BANGLADESH WATER DEVELOPMENT BOARD

PROJECT COMPLETION REPORT: IMED-04/2024

Name of the Project: **Detailed Study for Restoration and Development of Water Resources Management System of Polder 31 under Dacope Uazila in Khulna District**

PROJECT PERIOD: August 2022 to June 2024

Directorate of Planning-I

Bangladesh Water Development Board

Government of the People's Republic of Bangladesh
Ministry of planning
Implementation Monitoring and Evaluation Division

PROJECT COMPLETION REPORT (PCR): IMED 04/2024 (Revised)

A. PROJECT DESCRIPTION

01.	Name of the Project	:	Detailed Study for Restoration and Development of Water Resources Management System of Polder 31 under Dacope Uazila in Khulna District
02.	Administrative Ministry/Division	:	Ministry of Water Resources (MoWR)
03.	Executing Agency	:	Bangladesh Water Development Board (BWDB)
04.	Planning Commission Sector/Division		Environment, Climate change and Water resources
05.	Type of Project (Investment/Technical/Feasibility Study): Feasibility Study		
06.	Location of the Project (As per Project Document):		

Sl. No	Division	District	City Corporation/ Municipality/Upazila
	Khulna	Khulna	Dacope

07. Estimated Cost, Implementation Period and Approval: (In Lakh Taka)

Subject	Approved Estimated Cost				Implementation Period	Date of Approval	Approved by
	Total	GOB (Foreign Exchange)	PA (RPA)	Self-finance			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Original	437.00	437.00	-	-	August 2022-July 2023	04.08.2022	Ministry of water resources
1st No Cost Extension (If Applicable)	437.00	437.00	-	-	August 2022-June 2024	06.06.2023	Ministry of water resources

08. Objective of the Project

The overall objective of this project is to conduct a holistic and integrated study in devising a long-term plan for restoration and development of water resource management system of Polder 31. The study is to recommend the best suited option for flood management, drainage improvement, irrigation expansion, and navigability improvement, protect salinity intrusion, decrease sedimentation and associated problems and riverbank protection through sustainable, eco-friendly and climate resilient interventions, that is technically feasible, environmentally sustainable, socially acceptable, and financially viable. The process and principles of integrated water resources management (IWRM) will be followed throughout the study.

09.Background of the Project (In brief):

In the early sixties and seventies, Bangladesh Water Development Board built a series of polders in the coastal area by constructing embankment to protect low-lying area against saline water intrusion and to make the land flood free from tidal water for enhancing agriculture production. The development of

polders provided immense benefit to the coastal communities more than 20 years. The construction of polder provided enabling environment for enhanced livelihood and agriculture production in the coastal area. The socio-economic conditions of the coastal communities have been improved over the years as a consequence of development of these polders. Later on, problem started due to siltation on the river bed when freshwater inflow from the upstream to flush the incoming sediment has been decreased significantly over the years and ceased to zero at present. High tide brings huge silt into the river system and there is no flushing flow to remove the incoming sediment. The rivers of the region have been experiencing siltation specially during dry season. The presence of polders restricts the spreading of natural tidal flows and prevents sedimentation on the low-lying lands. This caused sedimentation in the peripheral rivers of polders and reduced drainage capacity. As a result, polder areas were suffering from water logging and drainage congestion for quite long periods and that in turn caused large scale environmental, social and economic degradation in this region. Bangladesh is extremely vulnerable to climate change. The coastal areas of Bangladesh are highly prone to floods, cyclones and storm surges. Climate change and sea level rise threaten to damage the Polder area, increase the vulnerability.

There is a need of dredging/excavation of rivers and improvement of the whole drainage system. After implementation of this polder (polder 31), it has been playing vital role in increasing agricultural products, improving livelihoods of the people and environment in the study area for many years. But in the recent years this polder is experiencing water-logging problem due to high rate of siltation in the peripheral rivers and internal drainage khals. This affects the normal social and economic activities of the people of the project area severely. The river morphology of the area is characterized by the active deposition of sediments and silt carried into the area with high tides. Drainage congestion induced by the continuous sedimentation becomes a chronic and common problem in the southwest area. Currently river siltation by incoming sediment from the sea and water-logging are the major concern of the people of the study area. As a result of continuing process of sedimentation on the river bed over the years, many of the rivers/channels/khals in the area lost its conveyance significantly causing severe drainage congestion in the project area for the last few years. Under these circumstances this study has been taken for restoration and development of water resources management system of polder 31.

10.Major Activities:

Component wise activities and the scope of work for the assignments are as follows (but not limited to):

Component-1: Mathematical Model Study

- Collection and review of existing data, maps, satellite images and relevant available study reports;
- Conducting field visit, reconnaissance survey and local stakeholder consultations;
- Preparation of an inventory of existing regulators and other structures with present condition and functionality for Polder 31;
- Conduct field survey to collect cross section data of peripheral river system and internal khals, embankment section, polder topography, water level, discharge and sediment concentration;
- Identify the prevailing problems of encroachment of drainage channel, sedimentation in khals and rivers, drainage congestion, river erosion and salinity intrusion;
- Development of Hydrological and polder drainage model to assess the drainage condition of Polder 31;
- Assessment and characterization of present hydro-morphological conditions of the peripheral rivers/channels of Polder 31;
- Assess the vulnerability of storm surge, water logging, flooding, erosion etc. considering climate change impact and sea level rise;

- Devise potential options for improved water resource management plan in consultation with BWDB and local stakeholders;
- Assess the effectiveness of different interventions through simulation of scenario using mathematical model;
- Revisit the existing design of drainage structures and devise a plan for drainage improvement of the polder including excavation of khal, dredging in peripheral rivers, remodeling of water control structures etc. considering sea level rise and changed rainfall pattern due to climate change;
- Prepare a plan for strengthening of coastal embankment considering the impact of cyclonic storm surge in future due to climate change and sea level rise;
- Identify erosion vulnerable locations and devise a plan and design for river bank/ erosion protection and slope protection works of the embankment
- Preparation of multi-hazard mapping due to flooding and riverbank erosion
- Detail design and drawing of the proposed interventions such as dredging/ excavation, riverbank protection works and regulators;
- Assessment of dredging/excavation volume of rivers /and khals. Assessment of re-siltation rate in the rivers;
- Identifying nature based solutions for erosion management;
- Development of alternative options considering the water and sediment dynamics as well as social and environmental issues and recommend best suited measures for mitigating the existing problems.
- Preparation of cost estimate of the project works as per DPP format on the basis of recent actual schedule of rates;
- Estimation of Benefits to be derived after implementation of the proposed project;
- Estimation of BCR, EIRR, NPV of each planning option based on the with and without project situation.

Component-2: Physical Modelling

• Collection of primary and secondary data (river bathymetry and bankline, tidal discharge, tidal water level and sediment data, historical hydrological and hydrometric data, maps, time series satellite images etc.) of the Sibsa and other rivers connected to it in the study area for the Physical Modeling from the Consultants responsible for the Mathematical Modelling Part of the project ;
• Collection of information and necessary documents related to the study project and existing and proposed interventions in the rivers;
• Compilation, processing and analysis of all collected data to the extent of gaining understanding of the existing physical conditions of the river and computation of basic and derived hydraulic and morphological parameters;
• Collection and review of relevant study reports and research papers;
• Collection of boundary conditions of the model under different hydrological scenarios derived from mathematical model outcomes;
• Visits to the study area including reconnaissance survey aiming at collecting necessary information related to reproduction of the prototype conditions in the model;
• Set up, design and construction of a fine sand bed morphological model and tidal wave flume model;
• Calibration of the models for measured discharge in base condition;
• Conducting application tests in base and with intervention conditions under different hydrological and scenarios;
• Investigating the sediment transport in the rivers under tidal currents in base and intervention conditions;

• Assessing the need for bank protection works and devising suitable type, location and dimension of the bank protection works;
• Assessing the sustainability of the dredging in the peripheral rivers and need for maintenance dredging;
• Studying the response of the protection structures against tide, wave, current and flooding and optimization of the design of protection structures;
• Interaction with the client as to different technical aspects of the study project and physical modeling and to obtain necessary primary and secondary data as well as different relevant documents and information;
• Interaction with Institute of Water Modelling (IWM) and Center for Environmental and Geographic Information Services in order to have necessary data and information required for the physical modeling.
• Preparation of Inception Report, Interim Report, Draft Final Report and Final Report of the physical model investigation.

Component-3: Environmental and Social Impact Study

• Collection and review of existing data, maps, information and past relevant studies from the secondary sources;
• Conduction of socio-environmental survey through appropriate tools & process to establish important environmental issues and to identify important environmental components;
• Terrestrial and ecological survey;
• Establishment of environmental baseline conditions;
• Selection of Valued Environmental Component (VEC);
• Environmental impact assessment and planning of mitigation measures;
• Environmental Management Plan & Environmental monitoring program;
• Carryout Questionnaire survey;
• Conduct community/ local stakeholder consultations (CC);
• Public consultation and disclosure;
• Social Impact Assessments, Mitigation Measures and Social Action Plan.
• Conduct KII, FGD, workshop and other types of mass discussion session for communicating with local beneficiaries and disseminating the study outputs;
• Workshop and consultation meeting for disseminating the study results to all stakeholder and local communities;
• Production of ESIA Reports following approved format of DoE, and presentation of EIA report at the DoE in getting requisite clearance certificate thereof.

11. Reasons for Revision (if applicable): Not applicable

11.1 Reasons for No-Cost Time Extension (if applicable):

- 1st time No-Cost Time Extension

For proper implementation of the research project, field level monsoon season data collection and survey work is required to complete the mathematical modeling of the project. Thus, additional time has been required.

12. Financing Arrangement (Source-wise):

12.1 Status of Loan/Grant

a) Foreign Financing: N/A

Source (s)	Currency as per Agreement	Amount in US$ (million)	Nature (Loan/Grant/supplier's credit)	Date of Agreement	Date of Effectiveness	Date of Closing	
						Original	Revised
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

b) GOB:

Total amount	Loan	Grant	Cash Foreign Exchange
(1)	(2)	(3)	(4)
437.00	-	437.00	-

c) Self-finance/Equity: N/A

Total amount	Self-finance	Equity	Cash Foreign Exchange
(1)	(2)	(3)	(4)

12.2 Utilization of Project Aid (Source wise): N/A

Source (s)	Total Amount		Actual Expenditure		Unutilized Amount	
	In Us$	In Local Currency	In Us$	In Local Currency	In Us$	In Local Currency
(1)	(2)	(3)	(4)	(5)	(6)	(7)

12.3 Reimbursable project Aid (RPA): N/A

Source (s)	RPA Amount		Amount	Amount	Amount	Remarks
	As per Project Document	As per Agreement	Spent	Claimed	Re-imbrued	
(1)	(2)	(3)	(4)	(5)	(6)	(7)

B. IMPLEMENTATION POSITION

13. Implementation Period:

Implementation Period as per Project Document		Actual implementation	Time Over-run (% of original implementation period	Remarks
Original	Latest Revised			
(1)	(2)	(3)	(4)	(5)
August 2022- July 2023 (12 months)	August 2022- June 2024 (23 months)	August 2022- June 2024 (23 months)	91.67%	For proper implementation of the research project, field level monsoon season data collection and survey work is required to complete the mathematical modeling of the project. Due to which additional time is required.

14. Cost of the Project:

Description	Estimated Cost		Actual expenditure	Cost over-run (% of original cost)	Remarks
	Original	Latest revised			
(1)	(2)	(3)	(4)	(5)	(6)
Taka	437.00	-	391.93	-10.31%	
Total	437.00	-	391.93	-10.31%	

15. Information regarding Project Director (s):

Name, Main Designation & Grade. Mobile Number (From Beginning)	Full time (Yes/No)	Part time (Yes/No)	Responsible for more than one project	Period		Remarks
				Joining	Transfer	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dr. Robin Kumar Biswas Superintending Engineer (Civil) Directorate of Planning-1 BWDB, Dhaka Grade-4 (50,000-71,200)	Yes	No	Yes	22-05-2022	Till date	

16. Personnel:

16.1 Personnel of Project implementation Unit (PIU):

Sl. No.	Name of Post (Grade)	Approved Strength	Employed during Implementation
(1)	(2)	(3)	(4)
Total=	-	-	-

*There was no provision of additional manpower in the approved PFS for conducting the project. So, existing officers and staffs of the Project Director's office i.e. Officer of the Superintending Engineer (Civil), Directorate of Planning-1, BWDB executed the project.

16.2 Personnel Required after the Project Completion: N/A

Sl. No.	As P reposed in Project Document (PD)		Recruited (Yes/No)	If not recruited explain reason and latest status
	Name of Post	Number		
(1)	(2)	(3)	(4)	(5)
Total=	-	-	-	-

17. Training (Foreign/Local): N/A

Category	Sl. No.	No. of Days/Weeks/Months (D/W/M), Batch & Participants					
		As in Project Document			Achievement		
		D/W/M	Batch (s)	Participants(s)	D/W/M	Batch (s)	Participants(s)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Local Training	-	-	-	-	-	-	-
	-	-	-	-	-	-	-
	-	-	-	-	-	-	-
Sub Total=	-	-	-	-	-	-	-
Foreign Training	-	-	-	-	-	-	-
	-	-	-	-	-	-	-
	-	-	-	-	-	-	-
Sub Total=	-	-	-	-	-	-	-
Total=	-	-	-	-	-	-	-

(PD= Project Document)

18. Component-wise Progress (As per latest approved Project Document): N/A

Name of Component	Unit	Quantity	Estimated Cost (Taka in Lac)					Actual Progress (Taka in Lac)				
			Total	GOB	PA	Self-finance	Others	Total	GOB	PA	Self-finance	Others
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(a) Revenue:												
Mathematical Model Study	MM	28	225.90	225.90	-	-	-	195.5	195.5	-	-	-
Physical Modelling	MM	34	87.16	87.16	-	-	-	84.21	84.21	-	-	-
ESIA Study	MM	21	114.04	114.04	-	-	-	109.99	109.99	-	-	-
Printing & Binding	-	LS	1.00	1.00	-	-	-	0.48	0.48	-	-	-
Other stationery	-	LS	1.40	1.40	-	-	-	1.38	1.38	-	-	-

Name of Component	Unit	Quantity	Estimated Cost (Taka in Lac)					Actual Progress (Taka in Lac)				
			Total	GOB	PA	Self-finance	Others	Total	GOB	PA	Self-finance	Others
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Domestic travel expenses	-	LS	2.50	2.50	-	-	-	0.37	0.37	-	-	-
Fuel and Gas	-	LS	1.00	1.00	-	-	-	0.00	0.00	-	-	-
Petrol, Oil and Lubricants	-	LS	1.00	1.00	-	-	-	0.00	0.00	-	-	-
Entertainment Expenses	-	LS	1.00	1.00	-	-	-	0.00	0.00	-	-	-
Sub-total (Revenue)			**435.00**	**435.00**	**-**	**-**	**-**	**391.93**	**391.93**	**-**	**-**	**-**
(b) Capital												
1. Supply of 1 Desktop with laser printer	Nos	**1**	2.00	2.00	-	-	-	0.00	0.00	-	-	-
Sub-total (Capital)			**2.00**	**2.00**	**-**	**-**	**-**	**0.00**	**0.00**	**-**	**-**	**-**
Total a+b (Revenue+ Capital)			**437.00**	**437.00**	**-**	**-**	**-**	**391.93**	**391.93**	**-**	**-**	**-**

19. Procurement of Transport (in Nos.) :

Type of transport	Number as per Project Document	Number Procured with date	Transferred to Transport Pool with date	Transferred to O & M with date	Condemned/ damaged with date	Returned or transferred to following project	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Car	-	-	-	-	-	-	-
Jeep	-	-	-	-	-	-	-
Microbus	-	-	-	-	-	-	-
Minibus	-	-	-	-	-	-	-
Bus	-	-	-	-	-	-	-
Pick-up	-	-	-	-	-	-	-
Truck	-	-	-	-	-	-	-
Motor - Cycle	-	-	-	-	-	-	-
By-cycle	-	-	-	-	-	-	-
Speed Boat	-	-	-	-	-	-	-
Launch	-	-	-	-	-	-	-
Others with name	-	-	-	-	-	-	-

20. Project Consultant (s) (Local/Foreign):

Name of the Field	Approved man month		Actual man month utilized	Number of Deliverables		Remarks
	As per Project Document	As per contract		As per Project Document	Actual	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
a) Local:						
Mathematical Model Study as Component-1 (Consultant-IWM)	28	28	28	4	4	
Physical Modelling as Component-2 (Consultant-RRI)	34	34	34	4	4	
Environmental and Social Impact Study as Component-3. (Consultant-CEGIS)	21	21	21	3	3	
b) Foreign:						

21. Infrastructure/Erection/Installation Tools & Equipment:

Description	Quantity (as per project document)	Quantity Procured with date	Transferred to O & M with date	Disposed-off as per rule with date	Balance	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)

22. Procurement of Goods, Works and Services:

22.1 Information on packages:

a) Total number of packages as per Project Document: 5 (Goods- 2 Works-N/A Services- 3)

b) Total number of packages procured: 4 (Goods- 1 Works- N/A Services- 3)

c) Reason for not procuring (if any): Due to having an error in economic code, computers could not be bought.

d) Number of packages for which the estimated cost is more than 1% of the estimated cost of the project: N/A

22.2 Detailed Package-wise information of Goods, Works and Services (For each case the highest 50 (fifty) packages) (Please use the format as in Annexure-I (a), I(b) and I(c))

C. FINANCIAL AND PHYSICAL TARGET AND PROGRESS

23. Original and Revised Financial Provision and physical Target (as per Project Document):

Financial Year	Financial provision & physical target as per original Project Document						Financial provision & physical target as per latest revised Project Document					
	Total	GOB	P.A.	Self-finance	Others	Physical %	Total	GOB	P.A.	Self-finance	Others	Physical %
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2022-23	250.00	250.00	-	-	-	57.13%	-	-	-	-	-	-
2023-24	179.00	179.00	-	-	-	42.20%	-	-	-	-	-	-

24. Revised ADP allocation and progress:

Financial Year	Revised Allocation & target						GOB Release	Expenditure & physical progress						Unspent* GoB Released
	Total	GOB	P.A.	Self-Finance	Others.	Physical %		Total	GOB	P.A.	Self-Finance	Others.	Physical %	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11	(12)	(13)	(14)	(15)= 8-10
2022-23	250.00	250.00	-	-	-	57.13%	246.75	243.36	243.36	-	-	-	57.29%	3.39
2023-24	179.00	179.00	-	-	-	42.20%	155.65	148.57	148.57	-	-	-	41.19%	7.08

*Attach the Proof for Reconciliation of Unspent GOB Released

**To determine the physical quantity, use the formula as in the circular of Planning Division

D. ACHIEVEMENT OF OBJECTIVES OF THE PROJECT

25. Project objective, Actual achievement and Reason for shortfall (if any):

Objectives as per Project Document	Actual achievement	Reasons for shortfall (if any)
Mathematical Modelling		
To prepare a holistic and integrated plan for strengthening flood protection, improving irrigation and drainage system, storing freshwater, controlling salinity intrusion considering climate change impact and sea level rise;	Achieved and incorporated in the intervention plan in Section 6.4. The intervention plan includes the design of the proposed embankment and riverbank protection measures to protect against monsoon floods and cyclonic storm surges. It also features proposed water management structures to prevent salinity intrusion, and khal excavation to enhance the drainage and irrigation systems, as well as improve water storage capacity. All interventions were developed with consideration of climate change impacts.	
Review and re-design of coastal embankment with respect to climate changes and sea level rise;	Achieved and presented in Section 7.1 and Section 7.2. The current embankment's height is insufficient, and the majority of the reach is vulnerable. The proposed embankment crest levels were designed considering the monsoon water level, storm surge level, wave height, land subsidence, and impact of climate change.	
To prepare and future sedimentation map, re-siltation rate and sediment management plan;	Achieved and presented in Section 5.2.1. The future sedimentation map and re-siltation rate have been assessed by using a morphological model after extracting node elevation from pre-project and post-project conditions.	
To alleviate poverty through livelihood improvement and enhancing agricultural and fish production;	Achieved and incorporated in Table 8.8 of ESIA study report (Page: 216)	
To ensure all development with full consideration for economic and environmental optimization, for long-term sustainability and equitability of the environmental resource conservation;	This project is economically viable and economic analysis is presented in Chapter 8	
Physical Modelling		
To improve understanding and gain insight into the physics of coastal and riverine processes;	The Dhaki is a tidally affected river. Based on the available primary and secondary data the physics of this river processes has been described. Chapters 02 (Section 2.4, 2.5 and 2.6)	

Objectives as per Project Document	Actual achievement	Reasons for shortfall (if any)
To test and optimize proposed designs by IWM;	Designs of bank protection work proposed by IWM has been tested and test outcomes have been reported. Chapters 04	
To provide data sets for improving numerical models;	Output data (velocity, bed level change, local scour etc.) of the physical model investigation have been provided in the report for this purpose. Chapters 04	
To study sediment transport issues such as evolution of river bed profile, erosion and scour mechanism around bottom-founded coastal structures and changes in bathymetry due to water flow;	Required sediment transport issues have been studied and results are furnished in the report. Chapters 04	
To assess potential flood risk effect;	For achieving this purpose model investigation is made for 100 year discharge and effects of such an extreme discharge have been provided in the report. Chapters 04 (Section 4.4)	
Afflux effects on hydraulic structures;	In the Dhaki river only passive measure for bank erosion protection (bank revetment) has been considered. During test run such measure does not cause any noticeable efflux effect.	
Calibrate and verify mathematical models;	The mathematical model was simulated for the whole river system of Polder 31, and the Physical model was run for the Dhaki River, which is a small part of the river system. During the study close liaison was maintained with the consultant of the mathematical model for sharing model outcomes data for calibration and verification purposes.	
To assess adequacy of hydraulic structures;	Adequacy of the proposed hydraulic structure (bank revetment) has been assessed in the physical model during application tests with proposed structures in place. Chapter 04	
ESIA		
To prepare a holistic integrated water resources management (IWRM) plan for strengthening flood protection, improving irrigation system, storing freshwater, controlling salinity intrusion considering climate change impact and sea level rise;	Integrated water resources management (IWRM) plan for has been proposed. Chapter - 4, 8,9,10	
To identify erosion and inundation problem due to cyclonic storm surge and breaching of embankment, prevailing problems of sedimentation in khals and rivers;	Identified erosion and inundation problems due to cyclonic storm surges and breaching of Embankment. Chapter 5 (P-185-186), Chapter 6	

Objectives as per Project Document	Actual achievement	Reasons for shortfall (if any)
To evaluate of overall drainage situation and preventive measures to solve drainage problems in project area;	Overall drainage situation has been evaluated and some problems have also been identified Chapter 5 and Chapter 6.	
To assess the impact in salinity intrusion and storm surges with respect to climate change;	Salinity Intrusion impact has been identified with respect to climate change Chapter -8 and 10.	
To ensure all development with full consideration for economic and environmental optimization, and for long-term sustainability and equitability of the environmental resource conservation.	All development considered for sustainability. Chapter 8,9	

E. BENEFIT ANALYSIS

26. Annual Out-put:

Items of out-put	Unit	Estimated quantity expected at full capacity	Actual quantity of out-put during the 1st year of operation at full capacity (or during, real production for newly completed project)

27. Cost/Benefit:

Item	Estimated	Actual

28. Please give reasons for shortfall, if any, between the estimated and actual benefit:

F. MONITORING AND AUDITING

29. Monitoring:

Name & Designation of the inspecting official	Date	Identified Problems	Recommendations
1	2	3	4
a) IMED:			
b) Ministry/Agency:			
c) Others: (Please specify)			

30. Auditing during and after Implementation:

30.1 Internal Audit:

Period of Audit	Date of submission of Audit Report	Sl. No.	Major findings/objections and Money involved	Whether objections resolved or not (if not, mention status)
1	2	3	4	5
Total findings/objections and Money involved=				

30.2 External Audit:

Period of Audit	Date of submission of Audit Report	Sl. No.	Major findings/objections and Money involved	Whether objections resolved or not (if not, mention status)
1	2	3	4	5
Total findings/objections and Money involved=				

G. POST-PROJECT REMARKS

31. General Observations/Remarks on the Project

31.1 Background

Bangladesh Water Development Board built a series of polders in the coastal area by constructing embankment to protect low-lying area against saline water intrusion and to make the land flood free from tidal water for enhancing agriculture production long time ago. From the time being, these polders provided immense benefit to the coastal communities more than 20 years. The construction of polder provided enabling environment for enhanced livelihood and agriculture production in the coastal area. The socio-economic conditions of the coastal communities have been improved over the years as a consequence of development of these polders. Later on, problem started due to siltation on the river bed when freshwater inflow from the upstream to flush the incoming sediment has been decreased significantly over the years and ceased to zero at present. High tide brings huge silt into the river system and there is no flushing flow to remove the incoming sediment. The rivers of the region have been experiencing siltation specially during dry season. The presence of polders restricts the spreading of natural tidal flows and prevents sedimentation on the low-lying lands. This caused sedimentation in the peripheral rivers of polders and reduced drainage capacity. As a result, polder areas were suffering from water logging and drainage congestion for quite long periods and that in turn caused large scale environmental, social and economic degradation in this region.

There is a need to solve the issues of these polders. Under these circumstances this study has been taken for restoration and development of water resources management system of polder 31. The study proposed some recommendations to tackle these issues. With proper implementation, it will be possible to improve flood management, drainage, irrigation expansion, navigability, salinity intrusion protection, decrease sedimentation etc.

31.2 Justification/Adequacy

Due to geographical location, south-western area of Khulna is at risk of natural calamities as well as other problems. High tide brings huge silt into the river system and there is no flushing flow to remove the incoming sediment. The rivers of the region have been experiencing siltation specially during dry season. The presence of polders restricts the spreading of natural tidal flows and prevents sedimentation on the low-lying lands. This caused sedimentation in the peripheral rivers of polders and reduced drainage capacity. As a result, polder areas were suffering from water logging and drainage congestion for quite long periods and that in turn caused large scale environmental, social and economic degradation in this region. Climate change and sea level rise threaten to damage the Polder area, increase the vulnerability.

A DPP has been prepared to rehabilitate polder 31. The objectives of the project are to combat with the problems associated with climate change, control flooding, strengthen peripheral embankment, reduce drainage congestion, provide irrigation and control salinity intrusion in polder 31 as well as improvement of the livelihood condition. The DPP was subsequently submitted for approval. A PEC meeting was held on 10 November 2021. In the meeting it was directed to conduct a detail feasibility study. The minutes of the meeting is enclosed in Annexure-4. Under such circumstance this study is undertaken.

Moreover, Bangladesh Delta Plan (BDP) 2100 is a water centric, multi sectoral techno-economic long term adaptive plan. This plan has some strategies for Coastal Zone.

Strategies for Coastal Zone are :

Strategy CZ 1: Increase drainage capacity and reduce flood risk at coastal zone.
Sub-strategy CZ 1.1: Diminish drainage congestion
Sub-strategy CZ 1.2: Flood risk protection
Sub-strategy CZ 1.3: Flood risk prevention
Sub-strategy CZ 1.4: Flood risk preparedness
Strategy CZ 2: Balancing water supply and demand for sustainable growth
Sub-strategy CZ 2.1: Supply management and additional irrigation
Sub-strategy CZ 2.2: Demand management and efficient water use
Sub-strategy CZ 2.3: Resource planning, protection of environment
This study is directly linked to the above strategies of Bangladesh Delta Plan (BDP) 2100 for Coastal Zone.

31.3 Objectives

The study has been completed successfully to attain the prime objective that was to devise a long-term plan for restoration and development of water resource management system of Polder 31. The study recommended the best suited option for flood management, drainage improvement, irrigation expansion, navigability improvement, protect salinity intrusion, decrease sedimentation and associated problems and riverbank protection through sustainable, eco-friendly and climate resilient interventions, that is technically feasible, environmentally sustainable, socially acceptable, and financially viable.

31.4 Project revision with reasons: Not applicable

32. Rationale of the project with respect to Concept, Design, Location and Timing (Consider the following issues):

Bangladesh Water Development Board built a series of polders long time ago in the coastal area by constructing embankment to protect low-lying area against saline water intrusion and to make the land flood free from tidal water for enhancing agriculture production. These polders provided huge benefit to the coastal communities with respect to livelihood, agriculture production, socio-economic conditions etc. But in recent years, polder areas specially polder 31 was suffering from water logging and drainage congestion for quite long periods and that in turn caused large scale environmental, social and economic degradation. The river morphology around this polder is characterized by the active deposition of sediments and silt carried into the area with high tides. Drainage congestion induced by the continuous sedimentation becomes a chronic and common problem in the southwest area. Currently river siltation is happening by incoming sediment from the sea and water-logging is the major concern of the people of the study area.

In view of the above, BWDB decided to conduct a detailed feasibility study for restoration and development of water resources management system of polder 31.

33. Brief description on planning and financing of the project and its applicability (Consider the following issues):

33.1 Project Identification

The project is being taken to improve the water resources management system of polder 31. After implementation of this polder, it has been playing vital role in increasing agricultural products, improving livelihoods of the people and environment in the study area for many years. But in the recent years this polder is experiencing water-logging problem due to high rate of siltation in the peripheral rivers and internal drainage khals. This affects the normal social and economic activities of the people of the project area severely. Under this circumstance, the project is identified for implementation.

33.2 Project Preparation

To achieve Sustainable Development Goal (Goal no-6, Target no- 6.6) it is essential to protect and restore water related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes river by 2020, a River Management Plan is essential. Besides this polder system is situated in one of the hotspots of Bangladesh Delta Plan-2100.

In view of these above stated reasons it is demand of time to prepare a water resources management plan for Polder 31.

33.3 Appraisal

Polder 31 was experiencing water-logging problem due to high rate of siltation in the peripheral rivers and internal drainage khals. This affected the normal social and economic activities of the people of the project area severely. The DPEC meeting regarding this project was held on 29/05/2022 at MoWR. To overcome this problem, a PFS is formulated by addressing the issues regarding the Polder 31. A review meeting was held regarding the PFS of this. Decisions were taken and the PFS was corrected based on the decisions taken in that meeting. Finally the DPEC meeting held on 29/05/2022 and the project was approved on 04/08/2022.

33.4 Credit Negotiation: Not Applicable
33.5 Credit Agreement: Not Applicable
33.6 Credit Effectiveness: Not Applicable
33.7 Loan Disbursement: Not Applicable
33.8 Loan Conditions: Not Applicable
33.9 Project Approval: Not Applicable
33.10 Others(specify): Not Applicable

34. Analysis of the post- implementation situation and result of the project (Consider following issues):

34.1 Whether the beneficiaries of the project have clear knowledge about the Target/Objectives of the project.
34.2 Programme for use of created-facilities of the project
34.3 O & M Program of the project.
34.4 Impact of the project (Direct & Indirect)
34.5 Transfer of Technology and Institutional Building through the project.
34.6 Employment generation through the project.
34.7 Possibility of Self employment.
34.8 Possibility of Women-employment opportunity.
34.9 Women's participation in development.
34.10 Probable Impact on Socio-Economic activity.
34.11 Impact on environment.
34.12 Sustainability of the project.
34.13 Contribution to poverty alleviation/reduction.
34.14 Opinion of the public representatives, local elite, local administration, teachers, religious leaders, women's representatives etc.
34.15 Contribution of Micro-credit programs and Comments on overlapping with any NGO activities.

35. Problems encountered during Implementation (with duration & steps taken to resolve those) (Consider following issues):

35.1 Project management:
35.2 Project Director:
35.3 Land Acquisition:
35.4 Procurement:
35.5 Consultancy:
35.6 Contractor:
35.7 Manpower:
35.8 Law & Order:
35.9 Natural calamity:
35.10 Project financing:
35.11 Allocation and release:
35.12 Design formulation/approval:
35.13 Project aid disbursement and re-imbursement:
35.14 Mission of the development partners:
35.15 Time & Cost Over-run:
35.16 Project Monitoring:
35.17 Delay in Decision:
35.18 Transport, Training:
35.19 Approval and Others:

36. Remarks & Recommendations of the Project Director:

The study has been framed to attain its objectives through three components: Mathematical Model Study as Component-1, Physical Modelling as Component-2 and Environmental and Social Impact Study (ESIA) as Component-3.. Under Mathematical Modelling Component, detailed hydro-morphological analysis of the concerned area was done through mathematical modelling. Based on the outputs of the mathematical modelling, project interventions have been proposed. Under Physical Modelling component, detailed study was conducted to gain insights into the physics of coastal and riverine process, to assess sediment transport issues, potential flood risk effect, afflux effect and adequacy of hydraulic structures. Under ESIA Component of the project, detailed environmental and social impact assessment (ESIA) has been completed to analysis the impact of the proposed interventions on the environment and the society of the project area.

The project planning followed a participatory bottom-up approach with due consideration to the local needs and underlying principles of IWRM. Water management issues and problems have been identified through field visit, discussion with local people and field survey. Remedial measures were devised with due analysis supported by mathematical modelling technology.

The present study identified major problems of Polder-31 and suggested some interventions to address the prevailing problems. This study also explored the opportunities of this Polder and suggested some measures for future development. The study suggested re-sectioning of polder embankment along with construction of slope protection works, excavation of drainage khals, silted up rivers, construction of regulators, repairing of existing regulators, and mangrove afforestation. The study also suggested implementation of bank protection works where the erosion rate is higher and there is not enough setback distance. Again, construction of new embankment, regulators and khal excavation were suggested at the northern side of Polder-31 for impoldering of newly accreted land.

The technical report i.e., the feasibility study report has been prepared according to specific format of Planning Commission. On the Environmental and Social Impact Assessment report has been prepared according to the Terms of Reference approved by the Department of Environment.

Finally, all the objectives and scopes have been accomplished under this study project. The design, cost estimate and ESIA have been conducted through the project. The feasibility study has shown that the project is technically feasible, environmentally friendly, socially acceptable, and economically viable. So, the DPP of the investment project would be finalized for implementation of the proposed physical components based on the findings of this study project.

The objectives of this study has been fulfilled by conducting a holistic and integrated approach in devising a long-term plan for restoration and development of water resource management system of Polder 31. The study recommends the best suited options for flood management, drainage improvement, irrigation expansion/enhancement, and navigability improvement, protect salinity intrusion, decrease sedimentation and associated problems and riverbank protection through sustainable, eco-friendly and climate resilient interventions. The process and principles of integrated water resources management (IWRM) were followed throughout the study.

Date..... 08.12.24

Signature and seal of the Project Director

(Dr. Robin Kumar Biswas)
Superintending Engineer (Civil)
Directorate of Planning
BWDB, Dhaka

37. Remarks/Comments of Agency Head:

The overall objective of this project is to conduct a holistic and integrated study in devising a long-term plan for restoration and development of water resource management system of Polder 31. The study recommended the best suited options for flood management, drainage improvement, riverbank protection irrigation expansion/enhancement, navigability improvement, protection of salinity intrusion, decrease of sedimentation and associated problems. To maximize the benefits and ensure the project's long-term sustainability, it is imperative to adhere to the suggestions and recommendations outlined in the feasibility study. The integrated plan for all interventions has been thoughtfully designed, aligning with the needs of local people and field officials. Upon implementation of the suggestive measures, long-term perspective of the sustainable and inclusive socio-economic growth may be achieved. BWDB will take necessary steps to prepare the DPP of the physical project as early as possible.

Date.....

Signature and seal of Agency Head

(Muhammad Amirul Haq Bhuiya)
ID No. 660118001
Director General
BWDB, Dhaka.

38. Remarks/Comments of the Secretary/Senior Secretary of the Ministry/Division:

The study has been completed successfully and in accordance with the study's recommendations, an investment project will be taken.

Date.....

Signature and seal of Secretary

Annexure-1(a)

Information Related to Procurement of Goods:

Package No.	Description of Procurement Package GOODS	Unit	Quantity	Procurement Method & Type	Contract Approving Authority	Source of Fund	Estimated cost in Lakh BDT	Time code for process	Not used in GOODS	Invite/ Advertise Tender	Tender opening	Tender Evaluation	Approval to Award	Notification of Award	Signing of Contract	Total time to Contract Signature	Time for completion of Contract (Days)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
GD/01	Other Stationery		L.S	RFQ	As Per DoFP	GoB	1.40	Planned Dates	N/A	As and when required & according to rule 69 of PPR-2008							30 Days
								Actual Dates		05-06-2024	09-06-2024	09-06-2024	09-06-2024	10-06-2024	10-06-2024	06	04 Days
GD/02	Supply of 1 Desktop with Laser Printer		1	RFQ	As Per DoFP	GoB	2.00	Planned Dates	N/A	As and when required & according to rule 69 of PPR-2008							
								Actual Dates		Did not Purchase							
Total (Goods)							**3.40**										

* Please mention Dates for plan and actual
* Deviation in days (difference between plan and actual)
*Plan as per procurement plan described in project document

Information Related to Procurement of Services:

Annexure-1(c)

Pack-age No.	Description of Procurement Package SERVICES	Unit	Quanti ty	Procure ment Method & Type	Contract Approving Authority	Source of Fund	Estim ated cost in Lac BDT	Time code for process	Advert ise EOI	Issue of RFP	Technic al Proposa l opening	Technic al Proposa l Evaluat ion	Financial Proposal Opening & Evaluation	Negotia tion	Approv al	Signin g of Contra ct	Total time to Contrac t Signatu re	Time for completi on of Contract (Days)
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*
SR/01	Mathematical Model Study for Restoration and Development of Water Resources Management System of Polder-31 Under Dacope Upazila in Khulna District.	MM	28	SSS	As Per DoFP	GoB	225.90	Planned Dates	-	21-08-2022	18-09-2022	18-09-2022	19-09-2022	19-09-2022	22-09-2022	25-09-2022	36 Days	274 Days
								Actual Dates	-	24-10-2022	24-11-2022	24-11-2022	24-11-2022	24-11-2022	08-12-2022	20-12-2022	58 Days	224 Days
								Deviation	-	65	68	68	67	67	78	87	22 Days	50 Days
SR/02	Physical Modelling for Restoration and Development of Water Resources Management System of Polder-31 Under Dacope Upazila in Khulna District.	MM	34	SSS	As Per DoFP	GoB	87.16	Planned Dates	-	21-08-2022	18-09-2022	18-09-2022	19-09-2022	19-09-2022	22-09-2022	25-09-2022	36 Days	274 Days
								Actual Dates	-	22-01-2023	29-03-2023	29-03-2023	29-03-2023	29-03-2023	18-05-2023	06-06-2023	136 Days	184 Days
								Deviation	-	155	193	193	192	192	239	255	100 Days	90 Days
SR/03	Environmental and Social Impact Study for Restoration and Development of Water Resources Management System of Polder-31 Under Dacope Upazila in Khulna District.	MM	21	SSS	As Per DoFP	GoB	114.04	Planned Dates	-	21-08-2022	18-09-2022	18-09-2022	19-09-2022	19-09-2022	22-09-2022	25-09-2022	36 Days	183 Days
								Actual Dates	-	24-10-2022	24-11-2022	24-11-2022	24-11-2022	24-11-2022	08-12-2022	27-12-2022	65 Days	217 Days
								Deviation	-	65	68	68	67	67	78	94	29 Days	34 Days
Total(Services)							**427.10**											

* Please mention Dates for plan and actual
* Deviation in days (difference between plan and actual)
*Plan as per procurement plan described in project document