5 USD200,000											
8	Farmer and stakeholder Engagement	.	The Implementation Coordination Committee (ICC) Meetings form a key measurable parameter to assess farmer and stakeholder engagement. Each meeting to be attended by 7 Water User Representatives (6 x WUA +1 x WUF)	Four ICC meetings are programmed to be held each year. 100% = 4 meetings attended by the 7 WU representatives' max score = 28 25=90% 20=70% 17=60% 14=50%	100%	100%	100%	100%	100%	0.1	100%	90%	80%	70%	60%
	TOTAL									1.0					

88. The procedure for the calculation of the “Composite Score” is shown in an example in Table15. The Maximum Annual Performance Remuneration is USD50,000. Then the annual performance remuneration payable to the IMO in respect of the sample year is calculated as:

$$\text{Annual Performance Remuneration Payable} = (3.5 - 2.975) / 2.5 \times \text{USD}50,000 \\ = \text{USD}10,500$$

89. The annual performance remuneration will be assessed as part of the annual report to be submitted by the IMO at the end of June each year. The end of June corresponds with financial year as well as the end of the Rabi period.

Table15: Example Calculation of Performance Scoring

	Reference	Indicator Weight	Performance Indicator Values					IMO Achievement	Raw Score	Weighted Raw Score
			1 Excellent	2 Very Good	3 Good	4 Fair	5 Poor			
1	Annual Reports and Work Plans	0.1	100%	90%	80%	70%	60%	62%	5	0.5
2	Pumps and Pipe Irrigation Commissioned	0.15	100%	90%	80%	70%	60%	90%	2	0.30
3	OM of pumps pipes and prepaid meters	0.15	95%	90%	80%	70%	60 %	78%	3	0.45
4	Cost Recovery	0.15	90%	80%	70%	60%	50%	66%	3.5	0.525
5	Participatory Design of the Piped Irrigation Systems	0.1	100%	90%	80%	70%	60%	100%	1	0.10
6	Agriculture Support Services- upscaling of new agriculture systems	0.15	100%	90%	80%	70%	60%	79%	4.0	0.6
7	Supplementary Cost Recovery Pilots	0.1	100%	90%	80%	70%	60%	77%	3.5	0.35
9	Farmer and stakeholder Engagement	0.1	100%	90%	80%	70%	60%	97%	1.5	0.15
	TOTAL COMPOSITE SCORE	1.0								2.975

3. Risk Register

90. The Consultant and Employer shall maintain a Risk Register and shall be jointly responsible for the identification of risk(s) promptly with appropriate contingency planning

strategy by recording it duly in the Risk Register. The Risk Register shall be regarded as a prompt communication tool between the Consultant and the Employer. Employer /Consultant shall respond to every risk event brought to his notice by other party by recording steps to be taken by the respective party in mitigating that risk in the Risk Register. A copy of all issues entered in the Risk Register shall be retained by the Employer or Consultant as the case may be. For guidance purpose, sample format of risk register is provided in Table 16 hereunder. It can be modified suitably during the course of the contract with the mutual agreement of Consultant and Employer.

Table 16: Format of Risk Register

S. No	Risk	Probability of Occurrence	Potential Impact	Response	Risk Allocation		Remarks
					Employer	Consultant	
A	Meteorological						
1	Heavy rains	High					
B	Hydrological						
1	High flood inflow due to rainfall/ other reasons	High (during monsoon period only)					
C	Seismological						
1	Occurrence of high intensity earthquake	Very low					
D	Restricted access to site						
1	Obstruction of Highways/roads connecting the Site due to heavy traffic/ bad weather conditions/ accidents etc.	Medium					
E	Environmental						
1	Instability of disposed soil	Low					
2	Failure of slopes in dumping areas	Medium					
F	Political & social risks						
1	Force Majeure	Very Low					
G	Economic & legal risks						
1	Fluctuation of prices of materials, labour and equipment	Medium					
2	Changes in administrative regulation/ government policies/Law	Low					
H	Behavioral risks						
1	a) Employer's obligations - - Modification in schedule which affects the Works of the Consultant. - Suspension of Works ordered by the Employer. - Delay in Handing over work fronts. - Delay in Consultants Design approvals.	Medium					

S. No	Risk	Probability of Occurrence	Potential Impact	Response	Risk Allocation		Remarks
					Employer	Consultant	
2	(b) Consultant's behavioural risks -Staff injuries and accidents - Acts or defaults by Sub-Consultants -Defects in Materials, Plant and Workmanship - Failure to depute a competent project management team -Lack of forward planning and budgetary control - inadequate maintenance	Medium					
I	General Problems						
1	Accidents, Strikes by staff	Medium					
2	Non availability of water/ Power supply	Medium					
3	Stoppage / Slow progress of work due to default of Consultant (design & construction delays etc.)	Low					

APPENDIX 4: INDICATIVE STATEMENT OF AUDIT NEEDS

A. Background

1. The Asian Development Bank (ADB) and the Government of Bangladesh (GOB) have entered into a Loan and additional Loan Agreement whereby, ADB shall provide (i) a loan equivalent to \$41.5 million and (ii) additional financing loan of \$13.5 million for the purpose of financing civil works, materials, equipment, consulting services and project management. The GOB shall contribute about \$8.7 million against these funding. The project will be carried out through the Bangladesh Water Development Board (BWDB) through its PMU. BWDB shall maintain separate books of account for the project including all receipts from the ADB loan and additional loan and GOB as all project expenditure is financed out of ADB loan and additional loan proceeds as well as GOB counterpart contribution.

B. Financial Reporting and Audit Requirements

2. BWDB will prepare consolidated project financial statements on a cash basis of accounting, in accordance with its Financial Administrative Regulations (FAR). This shall not be construed to refer to the financial statements of BWDB as a whole.

3. The audit of the project financial statements shall be carried out by the Foreign-Aided Project Audit Directorate (FAPAD) within the Office of the Comptroller and Auditor General of Bangladesh (OCAG) in accordance with OCAG's Audit Manual and, as supplemented by this Statement of Audit needs. The auditor will review that the funds received from all sources and expenditures incurred by BWDB during the reporting period are as per agreed terms and conditions.

4. BWDB will submit to ADB audited project financial statements for each fiscal year, within 6 months of the end of the fiscal year in English. A complete set of audited project financial statements includes:

- (i) Audit report including separate Audit opinions on the following:
 - a. 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; and
 - b. whether the proceeds of the loan and additional loan were used only for the purpose of the project.
- (ii) Project financial statements consisting of the following:
 - a. Statement of Cash Receipts and Payments
 - b. Statement of Budget vs. Actuals
 - c. Statement of Disbursement by Financing Source
 - d. Statement of Disbursement Claimed Under Statement of Expenditure (SOE) Procedure
 - e. Statement of Imprest/Advance account
 - f. summary of accounting policies and explanatory notes
- (iii) A management letter.

5. To support timely submission, unaudited project financial statements should be submitted to the OCAG/FAPAD for audit within 3 months of the end of the fiscal year.

C. Specific Audit Needs

6. The audit would cover the entire Project, i.e., covering all sources of funds including ADB loan, ADB additional loan and the GOB and all application of funds incurred by BWDB as part of the project. The audit scope will also include Direct Payments made by ADB to suppliers, contractors a service provider (DPs).

7. The Project Director shall provide all pertinent information to the Auditors including preservation and use of resources procured and its reflection in the project accounts, so as to facilitate comprehensive audit coverage. The audits should be carried out annually from commencement of the Project. The audit for the first year should also cover transactions, which occurred from the commencement of the project, i.e. till the end of the fiscal year. In case the period is less than 6 months, GOB may agree with ADB to provide APFS from the commencement of the Project to the end of the subsequent fiscal year.

8. The auditor will provide assurance as to whether the project financial statements present a true and fair view of the receipts and expenditures, or are presented fairly, in all material respects, in accordance with the applicable financial reporting framework. The auditor will also provide a separate opinion on whether the proceeds of the loan and additional loan were used only for the purpose of the project.

9. In addition, ADB will also require an assessment by the auditors of compliance with provisions of the financing agreement with ADB, especially those relating to accounting and financial matters. Positive assurance should be provided in accordance with International Standard of Supreme Audit Institutions – 4100 on Compliance Audit. An audit opinion shall be provided that will inter alia include verification that:

- i. All funds, including counterpart funds, have been used in accordance with the conditions of the loan agreements, with due regard to economy and efficiency, and only for the purposes for which the funds were provided;
- ii. With respect to SOEs, (a) adequate supporting documentation has been maintained to support claims to ADB for reimbursement of expenditures incurred; and (b) except for ineligible expenditures as detailed in the audit observations, if any, appended to this audit report, expenditures are eligible for financing under the Loan Agreement;
- iii. The Imprest Account gives a true and fair view of the receipts collected and payments made during the year ended [insert date], and (ii) these receipts, and payments support the Imprest Account Liquidation/ replenishments during the year.

10. ADB would expect that the auditors should advise a calendar for discussion/review of audit observations (particularly any serious matters) through tri-partite meetings and review meetings to facilitate executive follow-up on audit observations and recommendations. Moreover, ADB would need a review of actions taken on the recommendations presented in the previous audit report on the progress made.

D. Project Financial Statements (PFSs)

11. The consolidated Project Financial Statement (PFSs) shall be prepared in accordance with international accounting best principles and practices as well as government's accounting laws and regulations. These should include:

- (i) Cash receipts and payment/ Sources and Consolidated Uses of Funds showing the funds received and expended from ADB and GOB for the project, showing the third-party payments separately and the opening and closing balances
- (ii) Statement of Budget Vs. Actual showing expenditure for the current year and cumulative year to date
- (iii) Statement of Disbursement By Financing Source
- (iv) Statement of Disbursement Claimed Under Statement of Expenditure (SOE) Procedure
- (v) Statement of Imprest/Advance account
- (vi) Detailed notes to the financial statements including explanatory notes, breakdown of expenditure, reconciliation of reimbursements, and Accounting Policies

12. Project Books of Account shall be maintained by the Project Management Unit (PMU) of BWDB.

13. Project Financial Statements shall provide sufficient level of detail to identify types of expenditures as identified in the allocation table of the Loan Agreement; namely civil works, consulting services, training, equipment, etc.

14. Draft template for the project Financial Statements have been included in the project administration manual (PAM) to facilitate compliance with ADB's requirements. Please note that any financial statement template is a working draft, which may require adjustment based on the actual activities of the Project.

E. Management Letter

15. In addition to the audit report, ADB will require a separate management letter. The management letter should specifically:

- (i) Give comments and observations on the notes to the accounts, accounting records, systems, and internal controls that were examined during the course of the audit;
- (ii) Identify specific deficiencies and areas of weakness in systems and internal controls and make recommendations for their improvement including MOE response to the identified deficiencies;
- (iii) Communicate matters that have come to attention during the audit which might have a significant impact on the implementation of the Project; and
- (iv) Bring to GOB and ADB attention any other matters that the auditor considers pertinent.
- (v) The auditor should also make follow-up on past audit recommendations and disclose the status (resolved/pending).

16. Serious issues, which affect the auditor's opinion as to whether the financial statements give a true and fair view, should be referred to in the audit opinion. Management Letter should include only those issues which do not affect the fairness of the financial statements.

F. General

17. ADB Review missions and normal program supervision will monitor compliance with financial reporting and auditing requirements and will follow up with concerned parties, including the external auditor.

18. ADB has made BWDB aware of ADB's policy on delayed submission, and the requirements for satisfactory and acceptable quality of the audited financial statements.⁴⁰ 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.

19. ADB retains the right to verify or have audited (i) the project (ii) the validity of BWDB's certification for each withdrawal application, and (iii) that ADB's financing is used in accordance with ADB's policies and procedures.

20. In case an external auditor needs to be commissioned for a supplementary audit, the auditor should be given access to all legal documents, correspondences, and any other information associated with the commission and deemed necessary by the auditor. Confirmation should also be obtained of amounts disbursed and outstanding with ADB and the Government, etc.

G. Public Disclosure

21. Public disclosure of APFS, including the auditor's opinion on the project financial statements, will be guided by ADB's Access to Information Policy 2018. After the review, ADB will disclose APFS 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, additional auditor's opinions, and audited entity financial statements will not be disclosed.

⁴⁰ ADB Policy on delayed submission of audited project financial statements:

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

APPENDIX 5: INDICATIVE CONSOLIDATED PROJECT FINANCIAL STATEMENTS**NAME of the project****Loan/grant No.****Outline**

1. Statement of Cash Receipts and Payments
2. Statement of Budget vs. Actuals
3. Statement of Disbursement By Financing Source
4. Statement of Disbursement Claimed Under Statement of Expenditure (SOE) Procedure
5. Statement of Imprest/Advance account
6. Notes to the financial statements

1. Statement of Cash Receipts and Payments for the year ended DD/MM/YYYY							
	Notes	Current year		Previous year		Cumulative (from inception to the end of current year)	
		Cash Receipts/Payments controlled by the entity	Direct/third party payments	Cash Receipts/Payments controlled by the entity	Direct/ third party payments	Cash Receipts/Payments controlled by the entity	Direct/ third party payments
Cash receipts	3						
ADB loan (loan number)	3.1						
ADB additional loan (loan number)	3.2						
GoB	3.3						
etc.							
Total receipts							
Payments	4						
Expenditure category 1	4.1						
Expenditure category 2	4.2						
Expenditure category 3	4.3						
Expenditure category 4							
etc..							
Total payments							
Cash balance at the beginning of the year	6.1						
Cash balance at the end of the year	6.2						

Project Director: [Signature]

Accounts officer or equivalent: [signature]

2. Statement of Budget vs. Actual for the year ended DD/MM/YYYY**Loan/Grant No.**

	Notes**	For the current year ended 20xx			For the Prior year ended 20xx			Cumulative (from inception to the end of current year)		
Expenditure Categories*		Budgeted	Actual	Variance	Budgeted	Actual	Variance	Project Budgeted as per the PAM	Actual	Variance
Expenditure category 1	5.1									
Expenditure category 2	5.2									
Expenditure category 3	5.3									
Expenditure category 4										
Etc.										
Total Payments										
Total Project Cost										

*expenditure categories
as outlined in the PAM

**any significant variances are to be explained in the notes

Project Director:
[Signature]

Accounts officer or equivalent:
[signature]

3.Statement of Disbursement By Financing Source for the year ended DD/MM/YYYY
 (separate statement for the ADB loan and additional ADB loan)

Loan/Grant No.

Statement of Disbursement	Note	Current Year	Prior Year	Cumulative Project to Date
ADB loan - Funds claimed during the year	7.1			
Reimbursement				
Imprest Fund				
Direct Payment				
Subtotal				
Expenditure incurred not yet claimed	7.2			
Subtotal				

*list of WAs/claims submitted to be disclosed in the notes

Project Director: [Signature]

Accounts officer or equivalent: [signature]

4. Statement of Disbursement Claimed Under Statement of Expenditure (Soe) Procedure For The Year/Period Ended Xx, Xxxx
 (separate statement for the ADB loan and additional ADB loan)

Loan/Grant No.

in (currency) '000

W/A No. (1)	SOE Sheet no (2)	Category (3)	Total Amount Paid (4)	ADB Financing % ¹ (5)	Net Eligible Expense (6 = 4 x 5)	Amount Reimbursed (7)	Advance Account Fund Replenished / Liquidated (8)	Total Disbursement using SOE Procedure (7+8 = 9)
		Total						
		Total for [prior year]						

¹ The financing percentages within the table for ADB funds are as per loan agreement Schedule 3.

Project Director: [Signature]

Accounts officer or equivalent: [signature]

5. Statement of Imprest/Advance account for the year/period ended DD/MM/YYYY (for each advance account separately)

Loan/grant No. Account details: XXXX			
	Notes	Current Year	Prior Year
Balance brought forward from previous period			
Add: Advance ¹ Replenishment received during the year/period ¹ Interest Earned			
Subtotal (A)			
Deduct: Payments made during the year/period Replenishment /Liquidation ¹ Expenditure yet to be claimed Amount refunded during the year/period			
Closing Balance (B)			
As per bank statement (copy attached)			

Project Director: [Signature]

Accounts officer or equivalent: [signature]

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED [YEAR END DATE]

1. Project Information

1.1 Key highlights:

Project title

Funded by:

Management:

Executing Agency

Implementing agencies

Start Date:

Closing date:

Project Duration:

Funding Sources/modality/amount

1.2 Impact and Outcome

2. Summary of Significant Accounting policies.

2.1 Basis of preparation

2.2. Cash Basis of accounting

2.3. Recognition of Receipts and payments

2.4. Third party payments

2.5. Presentation currency

2.6 Foreign Currency Translation

2.7. Changes in Accounting policies

2.8 Reporting period

2.9 Comparatives

3. Funds received

3.1 Funds received from ADB original loan /List of WAs by financing source

3.2 Funds received from ADB additional loan /List of WAs by financing source

3.3 provide a breakdown of Funds received from the Government

3.4. funds received from Other sources

etc..

4. Payments

List of Payments from the advance account/subadvance account with a breakdown by category

List of third party payments/direct payments with a breakdown by category.

5. Variances

List and explain any significant variances between budget and actual expenditures.

6. Opening and closing balances

List details of the opening balances

List details of the closing balances

7. Disbursements/Withdrawal Applications

7.1 Include detailed list of WAs claimed from ADB with the following breakdown : i) funding source (ADB loan/additional loan), ii) WA number, iii) time period in which expenditures were incurred iv) the amount claimed and currency, v) date submitted, vi) disbursement method, vii) the amount disbursed by ADB, vii) used exchange rate and viii) explanation of any difference between the amount claimed from ADB and the amount disbursed by ADB.

7.2 Provide a breakdown of expenditures incurred but not yet claimed from ADB including the eligible portion for ADB financing.

8.Special notes for the FY

Disclose a break down Interest Expenses/ Financial Charges incurred as part of the project for the current year, past year and cumulatively.

APPENDIX 6: FINANCIAL INFORMATION TO BE INCLUDED IN THE QUARTERLY PROGRESS REPORT

General Instructions

1. The financial information in the format outlined below are to be included in the quarterly progress reports (QPRs) to be submitted to ADB within 45 days after each quarter. In case of delays or incomplete information, ADB will submit a reminder to the executing agency/implementing agency. Repeated delays or incomplete information may have a negative impact on the project performance ratings and may be discussed during review missions.

Section A. Utilization of Funds (ADB Loan, and Counterpart Funds)

2. In this section include the following information:
- (i) Overall status of project financing including the adequacy and timeliness of counterpart funds;
 - (ii) cumulative contract awards financed by the ADB loan, and counterpart funds (commitment of funds to date), and comparison with time-bound projections (targets – for ADB financing compare the actual contract awards with the contract award curve included in the PAM). Include an analysis of significant variances between planned and actual contract awards; Provide contract-wise details as per annex 2
 - (iii) cumulative disbursements from the ADB loan, and counterpart funds (expenditure to date), and comparison with time-bound projections (targets – for the ADB financing compare the actual disbursement with the disbursement projections as per the S curve included in the PAM), Include an analysis of significant variances between planned and actual disbursements;
 - (iv) Reconciliation of project records and ADB disbursement records (LFIS/GFIS) for the reporting period and cumulative from project inception to end of the reporting period. Explain reasons for discrepancies and outline follow-up actions required (if any). Attach a detailed reconciliation by WA as per Annex 1; and,
 - (v) re-estimated costs to completion (if required), need for reallocation within ADB loan categories, and whether an overall project cost overrun is likely.

Section B. Financial Management

3. In this section, include the following information:
- (i) Summary of the Financial management arrangements in the project including: (a) any problems in the existing Financial management arrangements and/or flow of funds and (b) any significant changes occurred during the reporting period (e.g., Financial management staff turnover, implementation of new financial systems, emerging Financial management related risks etc.);
 - (ii) Summary of the status of each agreed action in the Financial management action plan outlined in the PAM. Attach a detailed log as per Annex 4;
 - (iii) Outline the status of recommendations and immediate actions provided by ADB as part of the APFS/AEFS review (if any) and Financial management related recommendations agreed during ADB review missions (if any). Attach a detailed log as per Annex 5; and,
 - (iv) Summarize the status of Status of past audit observations (if any). Attach a detailed log as per Annex 3.

Annexes: Attach the following annexes to the report when submitting it to ADB:

1. Annex 1: Detailed reconciliation (by Withdrawal application) of project records and ADB disbursement records (LFIS/GILFIS) for the fiscal year to date and cumulative;
2. Annex 2: Status of past audit observations (resolved/ pending);
3. Annex 3: Status of FM action plan (complied/ongoing)
4. Annex 4: Status of FM related actions agreed during ADB review missions (if any).

- **for the Fiscal Year to Date and Cumulative – Separate schedule to be prepared for the original ADB loan and the additional ADB loan**

Original ADB loan										
WA Details			Per project records/APFS (Amount recorded in the project Financial statements as reimbursement, direct payment, etc..)				Per ABD disbursement records LFIS/GFIS (actual Paid)			Remarks
Withdrawal application No (WA)	Disbursement method (reimbursement, direct payment, etc..)	Time period covered in the WA	Date	In local currency (as recorded in project records/ financial statements)	exchange rate	USD equivalent (A)	Value date	In USD (B)	Difference (A-B)	Reason for difference (i.e. timing forex. Pending rejected)
1		1-31.3.2020								
2										
3										
etc..										
Total - Fiscal year to Date										
Total - Cumulative										

Additional ADB loan										
WA Details			Per project records/APFS (Amount recorded in the project Financial statements as reimbursement, direct payment, etc..)				Per ABD disbursement records LFIS/GFIS (actual Paid)			Remarks
Withdrawal application No (WA)	Disbursement method (reimbursement, direct payment, etc..)	Time period covered in the WA	Date	In local currency (as recorded in project records/ financial statements)	exchange rate	USD equivalent (A)	Value date	In USD (B)	Difference (A-B)	Reason for difference (i.e. timing forex. Pending rejected)
1		1-31.3.2020								
2										
3										
etc..										
Total - Fiscal year to Date										
Total - Cumulative										

Annex 2: Status of External Audit Observations – Cumulative from Inception to End of Reporting Period

Responsible Entity: DOH/DIPH	External Audit Recommendation	Date of the Recommendation	Planned Actions to Address the Recommendation	Responsibility	Current Status of the Planned Action (pending /resolved)	Remarks

Annex 3: Status of Financial Management Action Plan

Key Risk	Risk Mitigating Activity	Timeline	Responsible Entity	Current status (implemented/Pending)	Remarks (including an action plan in case of noncompliance)

Annex 4: Status of FM related actions agreed during ADB review missions or TPRMs

Date of the review mission	Agreed actions	Timeline	Responsible Entity	Current status (implemented/Pending)	Remarks