

Bangladesh Water Development Board
Asian Development Bank

Flood and Riverbank Erosion Risk Management Investment Program – Project 1

ADB Loan No. 3138-BAN (SF)

Institutional Strengthening and
Project Management Consultant (ISPMC)

QUARTERLY PROGRESS REPORT NO. 10

FOR

OCTOBER - DECEMBER 2017

Prepared by:

Reference: ISPMC JV NHC-EMM
ISPMC – FRERMIP soniafrermip@gmail.com
452
07-February-2018

To
Mr. Rafiqul Islam Choubey
Project Director,
Flood and Riverbank Erosion Risk Management Investment Program
152/3/B Bir Uttam, Kazi Nuruzzaman Road, Panthopath,
Firoz Tower, (12th Floor) Dhaka-1205, Bangladesh

Subject : Submission of Quarterly Progress Report No. 10
October - December 2017.

Reference: As per Institutional Strengthening and Project Management Consulting Services
Contract, Clause 9 (i), Page 35


Dear Sir,

Please find enclosed Quarterly Progress Report No. 10 for the period October - December 2017 for the Flood and Riverbank Erosion Risk Management Investment Program (FRERMIP) – Project 1. This report has been prepared in close discussion with your office, using information available in the Revised (May 2017) Development Project Performance and considering the Facility Administration Manual.

The quarterly progress report documents the status of project and progress made during the reporting quarter. When required, it identifies changes to the key assumptions and possible risks to project implementation. This report was prepared by ISPMC with contributions, assistance and cooperation of the Bangladesh Water Development Board (BWDB).

This Quarterly Progress Report includes a new Appendix which shows compliance with Loan Agreement Covenants. We look forward to further comments from BWDB, ADB and others on this report.

Yours sincerely,
JV Northwest Hydraulic Consultants – Euroconsult Mott MacDonald


Knut Oberhagemann
Team Leader

Distribution
As per enclosed Distribution List

DISTRIBUTION LIST (Not according to Seniority)

BWDB:

1. Additional Director General, Eastern Region, BWDB, Dhaka
2. Additional Director General, Western Region, BWDB, Dhaka
3. Additional Director General, Planning, BWDB, Dhaka
4. Chief Engineer, Planning, BWDB, Dhaka
5. Chief Engineer, Design, BWDB, Dhaka
6. Chief Engineer, Monitoring, BWDB, Dhaka
7. Superintending Engineer, O&M Circle, BWDB, Pabna
8. Superintending Engineer, O&M Circle, BWDB, Mymensingh
9. Superintending Engineer, O&M Circle, BWDB, Dhaka
10. Executive Engineer, SMO, BWDB, Koitola
11. Executive Engineer, SMO, BWDB, Tangail
12. Executive Engineer, SMO, BWDB, Manikganj

Development Partners:

13. Country Director, BRM, ADB, Sher-e-Bangla Nagar, Dhaka
(Attn.: Mr. Zahir Uddin Ahmad, PIO; 2 copies)
15. Embassy of the Kingdom of the Netherlands, Gulshan, Dhaka
(Attn.: Mr. Pieter de Vries)
16. Project Manager, PMU, FRERMIP, DDM
17. Project Director, PMO, FRERMIP, BWDB; 4 copies

Total of 20 copies as specified in ISPMC contract agreement.

ABBREVIATIONS AND ACRONYMS

ADB	-	Asian Development Bank
ADP	-	Annual Development Programme
BDT	-	Bangladesh Taka
BRM	-	Bangladesh Resident Mission
BWDB	-	Bangladesh Water Development Board
CbFRM	-	Community-based Flood Risk Management
CEGIS	-	Center for Environmental and Geographic Information Services
CRO	-	Chief Resettlement Officer
DG	-	Director General
DDM	-	Department of Disaster Management
DPP	-	Development Project Performa
EKN	-	Embassy of the Kingdom of the Netherlands
GAP	-	Gender Action Plan
GFM	-	Grout Filled Mattress
GOB	-	Government of Bangladesh
GON	-	Government of the Netherlands
ha	-	hectare
IMED	-	Implementation Monitoring and Evaluation Division
INGO	-	Implementation Non-Government Organization
ISPMC	-	Institutional Strengthening and Project Management Consultants
JLB-2	-	Jamuna Left Bank 2 Sub-Project
JRB-1	-	Jamuna Right Bank 1 Sub-Project
JVT	-	Joint Verification Team
km	-	Kilometer
LA	-	Land Acquisition
MDIP	-	Meghna-Dhonagoda Irrigation Project
Mil	-	Million (1,000,000)
MIS	-	Management Information Systems
MoDM	-	Ministry of Disaster Management
MoWR	-	Ministry of Water Resources
O&M	-	Operation and Maintenance
PM	-	Project Manager (DDM)
PD	-	Project Director (BWDB)
PIRDP	-	Pabna Irrigation and Rural Development Project
PLB-1	-	Padma Left Bank 1 Sub-Project
PMO	-	Project Management Office (BWDB)
PMU	-	Project Management Unit (DDM)
PPTA	-	Project Preparatory Technical Assistance
QPR	-	Quarterly Progress Report
SMO	-	Sub-Project Management Office
ToR	-	Terms of Reference
USD	-	United States Dollars

TABLE OF CONTENTS

	Page
Forwarding Letter	
Distribution List	
Abbreviations	i
Table of Contents	ii
INTRODUCTION	3
1.1 Background	3
1.2 The Project	4
1.3 Overall Progress.....	4
1.4 This Report	5
2. PROJECT ACTIVITIES.....	5
2.1 Introduction	5
2.2 PROJECT ASSET IMPLEMENTATION.....	6
2.2.1 Introduction	6
2.2.2 Design Activities.....	7
2.2.3 Bidding Activities.....	7
2.2.4 Implementation Activities.....	8
2.3 OTHER PROJECT ACTIVITIES.....	8
2.3.1 Supporting Service Studies	9
2.3.2 Environmental Management	9
2.3.3 Resettlement Services	9
2.3.4 Livelihood Development	10
2.3.5 Gender and Development	11
2.3.6 Community-Based Flood Risk Management (CbFRM).....	11
2.3.7 Capacity Building.....	11
2.3.8 River Study	13
2.3.9 Pilot Works.....	14
2.3.10 Project-2 Feasibility Study	16
2.3.11 2017 Flood Survey Monitoring Program.....	17
2.3.12 Management Information Systems (MIS) Developments	18
3. ADMINISTRATIVE ARRANGEMENTS	19
3.1 Establishment of Project Offices	19
3.2 Compliance with Loan Agreement Covenants	19
3.3 Important Events During This Quarter:	20
4. FINANCIAL ARRANGEMENTS.....	20
4.1 Statements of Expenditure.....	20
5. ISSUES FOR DISCUSSION AND AGREEMENT.....	21
5.1 Construction Schedule for Embankment	21
5.2 Pilot Works.....	21
5.3 PMO Under-Staffing.....	22
6. REFERENCES	23

TABLE OF FIGURES

Figure 0.1. Project Location Map	1
Figure 2.1. Contract, Disbursement and Reimbursement History of ADB Loan	6
Figure 2.2 Planned Pilot Works in Harirampur	15
Figure 2.3 Planned Pilot Works in Hurashagar	16

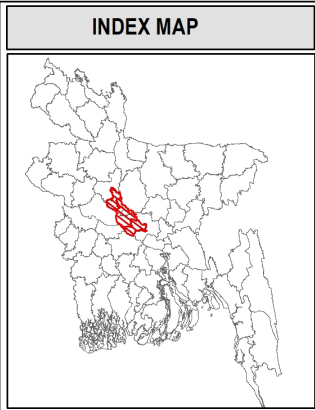
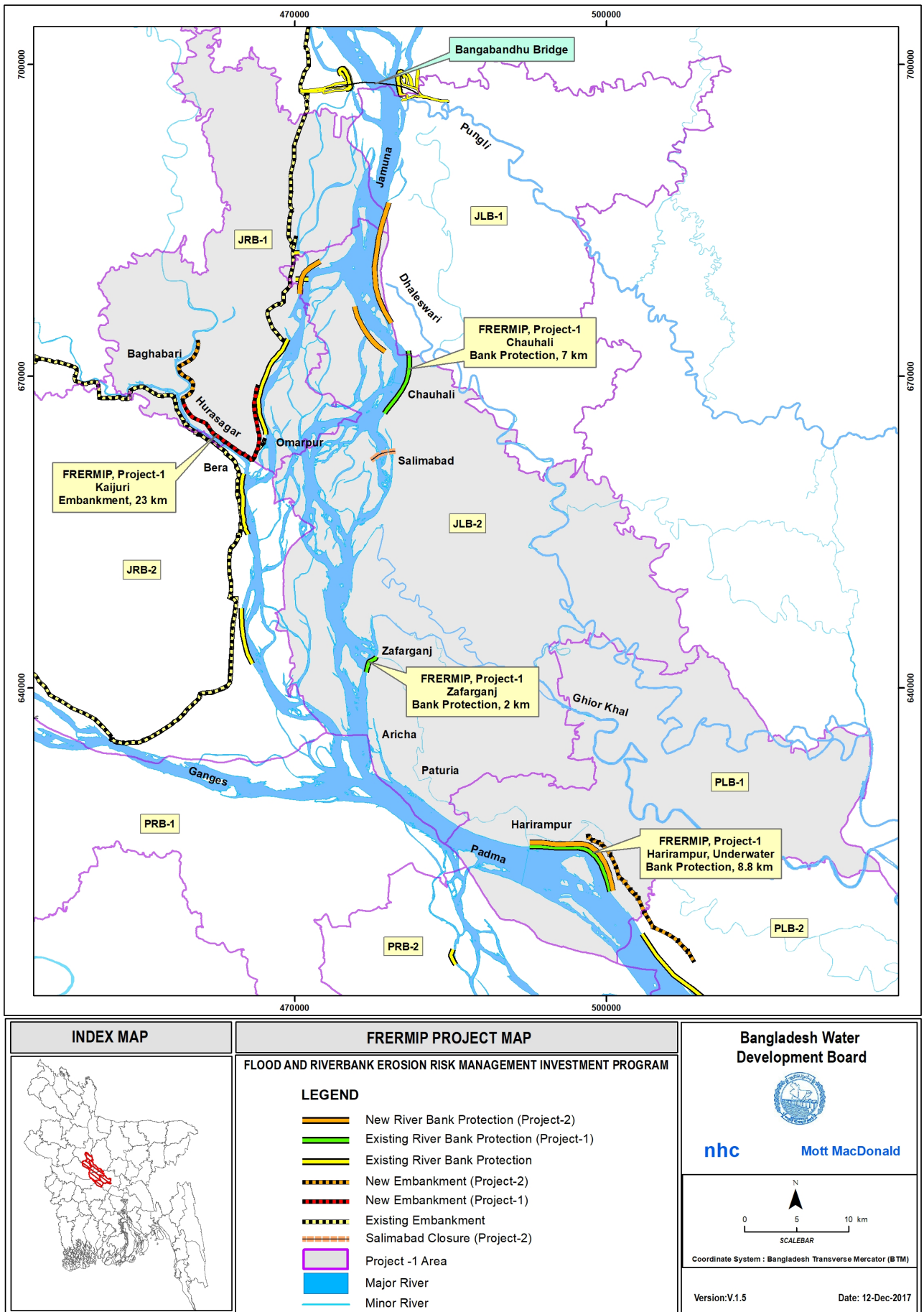
TABLE OF FIGURES

Table 0.1 Progress at a Glance	2
Table 2.1. Supporting Service Studies.....	9
Table 2.2. Summary of Capacity Building Progress.....	12
Table 2.3 Project-2 Proposed Work Items and Scope of Works.....	16
Table 2.4. Summary of 2017 Flood Season Survey Program	18
Table 5.1. Proposed and Actual PMO Staffing	22

APPENDICES

Appendix-A	:	Work Program Summaries
Table A-1	:	Project Program Summary
Table A-2	:	Project Cost Summary
Table A-3	:	ADB Categories: Reimbursed Amount, by Donor
Table A-4	:	DPP Categories: Reimbursed Amount, by Donor
Table A-5	:	DPP Categories: Key Physical and Financial Indicators
Appendix-B	:	Work Program Details
Table B-1	:	Design Progress Details
Table B-2	:	Tender Progress Details
Table B-3	:	Implementation Progress Details, by Contract
Table B-4	:	Project Program, by Contract
Table B-5	:	BWDB PMO Expenditure Summary, by Contract
Table B-6	:	Reimbursement Summary, by Contract
Table B-7	:	Reimbursement Summary, by Application
Table B-8	:	ADB and GON Disbursement Details
Appendix-C	:	Administrative Details
Table C-1	:	Utilization of Consultant Person-months
Table C-2	:	Work Schedule from Inception Plan
Appendix-D	:	Status of River Study Technical Notes
Table D-1	:	Status of River Study Technical Notes
Appendix-E	:	Detailed Resettlement Progress
Table E-1	:	Acronyms Associated with Resettlement Activities
Table E-2	:	Detailed Resettlement Progress by Individual Site
Table E-3	:	Corrective Action Plan to comply with the Loan Agreement
Appendix-F	:	Gender Action Plan
Appendix-G	:	Compliance with Loan Agreement Covenants
Appendix-I	:	Capacity Building: Implementation Progress
Table I-1	:	Implementation Progress of Training Activities: PMO Program
Table I-2	:	Implementation Progress of Training Activities: ISPMC Program
Appendix-J	:	Capacity Building: Overseas Study Tours
Appendix-K	:	National Workshop on the River Stabilization Plan
Appendix-L	:	Photo Library

Figure 0.1. Project Location Map




FRERMIP PROJECT MAP
FLOOD AND RIVERBANK EROSION RISK MANAGEMENT INVESTMENT PROGRAM

LEGEND

- New River Bank Protection (Project-2)
- Existing River Bank Protection (Project-1)
- Existing River Bank Protection
- New Embankment (Project-2)
- New Embankment (Project-1)
- Existing Embankment
- Salimabad Closure (Project-2)
- Project -1 Area
- Major River
- Minor River

Bangladesh Water Development Board



nhc **Mott MacDonald**

0 5 10 km
 SCALEBAR

Coordinate System : Bangladesh Transverse Mercator (BTM)

Version: V.1.5 Date: 12-Dec-2017

Table 0.1 Progress at a Glance

1. Basic Data	
ADB Loan Agreement Number	3138-BAN(SF)
ADB Grant Agreement Number	0396-BAN(EF)
Project Name	Flood and Riverbank Erosion Risk Management Investment Program - Project 1
Country	Bangladesh
Borrower	People's Republic of Bangladesh
Executing Agency	Bangladesh Water Development Board
Implementing Agency	Department of Disaster Management

2. Financing				
Modality and Sources	Projects (\$ million)			Amount (\$ million)
	I	II	III	
Asian Development Bank (ADB)	61.2	100	90	251.2
Government of The Netherlands (GON)	13.7	0	0	13.7
Government of Bangladesh (GOB)	33.5	45.3	34.8	113.6
Total	108.4	145.3	124.8	378.5

3. Milestones			
Milestone	Date of		
	Approval	Signing	Effectiveness
ADB Loan Agreement	2014 June 27	2014 August 14	2014 August 15

Milestone	Project		
	I	II	III
Estimated Completion Date	2019 June 30	2021 December 31	2023 June 30

Milestone	Date
Last ADB Review Mission	26-Nov to 01-Dec-2017

4. Assets and Physical Progress						
Proposed Project Assets	Goods	Services	Works	eXtra	Total	Available
Project Program Best Estimate (Tk Mil)	1399	1220	3540	2514	8673	8685

Primary Component	Secondary Component	Assigned Weight (%)	Progress	
			Actual (%)	Weighted (%)
1. Establishment & Recruitment	1.1 PMO Establishment and Staffing	2	100	2
	1.2 ISPMC Consultants Recruitment	2	100	2
	1.3 NGO Recruitment	2	50	1
2. Implementation; Tranche-1	2.1 Detailed Design	2	100	2
	2.2 Tender Documents Preparation	6	65	4
	2.3 Tendering and Contract Award	6	60	4
	2.4 Land Acquisition and Resettlement	8	80	6
	2.5 Project Management	6	80	5
	2.6 Physical Completion of Works	32	80	26
	2.7 Financial Disbursements	4	80	3
3. Knowledge Base & Capacity	3.1 Knowledge Base & Tech. Studies	4	70	3
	3.2 CBFRM Activities	6	30	2
	3.3 MIS Project Mgmt Module	4	10	0
4. River Study, Piloting & Master Plan	4.1 Long-term stabilization study	4	90	4
	4.2 Land recovery piloting	2	25	1
5. Preparation; Project-2	5.1 Feasibility Study; Project-2	6	90	5
	5.2 Detailed Design; Project-2	4	20	1
Totals		100		70

5. Financial Progress			
Financial Indicator	BDT Million	US\$ Million	% of Total
Estimated Project Cost (Source: DPP Page 1)	8,685	108.56	100
Physical Progress	5,749	71.86	67
PMO Expenditures	4,931	61.64	62
ADB Disbursement	4,306	55.94	51
Total Reimbursement	3,154	40.04	36

INTRODUCTION

1.1 Background

The people in Bangladesh are often detrimentally affected by flooding and riverbank erosion along its four main rivers: Jamuna, Ganges, Padma and Meghna. Over 5,000 hectares (ha) of floodplain land is lost annually due to riverbank erosion, affecting over 55,000 people¹. The risk associated with flooding and riverbank erosion increases with the growth of the population, and the high population density of Bangladesh restricts the scope for moving people away from disaster prone areas. Riverbank erosion increasingly threatens embankments required for flood protection. The threat of flooding and riverbank erosion discourages investment and leads to lower economic growth in riverine areas. Effective riverbank erosion and flood protection management is essential for the economic growth and poverty reduction in affected areas.

Starting in 2004, geotextile bag revetments were used systematically to protect long reaches of the Pabna Irrigation and Rural Development Project (PIRDP) and Meghna-Dhonagoda Irrigation Project (MDIP) against riverbank erosion. Between 2004 and 2011, this protection method was used along 17 km of the lower Jamuna River and some 11 km around the MDIP. Geobag revetments were incorporated into the 'Guideline for Riverbank Protection' approved by BWDB in 2010. Following a feasibility study completed in December 2013, the Government of Bangladesh (GOB) and Asian Development Bank (ADB) agreed to continue riverbank protection for more systematic river stabilization along the lower Jamuna and upper Padma rivers. This initiative includes reclaiming floodplain land lost during the widening process which has persisted since the 1960s¹.

The Project Preparatory Technical Assistance (PPTA) implemented from 2012 to 2013 provides the key concept for FRERMIP and is documented in the Final Report, Feasibility Study, 2013 (Ref. 5). The ADB Facility Administration Memorandum, June 2014 (Ref. 1) is the key document prescribing the loan objectives and procedural details.

The loan for Project-1 of the Flood and Riverbank Erosion Risk Management Investment Program (FRERMIP) was signed on 14 August 2014, and the contract with the main consultant (ISPMC) was signed on 8 September 2015. The first 17 km of riverbank protection, concentrating on the critical underwater part, were completed during the dry season 2015/16. This first project lays the foundation for systematic river stabilization supported by FRERMIP over three successive projects to be implemented over a period of around ten years. The first project, scheduled to be completed in June 2019, will provide structural and non-structural flood and riverbank erosion risk management measures in three high priority sub-projects: Jamuna Left Bank 2 (JLB-2), Jamuna Right Bank 1 (JRB-1) and Padma Left Bank 1 (PLB-1); refer to **Figure 0.1** and **Ref 5**. Subsequent projects will extend the protected reaches with the goal to substantially stabilize the lower Jamuna and parts of the Padma River, based on an adaptive approach with designs adjusted to changing river conditions.

FRERMIP will contribute to provide a defined boundary between river and floodplain, and thus contribute to a more secure and improved livelihood for people living along the main rivers of Bangladesh, which will trigger faster economic growth and accelerate poverty reduction. The outcome of the program will be reduced flood and riverbank erosion risks in the sub-project reaches.

¹ Provided by Dr. M. Sarker based on his River Study Technical Note B1: Holistic River Morphology Analysis for the Brahmaputra River System

1.2 The Project

The project has three funding partners including two international donors, plus the local counterpart: Asian Development Bank (ADB), Government of Netherlands (GON), and Government of Bangladesh (GOB).

The project scope and implementation arrangements have not fundamentally changed from those outlined in the ADB Report and Recommendation of the President (**Ref. 2**), with the exception of the postponement of some activities due to the reduction of available loan financing. The anticipated outputs of the project are still to provide:

1. flood and riverbank erosion risk mitigation functioning at priority river reaches
2. a strengthened institutional system for flood and riverbank erosion risk management

Under Project-1, 17.8 km of riverbank protection² and more than 20 km of flood embankments (rehabilitation and new; refer to the Project Map; **Figure 0.1**) will be implemented. Project outputs will also include related: social and environmental safeguards; institutional, knowledge-base, and capacity development; and community capacity development for flood risk management activities.

The project will result in an improved knowledge base and enhanced institutional capacity in sustainable asset management, and better strategic management of the main rivers. The project will actively promote a sound and sustainable program management system which will facilitate the implementation process. **Table 0.1**, placed at the beginning of the report, provides a summary of project information including salient reference data, estimates of project assets, plus physical and financial progress indicators, in Bangladesh Taka (BDT), US dollars (USD) and percent completion.

Delays in the bidding process for key work contracts, specifically the 23.0 km of embankment construction, requires that Project-1 will be extended by a minimum of one construction season, until June 2019; but this is still within the scheduled project completion period. The Project Management Office (PMO) has revised the current DPP to this end, which was approved by the Ministry of Water Resources on 15 June 2017 (**Ref. 4**). The revised DPP also addresses the reduced level of loan funding by deferring a number of activities to Project-2³ and increasing budgets to reflect revised resettlement and construction costs. A first zero-cost Variation Order for the ISPMC was accepted on 27 July 2017, a second zero cost variation was sent to ADB for approval on 21 December 2017; primarily to extend their input to May 2019. The PMO still expects that the modified Project outputs (**refer to Appendix-A, Table A-5**) can be fully achieved by the original scheduled closing date of 30 June 2019.

1.3 Overall Progress

Project-1 was very successful in its core activity, the construction of riverbank protection, during the dry season 2015/16. The progress during 2016/17 dry season concentrated on the continuation of the ongoing contract works. In total, 17.8 km riverbank protection (underwater with temporary or permanent wave protection above low water level) has been substantially completed. There were a number of localized damages to the permanent wave protection at Chauhali, which may require a major design change for future works. The BWDB has formed an investigation committee to provide

² The length of protection work has increased from 16 to 17.8 km due to changes in the river morphology at Chauhali and Harirampur between the feasibility study and the construction start.

³ Project support service contracts deferred due to lack of funding include: S-05 Participatory O&M, S-08 Annual Development Plan MIS, S-09 Asset MIS, and S-10 Environment Management.

recommendations in July 2017. This notwithstanding, the underwater protection has performed very well, despite deep scouring to, in places, 25 m below the original apron setting level as demonstrated by the Chauhali multi-beam echo-sounder survey performed in November 2017.

The overall weighted project progress is presented in **Table 0.1** and shows that the weighted progress achieved to the end of the reporting period is around 70%. Compared with the total estimated projected cost, the physical progress is 67%, PMO expenditure is 62%, ADB (plus GON) disbursement is 51%, and total reimbursement is 36%.

1.4 This Report

Quarterly Progress Report No. 10 covers the period 01 October to 31 December 2017. The report describes activities carried out during the quarter, which primarily included: river monitoring, river stabilization study, Project-2 feasibility study, preparation and bidding for remaining goods, works and services contracts, and conducting a national stakeholder workshop on the draft river stabilization plan. There were no ongoing construction works during the report quarter, however, it is expected that contractors selected to construct the 23.0 km Kojjuri embankment will be able to start their work in early 2018.

2. PROJECT ACTIVITIES

2.1 Introduction

The BWDB FRERMIP Project Management Office (PMO) started functioning in April 2014. That office was initially engaged in preconstruction and procurement activities, and since November 2015 with construction activities at three sites (through two Sub-Project Management Offices (SMOs) at Tangail and Manikganj). At the end of the second construction season, a total of 17.8 km of riverbank protection has been constructed under the project: 7.0 km at Chauhali, 2.0 km at Zafarganj and 8.8 km at Harirampur.

Between February and August 2017, there were a number of slope failures between Chauhali and Solimabad on the left bank of the Jamuna River, with a few additional ones occurring after the flood season. The recent multi-beam survey has been particularly useful in defining the location and extent of these slope failures (**Appendix-G**). The first major adaptation works will be implemented during the upcoming 2017/18 dry season focussing on Chauhali .

The Institutional Strengthening and Project Management Consultants (ISPMC) have been working since September 2015 and have completed the following activities: prepared the Project Inception Report and the first River Study team report (Strategic Framework on River Stabilization), supported overall project management and capacity building activities, advised on design, construction and resettlement activities, and prepared the terms of reference for several supporting studies. The remaining River Study work is ongoing and the updated Feasibility Study is under preparation (**Section 2.3.8 and 2.3.10, respectively**).

The status of implementation activities in the reporting quarter is discussed in the following sections, and summary and detailed tables are provided in **Appendix-A** and **Appendix-B**, respectively. The history of contractual awards and disbursements, as projected by ADB and as actually achieved, is shown in **Figure 2.1**, along with the actual total reimbursements. The graph has not been corrected for the expected reduction in loan amount from US\$ 65 to around 58 million, but a horizontal line with the ADB revised funding amount has been added.

2.2 PROJECT ASSET IMPLEMENTATION

2.2.1 Introduction

Tables A-1 and A-2 show the type, number and total cost of assets currently included in the program. The cost of the proposed 23.0 km of embankment (plus associated structures) has recently been revised to BDT 1,221 million based on detailed cost estimates from the PMO and the Koitola SMO (**Table A-5**). The 17.8 km of riverbank revetment is expected to cost BDT 1850 million, plus BDT 1153 million for geo-bags. Details on an individual contract basis are provided in **Table B-4**. This detailed table also shows that the best estimate of final cost for all project assets currently identified is BDT 8673 million (Goods BDT 1399 million, Services BDT 1219 million and Works BDT 3540 million, plus BDT 2514 million of additional assets included in the DPP; primarily land acquisition).

Using cross-link tables that connect these category items (and Asset Types) with other financial indicators, it is relatively easy to produce tables which show project progress based on ADB Financial Categories (**Table A-3**) or DPP Components (**Table A-4 and A-5**). Note that **Table A-5** also contains the revised DPP values (**Ref. 4**).

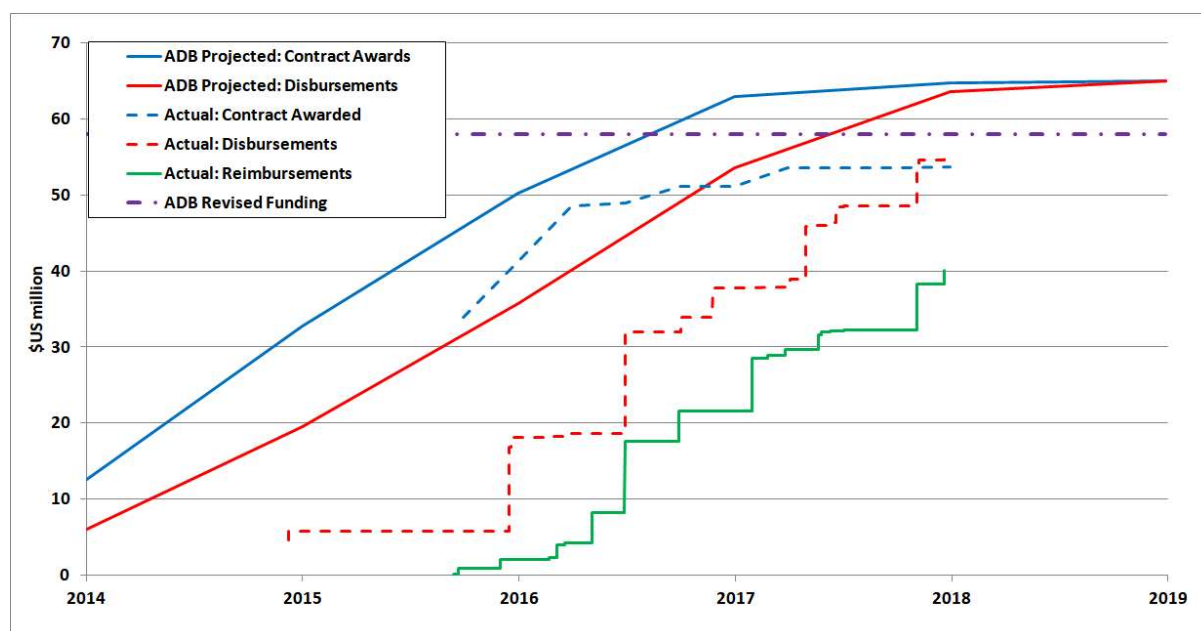


Figure 2.1. Contract, Disbursement and Reimbursement History of ADB Loan

To date, the PMO has expended BDT 4931 million: BDT 588 million under Revenue Categories, and BDT 4343 million under Capital Categories. The Capital Categories are mostly related to the ongoing riverbank protection works at Chauhali and Zafarganj and Harirampur, and land acquisition for the Koitola embankment (subproject JRB-1).

One of the main reasons for revising the DPP was because the available loan amount from ADB had reduced from the initial equivalent of US\$65 million to around US\$58 million due to the US\$ appreciation against the currency basket of the Special Drawing Rights (SDR) of the loan agreement. However, the revised total DPP amount in BDT actually increased from BDT 8286 to BDT 8685 million. The Government of Bangladesh contribution has increased significantly from the original 22% to now 31% due primarily to the large increase in land acquisition costs from BDT 885 (\$US11 million) to BDT 2083 million (\$US26 million).

2.2.2 Design Activities

The revised Koitola embankment designs and technical specifications proposed by ISPMC, which included alternative cost effective work methods, helped to ensure that received bid values were very close to the estimated value (**refer to Section 2.2.3**).

Besides the Koitola embankment, there are 3 other new construction works in the 2017/18 work program. All the design work for these 3 works has been finalized:

- 2017/18 Emergency/Adaptive Riverbank Protection
- River Training Pilot Work
- Inspection Bungalow

Based on the multi-beam survey results (**Appendix-G**), ISPMC has proposed a design for Chauhali repair works. This design was reviewed by BWDB Design and with minor revisions, will be followed in the Emergency/Adaptive and Work contract that will be implemented during the current construction season.

On 04 July, the BWDB formed a committee to assess the cause of the riverbank protection slope failures at Chauhali, including two professors from BUET. The committee decided to wait for the dry season to inspect the failures and recommend future action and is expected to conduct field visits and complete their work during the first half of 2018.

A complete history of design progress details, on an individual asset basis, is given in **Table B-1**.

2.2.3 Bidding Activities

No major contracts have been awarded during this quarter. On 11 December, the 5 tenders for construction of the Koitola embankment were received for the third time. Due in part to the revised designs and technical specifications proposed by ISPMC, which included alternative cost effective work methods, the received bid values were well within the permissible 10 percent above of the estimated value. The tender evaluation committee has finished their proceedings, and evaluation results will be sent to the ADB for concurrence in early January 2018.

The short-listed tender for Community-based Flood Risk Management (CbFRM) support services was received on 17 December and is currently being evaluated (**Section 2.3.6**).

Besides the Koitola embankment, there are 4 other contracts in the 2017/18 work program; 3 for construction works and 1 for a multi-beam service contract. Contractual procedures for these 4 contracts are currently under process. It is anticipated that contractual procedures for all 4 contracts can be finalized by the end of this quarter:

Works

- 2017/18 Emergency/Adaptive Riverbank Protection: Bid Document sent to ADB for approval on 31-Dec-2017
- River Training Pilot Work: Bid Document will be sent to ADB for approval by end-Jan-2018
- Inspection Bungalow in Manikganj: Bid Document sent to ADB for approval on 27-Aug-2017

Services

- Multi-beam Echo Sounding & River Survey: Bid document re-sent to ADB after incorporating comments on 26-Nov-2017

A complete history of bidding progress details, on individual contract basis, is given in **Table B-2**.

2.2.4 Implementation Activities

The construction works at Chauhali, Zafarganj and Harirampur have been essentially completed. The length of river bank protection works, has been extended from the original envisioned length (17.8 km from 16 km) to accommodate rapidly changing river morphology.

Over the two previous flood seasons, systematic scour has occurred along the Chauhali bank protection, which caused the river bed to lower by up to 22 m in places over a length of about 4 km. To date, a total of 24 slope failures occurred in the upper slope, protected by concrete blocks at Chauhali. The cause of the slope failures is still under investigation, but it appears that the mostly silty soil of the riverbank became overloaded with the surcharge of the heavy concrete block protection.

The survey results from the November 2017 multi-beam survey at Chauhali (**Appendix-G**) not only confirms the good performance of the launched geo-bags providing good underwater slope coverage during the last two higher than normal flood seasons, but also clearly and accurately defines areas where repair work is required. In addition to required adaptive work, the proposed 2017/18 Emergency/Adaptive Riverbank Protection contract will also include necessary repair work at Chauhali.

The available funding for the 2017/18 Emergency/Adaptive works for all three riverbank protection sites is around BDT 160 million⁴. This budget is insufficient for complete adaptation work and therefore will be concentrated at Chauhali.

Table B-3 shows implementation details for goods, services and works contracts, on an individual contract basis. The table includes new, carried-over and completed contracts. It shows actual progress during the reporting quarter and projected progress for the next quarter. The best estimate of final cost has been updated as per the revised DPP.

2.3 OTHER PROJECT ACTIVITIES

Other project activities that are documented in the following sections include:

1. Supporting Service Studies
2. Environmental Management
3. Resettlement Services
4. Livelihood Development
5. Gender and Development
6. Community-Based Flood Risk Management
7. Capacity Building
8. River Study
9. Pilot Works
10. Project-2 Feasibility Study
11. 2017 Flood Survey Monitoring Program
12. Management Information Systems (MIS) Developments

⁴ The provisional 2017/18 ADP funding for Adaptive Protection and Emergency work is currently only BDT 89 million (**Appendix-A, Table A-5**), but funding from other sources is expected for this critical work.

2.3.1 Supporting Service Studies

There are currently a total of 6 service contracts for supporting studies. The status of all support studies is summarized in **Table 2.1**.

Table 2.1. Supporting Service Studies

Pkg.	Study Name	Present Status
S-01	Institutional Strengthening and Project Management Consultant (ISPMC)	The ISPMC signed a contract with BWDB on September 2015, and their work is estimated to be around 70 percent complete.
S-02	Resettlement Plan Implementation	The Resettlement INGO signed a contract with BWDB on 16 March 2016, and their work is estimated to be 60 percent complete (Section 2.3.3).
S-03	Livelihood Development Services	The ToR was submitted to PMO on 25 May 2016 and was sent to ADB shortly after for their concurrence (Section 2.3.4). During a meeting on 8 October 2017 ADB informed that written comments would be sent to the PMO shortly.
S-04	CbFRM Services	A short-listed tender was received on 17 December 2017 and is currently being evaluated (Section 2.3.6).
S-05	Multi-Beam Echo Sounding (MBES) Survey	The finalized MBES Survey ToR was submitted to the PMO on 27 July 2017, and was sent to ADB shortly after for their concurrence.
S-06	Erosion Prediction Services	CEGIS is conducting the study. The progress of work for their current contract is estimated to be 80 percent and the draft report is expected in early 2018.

2.3.2 Environmental Management

A short tabular summary of the environmental activities since the project inception with the lessons learned was produced in October 2017 for inclusion in the ISPMC Mid-Term Report and the upcoming ADB mid-term review mission.

The next bi-annual EMP compliance report on the Project-1 construction works (July - December 2017) will be prepared in early January 2018 for submission to PMO and ADB.

2.3.3 Resettlement Services

The revised draft Resettlement Plan (RP)⁵ for the 23 km Koitola embankment from Koijuri to Baghabari was approved by ADB on 15 November 2017 with minor conditions, which were satisfied on 27 November 2017. A revised RP for Harirampur was submitted on 07 December 2017 for ADB approval. The Land Acquisition Plans (LAPs) for Zafarganj (1.4 km and 0.6km) and Chauhali riverbank protection, and the Koitola embankment have been approved by the concerned District Commissioners (DCs). The revised LAP for Harirampur riverbank protection has been submitted to the BWDB Executive Engineer, Manikganj for further processing. The INGO has conducted the necessary surveys, identified the Affected Persons (APs), and issued Identification (ID) cards in preparation for payment of additional compensation. Payments of land compensation by the District Commissioner, as well as issues addressing social safeguard compliance of ADB policy are also in

⁵ Refer to Appendix-E Table E-1 for all Resettlement related acronyms.

progress. Resettlement activities performed during the reporting quarter and projected for the next quarter, at each site, are detailed in **Appendix-E Table E-2**.

During the quarter, the PMO held three coordination meetings (one in October, November and December) to review the INGO's progress, to address the corrective measures stipulated by ADB for Chauhali and Zafarganj, and to plan future actions. The coordination meetings were attended by the PMO PD, Superintending Engineer, Chief Resettlement Officer (CRO), INGO staff, ISPMC representatives, and SMO Executive Engineers.

In this quarter, two missions from ADB visited the project sites and participated in two coordination meetings: one Safeguard Mission from the Bangladesh Resident Mission (BRM) held in 5 - 9 November 2017, and another Social Safeguard Mission from Manila held in 12 - 18 December 2017. Members of the BRM Safeguard Mission visited the Koitola embankment, and Chauhali and Zafarganj riverbank protection on 5 - 6 November 2017. During their field visit, there were two consultation meetings held with the Affected Persons (APs): one in Koitola and the other in Chauhali.

The BRM Safeguard Mission submitted a draft report, that included a Corrective Action Plan which is being monitored by ISPMC. Details regarding the Corrective Action Plan to comply with the Loan Agreement are provided in **Appendix-E Table E-3**. These actions include the preparation of RPs and completion of all necessary surveys prior to the start of embankment construction.

In line with earlier discussions, the BRM Safeguard Mission also reviewed short-comings of the INGO, including their lack of reporting skills and the accuracy of their assessments. Subsequently, the INGO has started submitting weekly progress reports, the quality of which will be improved further.

The ADB Social Safeguard Review Mission from Manila reviewed Project-1 safeguard measures, and assessed Project-2 social safeguard requirements and their on-going progress. Project-1 progress was determined based on discussions with various stakeholders including: BWDB, INGO, ISPMC and BRM officials. The status of Project-2 preparation work was determined based on discussions with BWDB, ISPMC officials, and a site visit. On 16 December 2017, the mission team members, together with BWDB and ISPMC personnel, visited proposed Project-2 works in Hurasagar, Solimabad, and Chauhali.

Regarding the Project-1 Koitola embankment construction, the civil work contracts have been received and evaluated, and contract awards are expected in January. However, at the end of December notices as per Section 7 had only been issued to affected households in the Padna District, not in the Sirajganj District. These notices are required prior to payment of Cash Compensation under the Law (CCL). The issuance of notices and payment of CCL can be very slow and may delay the start of the civil works (**Section 5.1**).

Contractual procedures are currently ongoing to engage an External Monitor to review and verify the progress of the resettlement plan implementation. The External Monitor will be engaged intermittently over a one year period for a total of 6 person-months of input. The bid document has been received and evaluated, and negotiations with the selected candidate is on-going. Contract award is expected by early February 2018.

2.3.4 Livelihood Development

The main objective of the Income Livelihood Restoration Plan (ILRP) is to improve, or at least restore, the income and livelihood of all project affected people.

The Livelihood Development Support Service contract ToR was initially submitted to the PMO on 25 May 2016, and subsequently forwarded to ADB for their concurrence. On 8 October 2017, the ISPMC held a meeting with the BRM representatives to attempt to expedite the ToR approval process. During the discussion, ADB mentioned that they may request that the ToR format be fundamentally changed to a lump sum payment based on the INGO deliverables instead of the current time bound ToR. The original duration proposed in the INGO ToR will also need to be drastically shortened from 2 years, to potentially less than 1 year, to accommodate the short remaining implementation period of Project-1 (completion in June 2019). Following the meeting, the BRM personnel agreed to send a detailed guideline for the proposed new ToR format. This guideline had not been received by the end of the reporting quarter.

2.3.5 Gender and Development

There has been no significant progress on Gender and Development during the reporting quarter. The INGO has been very busy with their critical resettlement work, and has not yet started organizing and imparting training on skills and leadership development for vulnerable women. However, a total of 112 Entitled Persons (EPs) have received compensation, including 16 women. From last quarter, as per BRM's informal request, the Gender and Development issues are documented in a separate section of the Quarterly Progress Report. In compliance with the BRM request, details regarding the Gender Action Plan (GAP) are provided in **Appendix-F**.

2.3.6 Community-Based Flood Risk Management (CbFRM)

During the quarter, ADB gave their concurrence to proceed with issuing the Request for Proposal (RFP) for the CbFRM support services contract to the 6 shortlisted INGOs on 23 October 2017. The RFP was issued on 12 November 2017, and 5 INGOs submitted the required technical and financial proposals on 17 December 2017. The Proposal Evaluation Committee (PEC) has already carried out a preliminary evaluation of the technical proposals, which will be communicated to ADB for initial comments on 03 January 2018.

It is anticipated that all remaining contractual procedures can be completed, and that the selected INGO will be able to start their support services by the end of March 2018.

During the reporting quarter, the Department of Disaster Management (DDM), Project Implementation Unit (PIU) submitted a request for funds required in the current fiscal year for the PIU operational expenses to monitor work performed by the INGO. This fund request is currently being processed by the Ministry of Disaster Management (MoDM).

2.3.7 Capacity Building

Institutional Capacity Strengthening

The recent nomination of a Chief Engineer River Management (CE-RM) on 22 November 2017 is considered a major step forward towards strengthening river management in BWDB.

Establishment of the office of CE-RM was suggested under the JMREMP project and included in the 'need-based organizational structure' of BWDB. It was also included as an important element of capacity strengthening in the FRERMIP PPTA (**Ref. 5**).

In the near future, it is hoped that BWDB will also form a separate River Management Design Circle dedicated exclusively to the challenging design of riverbank protection and river training works in the constantly changing environment of the large rivers. The design works require specialized expertise which is lacking in the current BWDB Design Circles, particularly in the field of river training and geotechnical engineering.

Training Program

During the quarter, a 14 day USA and Canada Study Tour was conducted from 5 - 18 October 2017 which included 9 high level Bangladesh government officials. The delegation was lead by the Senior Secretary of the Ministry of Water Resources and included high level members from Planning Commission, Implementation Monitoring and Evaluation Division (IMED), and BWDB. The delegates visited works of the US Army Corp of Engineers in New Orleans. In Los Angeles, the team learned about storm water management and inspected a pump manufacturing facility. Subsequently, the team visited Vancouver, Canada where Northwest Hydraulic Consultants (lead Joint Venture partner of the ISPMC) discussed the River Stabilization Plan for Jamuna and Padma Rivers, and demonstrated the abilities of modern physical and numeric hydraulic modelling.

The 'National Stakeholder Workshop on the River Stabilization Plan for the Jamuna and Padma Rivers' was held at the Hotel Radisson, Dhaka on 29 November 2017. The workshop presented the draft river stabilization plan to a broad audience of over 200 participants for their comments and guidance. A broad number of ministries, including Prime Minister's Office, Government organizations, professional organizations, universities and civil societies were invited. Five parallel breakout sessions allowed experts from different fields to discuss key aspects of river stabilization, ranging from technical to environmental, social, and institutional issues, and recommend a way forward. Details on the National Workshop are provided in **Appendix-K**.

A summary of the status of the Training Program progress is shown in **Table 2.2**, and details are provided in **Appendix-I**. There are two components to the Capacity Building Training: PMO and ISPMC Programs. The type, number and scope of the training under the PMO Program is specified in the DPP.

The ISPMC training budget has two provisions sum budgets: Line 1 for Workshops, Training and Seminars; and Line 2 for Conferences and Study Tours. While the types of training under the ISPMC component have been defined, the number and scope of the training has not been specified.

The gender of trainees has recently been added to the detailed tables. For completed training programs, there were 9% women in the PMO Program and 26% in the ISPMC program.

Table 2.2. Summary of Capacity Building Progress

Type of Training	Implementation Progress				
	Total	Discussed	Prepared	Approved	Completed
PMO Program					
A. Local Training	34	34	15	5	5
B. Overseas Training	2	2	2	2	2
C. Overseas Tours	4	4	3	2	2
PMO Totals	40	40	20	9	9

Type of Training	Completed
ISPMC Program	
Line 1:	
A. Workshops	3
B. Training	6
Line 2:	
A. Conferences & Discussions	5
ISPMC Totals	14

2.3.8 River Study

The River Study Team has four key deliverables out of which, two have been essentially completed, and two are still under process. These deliverables are summarized below and discussed in more detail in this Section:

1. **Long-Term Strategic and Holistic River Stabilization and River Training Plan:** This plan summarizes the work of the following three deliverables. (Status: the draft from November 2016 was revised and submitted to PMO in May 2017, and approved by the technical advisory committee in September 2017)
2. **River Stabilization Plan:** The River Stabilization Plan presents a summary of the guided meandering design, bank protection and river training features, and improved flood embankments. (Status: the draft was discussed during the National Stakeholder Workshop on 29 November 2017, a revised draft will be presented to the Honourable Prime Minister in late January 2018, and a final version is expected to be completed by March 2018)
3. **Preliminary Master Plan:** Identifies FRERMIP interventions that will be key drivers of regional change, and sustainable development opportunities related to these drivers. Guided peri-urban development is expected to help propel Bangladesh into a middle income status. (Status: the first draft from November 2017 is to be updated in February 2018, and completed in March 2018)
4. **Strategic Environment and Social Assessment (SESA):** The assessment pertains fundamentally to the environmental aspects of river stabilization and water resources development in the North Central Region. (Status: the first draft was reviewed by the Netherlands Commission for Environmental Assessment in summer 2017, comments were received on 22 July 2017, completion is expected in accordance with the completion of the other three documents in March 2018)

As part of the FRERMIP River Study, a large number of Technical Notes will be prepared. It is intended that these Technical Notes will eventually either be incorporated into the main text or form Annexes of the River Stabilization Plan or the Preliminary Master Plan.

Out of a total of 37 Technical Notes, 15 have been completed, 11 have formalized drafts, and the remaining 11 are still under development. Most Technical Notes will be assigned to one of the seven proposed Supplementary Reports, organized as follows:

- Background information
- Morphology - General
- Morphology - Bifurcations & Offtakes
- River Engineering
- Water Resources and Flood Modelling
- Ecological issues
- Land Use & Economic Benefits

Appendix D, Table D-1 shows the status of individual Technical Notes, and the Supplementary Report where they belong. All River Study documents are expected to be finalized during the first quarter of 2018 and subsequently prepared for printing during the second quarter of 2018.

2.3.9 Pilot Works

On 04 October 2017, the ISPMC submitted a detailed Memo to the PMO on the 'Design of Grout-filled Jute Mattresses' which describes the components of the proposed Pilot Works Program, including a draft bidding document. The Memo provided design details pertaining to the implementation of grout-filled jute mattresses at two sites as per decision of the Technical Advisory Committee: Harirampur and Hurashagar.

Along the riverbank at Harirampur, the mattresses would provide wave protection above low water. Along the Hurashagar site, the mattresses would provide wave protection along the embankment. Grout filled jute mattresses have the potential to significantly reduce the cost of wave protection compared to traditional CC blocks. The initial proposal considers a 1.6 km length at the Harirampur site (**Figure 2.2**) and a 1.3 km length at the Hurashagar site (**Figure 2.3**).

The purpose of the pilot test is to refine the technology of traditional grout-filled mattresses, installed at the Meghna Bridge and the Pabna Irrigation and Rural Development Project (PIRDP) in Bangladesh. At both sites, the mattresses have performed for more than 10-years under fluctuating water levels, with the latter having demonstrated its flexibility by adjusting to some slope movement.

The new technology would use jute instead of a synthetic fiber, which will require a number of adjustments to the system. The parameters to be tested in this pilot project include: cement-sand ratio, drainage systems, mat flexibility, under-layers, and mat thicknesses.

As a result of the observations during the field visits and discussions with BWDB, design alternatives for the construction sites at Harirampur and Hurasagar were prepared. The design options are detailed in Table 2.1

Table 2.1: Design Options for Harirampur and Hurasagar Sites

Harirampur		
Design Option	Type A	Type B
Area Weight	2:1 sand-cement ratio	3:1 sand-cement ratio
Drainage	No extra drainage	No extra drainage
Flexibility	Longitudinal joints	No longitudinal joints
Underlayer	Crushed brick layer 0.15m Geotextile Sand filter 0.15m	No crushed brick layer Geotextile Sand filter 0.1m
Thickness	270mm	180mm
Hurashagar		
Design Option	Type C	Type D
Area Weight	2:1 sand-cement ratio	3:1 sand-cement ratio
Drainage	Drainage in embankment	Drainage in embankment
Flexibility	Longitudinal joints	No longitudinal joints
Underlayer	Crushed brick layer 0.1m Geotextile Sand filter 0.15m	No crushed brick layer Geotextile Sand filter 0.1m
Thickness	180mm	270mm

In addition to construction activities, this pilot program will also include a strong monitoring, evaluation and adaptation component. The monitoring program will include the installation of piezometers and inclinometers, and a multi-beam echo-sounder survey. Monitoring will be conducted with strong involvement from the BWDB Design Office.

On 16 October ISPMC has submitted the revised bid document to PMO for pilot river bank protection works by grout filled jute mattress.

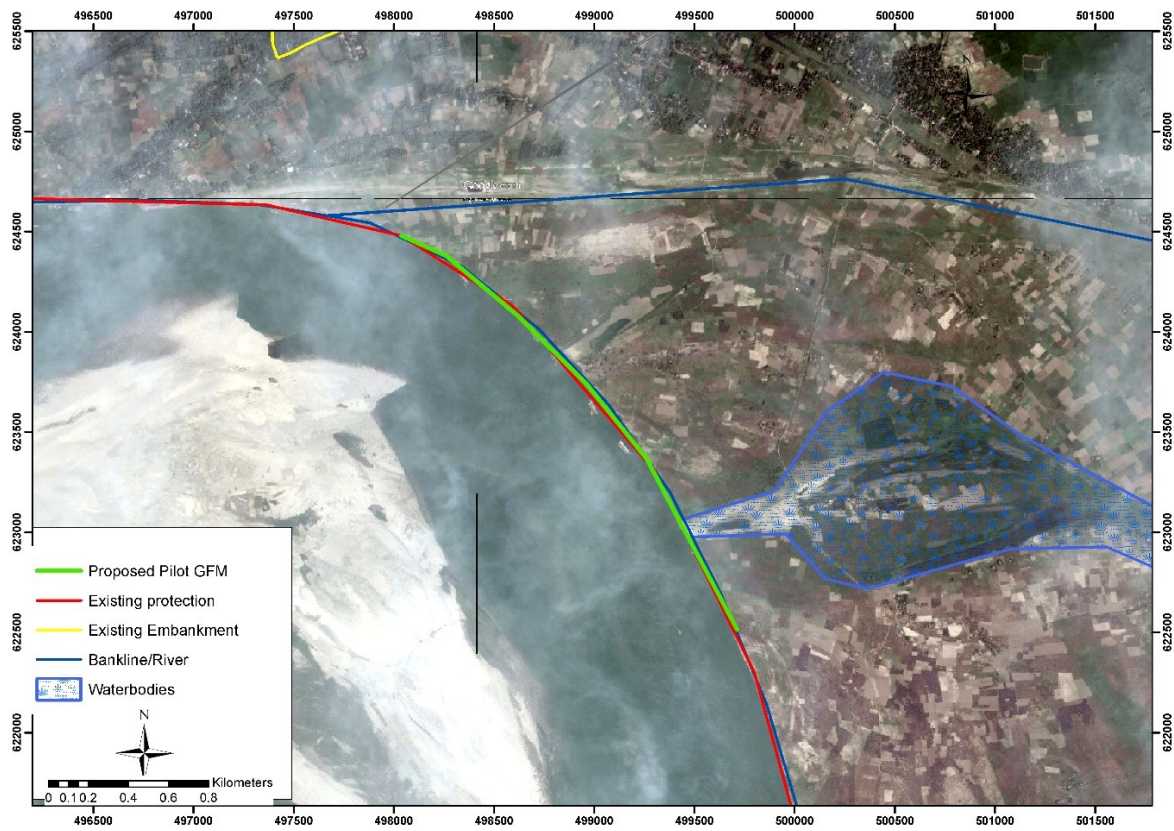


Figure 2.2 Planned Pilot Works in Harirampur

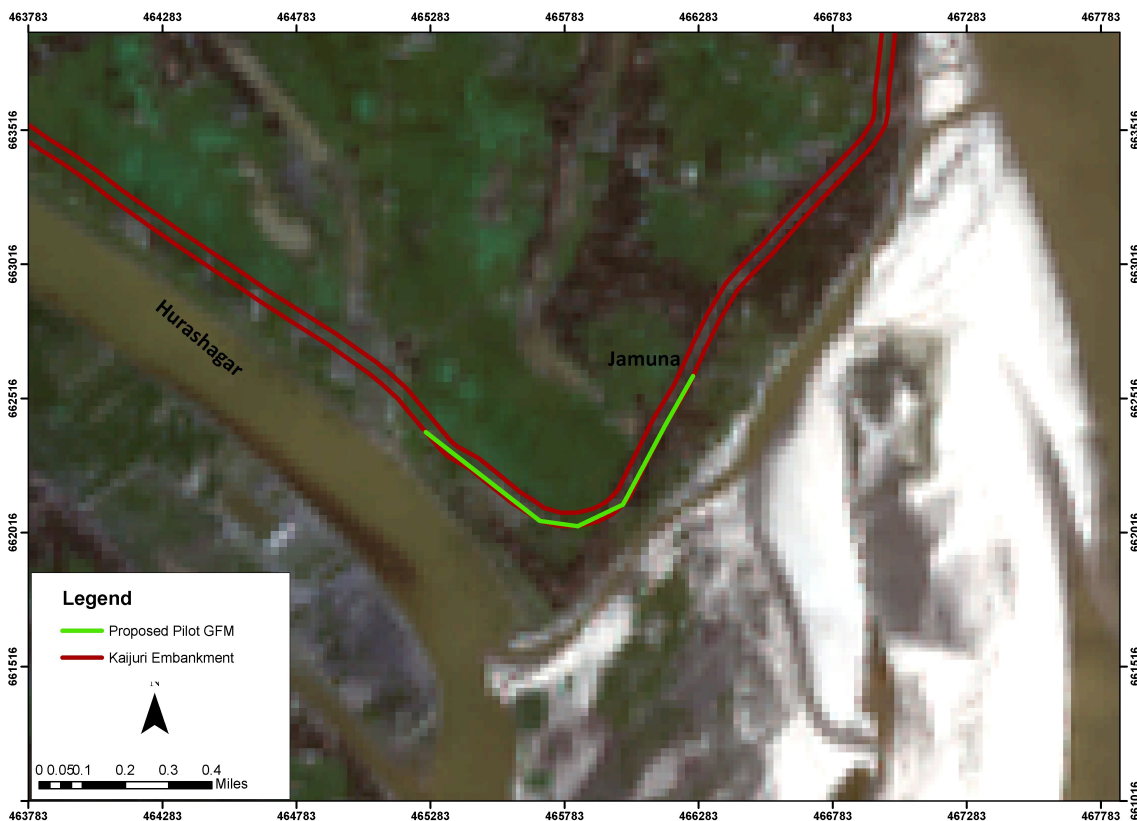


Figure 2.3 Planned Pilot Works in Hurashagar

In mid July, the ISPMC finalized a Technical Note documenting the results of a 3D numerical modelling analysis of the top-blocked semi-permeable spurs. Analysis results did not show a clear advantage of top-blocked semi-permeable spurs over more conventional permeable spurs. In fact, the top-blocked semi-permeable spurs actually indicated additional erosion potential. The note recommended to build one or two pilot structures at the end of the systematic protection in the Lower Bhadra River (being implemented by BWDB under the Blue Gold Program). The joint decision by Blue Gold and FRERMIP is still pending.

The Grout-filled Jute Mattress pilot program has been designed for a total estimated cost of US\$ 4 million. However, the program may be increased to US\$ 5 million, if the alternative top-blocked semi-permeable spurs pilot program is ultimately dropped.

It is anticipated that all remaining design and contractual procedures can be completed during the next quarter, and that the selected contractor will be able to start work during the lowest flow of March 2018.

2.3.10 Project-2 Feasibility Study

General

The ISPMC is currently preparing a feasibility study for Project-2 which will identify all proposed structural components, including their preliminary design and cost estimate. The feasibility study will include environmental and social impact assessments and propose a plan to monitor and manage any negative impacts. It is intended that a draft feasibility study will be discussed between PMO and ADB during the pre-appraisal mission in February/March 2018. The first social safeguard documents have been shared with ADB for their comments in December 2017.

Project-2 will continue to increase river stability and reduce flood risk along the Jamuna, Padma and Meghna Rivers. Four sub-projects are proposed for Project-2, and the salient features and primary work items are summarized in **Table 2.3**. Topographic, hydraulic and geotechnical data required for the preliminary design and cost estimates are currently being collected. Detailed design for these identified Project-2 civil works is expected to start in February 2018.

Table 2.3 Project-2 Proposed Work Items and Scope of Works

Sub-Project	Work Item	Tentative Scope of Works
JRB-1 (Jamuna Right Bank)	<ul style="list-style-type: none"> • Embankment • Fish Passes • River Protection 	<ul style="list-style-type: none"> • 6 km rehab. along Hurasagar • 2 Nos. • 4 km Enayetpur - Koijuri reach
JLB-2 (Jamuna Left Bank)	<ul style="list-style-type: none"> • River Training • Land Recovery 	<ul style="list-style-type: none"> • 14.5 km bifurcation stabilization • 5.5 km closure dam and katkin plantation
PLB-1 (Padma Left Bank)	<ul style="list-style-type: none"> • Embankment • Fish Passes • Riverbank Protection 	<ul style="list-style-type: none"> • 17 km rehab. from Harirampur to Dohar • 5 Nos. • 9 km
MLB-2 (Meghna Left Bank)	<ul style="list-style-type: none"> • Scour Apron 	<ul style="list-style-type: none"> • 2 km near Chandpur Town

Social Aspects

During this quarter an intensive resettlement survey was conducted along the proposed 17 km Harirampur embankment, with a total of 182 household respondents. Based on results, an initial resettlement plan including preliminary budget and Land Acquisition Plan (LAP) was prepared and submitted to ADB on 21 December 2017. The 6 km Hurasagar embankment resettlement survey,

with a total of 366 household respondents, started in mid December and the preliminary budget and LAP should be completed by the end of January 2018. A special ADB Safeguard Mission from Manila held from 12-18 December 2017 reviewed a number of resettlement plans, as well as a number of due diligence documents associated with the initial implementation of riverbank protection and river training works.

Environmental Aspects

An Environmental Impact Assessment (EIA) for Project-2 is being prepared which includes the collection of baseline data, results of public consultation, identification of positive and negative impacts and possible mitigation measures, and the environmental management and monitoring plan. A preliminary EIA prepared in January 2017 was updated in November 2017. One of the additions is an assessment of, and recommendation for, potential bird sanctuaries. The ISPMC environmental specialists organized two public meetings during the reporting quarter as a part of the team's public consultation and disclosure activities.

Highlights from the revised EIA were presented to the ADB team during its progress review mission at the end of November 2017. Verbal comments by the ADB team were documented in a response matrix and the revised EIA was submitted to ADB in December 2017 for review. The updated EIA is expected to be completed at the end of January 2018, after receiving ADB's comments.

Technical Aspects

The closure of the Solimabad channel (**refer to Figure 0.1. Project Location Map**) and works on a mid-channel char will be the first major river training works under FRERMIP. This work will make use of building with nature experience and apply modern designs, potentially involving recurrent dredging methods as well as special designs for works on loose unconsolidated char soils.

To assist flood modelling in the feasibility study area, a Real-Time Kinematic (RTK) satellite navigation survey of the all roads, embankments, riverbanks, bridges and culverts was completed in December 2017. This survey includes almost a 1200 km length of survey, mostly on the left bank of the Jamuna and Padma Rivers covering Dhaka, Tangail and Manikganj Districts.

A drone LIDAR (Light Detection and Ranging) survey contract was awarded to a sub-consultant in December 2017 to support the detailed design activities of the proposed embankments at Harirampur and Hurasagar, as well as riverbank protection and river training work sites. The survey will be conducted as soon as clearance from the Bangladesh Defence Ministry can be obtained. The drone LIDAR survey will include detailed topography, continuous high resolution imaging, and a video covering the total embankment length and the surrounding area. The survey will also include the char land area upstream and downstream of Chauhali.

Economic Aspects

Based on the proposed Project-2 technical requirements, and its environmental and social impacts, a cost benefit analysis will be prepared to confirm that Project-2 is economically viable. This includes an update of actual Project-1 costs, an estimate for Project-2 works, and a projection for the final Project-3 works.

2.3.11 2017 Flood Survey Monitoring Program

During the 2017 flood survey monitoring, 2 different types of surveys were conducted:

1. General River Monitoring
2. Site Monitoring

For general river monitoring, ADCP (Acoustic Doppler Current Profiler) discharge, bathymetry and float track measurements were collected. For the 3 riverbank protection sites (Chauhali, Harirampur and Zafarganj), plus Solimabad (2 km downstream of Chauhali) bathymetry and float track measurements were collected.

A multi-beam survey was conducted in November 2017 at Chauhali and Kojjuri. An adaptation and repair work design has been prepared for Chauhali based on the multi-beam data. A dry-season, partial river, single-beam bathymetric and ADCP survey started on 21 December 2017 and is expected to be completed by 9 January 2018.

A summary of survey activities is provided in **Table 2.4**, and salient details are provide in **Appendix-G**. All major findings from the survey work will be documented in the 2017 Flood Season Monitoring Memo which is intended to finalized by early February 2018.

Table 2.4. Summary of 2017 Flood Season Survey Program

Survey Type/Site	Chauhali	Zafarganj	Harirampur	Solimabad	Kojjuri	Full/Part.River
Single-Beam Bathymetric Survey	5	2	2	2		2
Multi-Beam Bathymetric Survey	1				1	
ADCP Velocity and Discharge Survey						3
Float Track Velocity Survey	3			1		2
Topographic Survey	1			1		

2.3.12 Management Information Systems (MIS) Developments

Work is progressing on a number of initiatives under the MIS project component. The River Survey database structure and interface are largely completed, and the compilation and organization of older bathymetric survey data from Sirajganj is on-going. Similarly, the database structure and interface for the FRERMIP Website has been mostly completed, and the compilation of relevant data is progressing. With the recent purchase of a Computer Server (referred to below), it is anticipated that both the River Survey database and FRERMIP Website will be available for ISPMC and BWDB personnel, and other users by mid-March.

During the quarter, there were two significant new developments related to MIS, which are briefly discussed below:

- Development of the Acoustic Doppler Current Profiler (ADCP) Database
- Purchase and installation of a Computer Server

ADCP Database

A separate database was developed to store and analyze velocity data from an ADCP which collects a matrix of river velocities at various depths along a river cross-section. The database analyzes data and displays summary results in QGIS (an open-source Graphical Information System). The database interface allows users to easily import raw data, and export processed data and analysis results.

Computer Server

In early December 2017, a computer server was purchased and installed with sufficient processing speed and storage capacity to properly accommodate the River Survey and ADCP Databases and FRERMIP Website. The server also houses a File Manager to store all project reports and support material, and makes them available for download by selected project personnel.

The ISPMC office tower already has a backup generator which starts automatically during a power outage. However, an uninterrupted power system was purchased to supply power until the backup generator comes on-line. The computer server is equipped with two storage devices that work as a mirror to each other, to provide an immediate backup system in case one storage device fails. The server also includes an external hard drive for off-site backup storage. The existing office internet band width may restrict performance. Application response times will be monitored, and if considered excessively long, alternate arrangements will be considered.

3. ADMINISTRATIVE ARRANGEMENTS

3.1 Establishment of Project Offices

The PMO and two ISPMC offices are fully operational. The project management team of the ISPMC and the BWDB PMO Office are both located in the Firoz Tower, 152/3/B Bir Uttam, Kazi Nuruzzaman Road (Green Road), Dhaka-1205; on the 12th and 13th floor respectively. The ISPMC River Study and Feasibility teams are located at the Banani Office: House 47 (8th Floor) Road 27, Banani, Dhaka.

Table C-1: Utilization of Consultant Person-Months details the time spent by all international and national specialists to the end of the reporting period. Up to the end of the December 2017, a total of 34 international specialists have expended 120 of 189 total person-months (63% of total), and 39 national specialists have expended 306 of 511 person-months (60% of total).

The number of international and national specialists has increased significantly from the previous quarter as part of the Variation Order approved in July 2017. These additional specialists are required to complete the River Study and Feasibility Study by providing expertise not included in the original DPP: e.g. climate change, dredging and geotechnical specialists.

Table C-2 shows the recently updated (December 2017) Work Schedule against major tasks as specified in the original ISPMC Terms of Reference. The Work Schedule shows that the ISPMC input has been extended to May 2019, which is the primary reason for the proposed zero-cost Variation Order No. 2 which is currently being processed. This change is required because the construction of the Koitola embankment, and the Pilot works at Harirampur a and Hurashagar are expected to continue up to June 2019.

3.2 Compliance with Loan Agreement Covenants

Schedule 5 of the FRERMIP Loan Agreement (**Ref. 8**) contains a set of 30 specific covenants to be followed during project implementation. These 30 covenants are documented in **Appendix-G**, together with a column for compliance, and a column that provides evidence to support the compliance value. Out of the 30 covenants: 22 fully comply, 7 do not fully comply, and 1 are non-applicable. Of the 7 covenants that do not fully comply: 2 refer to BWDB and DDM staffing, 3 with resettlement issues, and 2 with contractual specifications.

3.3 Important Events During This Quarter:

- 17-Sep-2017⁶** **4th Technical Advisory Committee(TAC) Meeting:** The TAC accepted the proposed Strategic Framework for River Stabilization, and Project-2 Site Selection Works. The TAC recommended addition stakeholder consultation for the River Stabilization Plan and preliminary Master Plan.
- 26-Nov to 1-Dec-2017** **ADB Consultation Mission:** Team members did review the progress of Project-1, but were primarily focused on the Feasibility Study and other processing documents required for Project-2.
- 29-Nov-2017** **National Workshop on the River Stabilization Plan:** The workshop presented the river stabilization plan to a broad audience for comments and guidance. Five parallel breakout sessions allowed experts from different fields to discuss key aspects of river stabilization and recommend a way forward (**Appendix-K**).
- 22-Nov-2017** **Chief Engineer River Management (CE-RM) Office:** Establishment of the CE-RM office is a major step forward towards strengthening river management in BWDB. The CE-RM Office will oversee all river protection and river training works along the large rivers of Bangladesh.
- 12-18-Dec-2017** **ADB Social Safeguard Review Mission from Manila:** Reviewed the status of Project-1 safeguard measures, and gained a better understanding of the Project-2 social safeguard requirements and their progress to date.

4. FINANCIAL ARRANGEMENTS

4.1 Statements of Expenditure

Using the project implementation database, and with help from the FRERMIP PMO, the ISPMC monitors project financial progress including: all ADB (and GON) disbursements (deposits) to the project, BWDB PMO expenditures paid to contractors and suppliers, and all reimbursement bill applications approved by ADB.

Table A-5 shows cumulative totals to date for progress, expenses and reimbursements, for all DPP categories. This table also includes the 2017/18 fiscal targets (and fiscal progress) as define in the provisional ADP (Annual Development Programme).

BWDB PMO expenditures by individual contract are provided in **Table B-5**. Only the total expenditure values are exactly correct. The individual donor values have been calculated using total expenditure values and the percent distribution by financial component.

Financial reimbursement on an individual contract basis is shown in **Table B-6**. The table shows the total bill claim amount, plus the reimbursed amount (BDT) by both ADB and GON. A summary of reimbursement applications for line of credit (L/C), direct payment, and imprest amounts is shown in **Table B-7**. This table also shows the total bill amount claimed and the reimbursement amounts paid by ADB and GON in both BDT and US\$.

⁶ This meeting occurred late in the previous quarter but the Minutes of the Meeting were not finalized until the current quarter.

Reimbursement values (BDT) are also summarized by ADB Financial Category (**Table A-3**), and by DPP Component (**Table A-4 and A-5**).

Table B-8 shows the total ADB (plus GON) disbursement (deposits) to the project. Total disbursement is the addition of all deposits to the ADB Loan Account and the Grant Imprest Account, plus the ADB and GON portions of all reimbursed Direct Payment and L/C applications.

A summary of the financial progress is also available in **Table 0.1 Progress at a Glance** which shows that the progress of PMO expenditure is 62%, the ADB disbursement is 51% and the total reimbursement is 36%. The history of project disbursements and reimbursements (US\$) is shown in **Figure 2.1** in **Section 2.1**.

5. ISSUES FOR DISCUSSION AND AGREEMENT

5.1 Construction Schedule for Embankment

The construction of the 23 km of embankment at Koitola remains on the critical path in regards to future disbursements and project completion date. Bids for embankment construction have been received and an evaluation has been completed and sent to the BWDB Director General for concurrence. It is anticipated that Contract Awards can be issued for the 5 contracts by the end of January 2018, and the work can start in February. However, there are still two other obstacles that remain to be overcome to ensure that significant construction progress is achieved by the end of the normal construction season (late-June).

As of the end of December, resettlement activities along the Koitola embankment had not been completed. The ADB Involuntary Resettlement Safeguard Policy Principles clearly states that the executing agency must: "Pay compensation and provide other resettlement entitlements before physical or economic displacement" (**Ref. 7**). To date, notices as per Section 7 have been issued for Padma District but not for Sirajganj District. These notices are required prior to payment of Cash Compensation under the Law (CCL). The issuing of notices and payment of CCL can be very slow and may delay the start of the civil works, which would automatically translate into the required extension of Project-1.

An embankment is highly susceptible to erosion if overtopped during the flood season. Any damage to the embankment during the flood season must be paid by contractors without any compensation. Therefore, contractors must be confident that they can complete the embankment to an elevation well above normal flood level, otherwise they may be very reluctant to start their construction until the following dry season.

The two obstacles identified above pose a significant risk to the successful completion of Project-1 by its current scheduled date of June 2019.

5.2 Pilot Works

The development of the pilot works has taken considerable time because a number of alternate options were developed to some detail, another project (Blue Gold) was involved, and additional design work was requested during a workshop in April 2017. The agreed pilot work option of grout-filled jute mattresses was finally developed over the summer 2017 with direct involvement of the BWDB Design office. The proposed bidding document, including design specifications and cost

estimates, was submitted to PMO on 4 October 2017, but as of the end of the reporting quarter, the design had not yet been vetted by the Design Office.

It is critically important that remaining design and contractual works are finalized, and that the selected contractor start work before mid-March 2018 for 3 reasons:

1. Implementation has to start before the lowest water levels (typically in March) are reached to allow sufficient time to reliably complete the works.
2. Meaningful piloting requires monitoring and adaptation throughout a minimum of two flood seasons. This is not guaranteed if the works are delayed by one more year.
3. The pilot works are being entirely funded by a Dutch grant. The Dutch financiers originally expected construction to start one year ago. Further delays could result in serious repercussions for future Dutch grant financing to the BWDB.

5.3 PMO Under-Staffing

The performance of the BWDB PMO has recently been reduced due to the transfer of both Superintending Engineers, of which only one has been replaced. **Table 5.1** shows the proposed and actual staffing for senior PMO personnel. It is not possible for the current reduced PMO staff to properly handle all their required duties.

Table 5.1. Proposed and Actual PMO Staffing

Position	Proposed ¹	Current (Dec-2017)
Project Director	1	1
Superintending Engineer	2	1
Executive Engineer	4	2
Assistant Director	1	1
Deputy Director (Accounts)	1	1
System Analyst	1	0
Sub-Divisional Engineer	2	1
Assistant Engineer	2	0
Totals	14	7

1. Source: Revised DPP

6. REFERENCES

1. ADB, 2014: Facility Administration Manual, Bangladesh: Multi-Project Financing Facility - Flood and Riverbank Erosion Risk Management Investment Program, 2014 June
2. ADB, 2014: Report and Recommendation of the President to the Board of Directors, Proposed Multi-Project Financing Facility People's Republic of Bangladesh: Flood and Riverbank Erosion Risk Management Investment Program, 2014 June
3. ADB, 2014: Loan Agreement, Program Agreement, and Grant Agreement; Flood and Riverbank Erosion Risk Management Investment Program – Project-1, between the People's Republic of Bangladesh and Asian Development Bank, 2014 August 14
4. BWDB, 2017: Revised Development Project Proforma/Proposal, Flood and Riverbank Erosion Risk Management Investment Program – Project 1 (Revised), 2017 June
5. NHC, 2013: Project Preparatory Technical Assistance 8054 BAN, Main River Flood and Bank Erosion Risk Management Program, Main Report, 2013 December
6. ISPMC, 2016: Flood and Riverbank Erosion Risk Management Investment Program (FRERMIP) Project-1, Inception Report, 2016 March
7. ADB, 2012: Involuntary Resettlement Safeguards, A Planning and Implementation Good Practice Sourcebook – Draft Working Document, Asian Development Bank, 2012 November
8. ADB, 2014: Loan Agreement, Flood and Riverbank Erosion Risk Management Investment Program - Project 1, between People's Republic of Bangladesh and Asian Development Bank, 2014 August 14

APPENDICES

Appendix-A	:	Work Program Summaries
Table A-1	:	Project Program Summary
Table A-2	:	Project Cost Summary
Table A-3	:	ADB Categories: Reimbursed Amount, by Donor
Table A-4	:	DPP Categories: Reimbursed Amount, by Donor
Table A-5	:	DPP Categories: Key Physical and Financial Indicators
Appendix-B	:	Work Program Details
Table B-1	:	Design Progress Details
Table B-2	:	Tender Progress Details
Table B-3	:	Implementation Progress Details, by Contract
Table B-4	:	Project Program, by Contract
Table B-5	:	BWDB PMO Expenditure Summary, by Contract
Table B-6	:	Reimbursement Summary, by Contract
Table B-7	:	Reimbursement Summary, by Application
Table B-8	:	ADB and GON Disbursement Details
Appendix-C	:	Administrative Details
Table C-1	:	Utilization of Consultant Person-months
Table C-2	:	Work Schedule revised in December 2017
Appendix-D	:	Status of River Study Technical Notes
Table D-1	:	Status of River Study Technical Notes
Appendix-E	:	Detailed Resettlement Progress
Table E-1	:	Acronyms Associated with Resettlement Activities
Table E-2	:	Detailed Resettlement Progress by Individual Site
Table E-3	:	Corrective Action Plan to comply with the Loan Agreement
Appendix-F	:	Gender Action Plan
Appendix-G	:	Compliance with Loan Agreement Covenants
Appendix-I	:	Capacity Building: Implementation Progress
Table I-1	:	Implementation Progress of Training Activities: PMO Program
Table I-2	:	Implementation Progress of Training Activities: ISPMC Program
Appendix-J	:	Capacity Building: Overseas Study Tours
Appendix-K	:	National Workshop on the River Stabilization Plan
Appendix-L	:	Photo Library

Appendix-A Work Program Summaries

Table A-1 Project Program Summary Quantity (Units)

Component	Asset Type	Units	BWDB	DDM	MAN	KOI	TAN	Totals
A: Civil Works								
A1: Embankment Works	Cons/ReCon: Embank	km	0.0	0.0	0.0	10.5	0.0	10.5
	New: Embank	km	0.0	0.0	0.0	12.5	0.0	12.5
	New: Infrastr	BDTM	0.0	0.0	7.8	0.0	0.0	7.8
	New: Regulator	No	0.0	0.0	0.0	4.0	0.0	4.0
A2: Riverbank Prot Works	New: Revetment	km	0.0	0.0	10.8	0.0	7.0	17.8
A3: Emerg & Adaptation	Emerg: AdpRivProt	BDTM	80.9	0.0	0.0	0.0	0.0	80.9
A4: Pilot Land Recovery	New: RivTrnWrk	BDTM	380.0	0.0	0.0	0.0	0.0	380.0
B: Materials								
B1: Geotextile, Civil Works	Procure: GeoBag	Mil	0.0	0.0	2.7	0.0	1.9	4.7
B2: Geotextile, Emerg	Procure: AdpGeoBag	Mil	0.8	0.0	0.9	0.0	0.0	1.6
C: Vehicles & Equipment								
C1: Vehicles/Transport	Procure: Veh/Trans	No	12.0	0.0	0.0	0.0	0.0	12.0
C2: Office Equipment	Procure: Equip	BDTM	4.4	0.0	0.0	0.0	0.0	4.4
C3: Survey Equipment	Procure: Equip	BDTM	6.7	0.0	0.0	0.0	0.0	6.7
C4: DDM Office Eqpt	Procure: Equip	BDTM	0.0	0.5	0.0	0.0	0.0	0.5
D: Consulting Services								
D1: ISPM; Consultant Serv.	Service: Feasi.Stud	BDTM	170.0	0.0	0.0	0.0	0.0	170.0
	Service: Instit.Cap	BDTM	387.0	0.0	0.0	0.0	0.0	387.0
	Service: Riv.Stabil	BDTM	461.0	0.0	0.0	0.0	0.0	461.0
D2: INGO BWDB	Service: Liveli.Sup	BDTM	65.1	0.0	0.0	0.0	0.0	65.1
	Service: Resettle.S	BDTM	16.2	0.0	0.0	0.0	0.0	16.2
D3: INGO DDM	Service: CBFRM	BDTM	0.0	64.4	0.0	0.0	0.0	64.4
D4: Survey & Investigation	Service: Eros.Pred	BDTM	55.9	0.0	0.0	0.0	0.0	55.9
E: Capacity Development								
E1: BWDB Training & Study	Service: Training	BDTM	63.9	0.0	0.0	0.0	0.0	63.9
F: Land Acqn & Resettle								
F1: Land Compensation	Compensate: Land.Acqu	BDTM	2,083.	0.0	0.0	0.0	0.0	2,083.
F2: Resettle Benefits	Compensate: Resettle.B	BDTM	28.4	0.0	0.0	0.0	0.0	28.4
G: Program Management								
G1: Staff Salaries BWDB	Service: Prog.Mngt	BDTM	83.7	0.0	0.0	0.0	0.0	83.7
G2: Office Opns BWDB	Service: Prog.Mngt	BDTM	31.0	0.0	0.0	0.0	0.0	31.0
G3: Office Opns DDM	Service: Prog.Mngt	BDTM	0.0	5.1	0.0	0.0	0.0	5.1
G4: BWDB River Surveys	Service: Riv.Surv	BDTM	7.8	0.0	0.0	0.0	0.0	7.8
	Service: LandSurvey	BDTM	0.2	0.0	0.0	0.0	0.0	0.2
X: Misc. Costs								
X1: Misc. Costs	Compensate: CD&SD	BDTM	12.1	0.0	0.0	0.0	0.0	12.1
	Compensate: Interest	BDTM	199.2	0.0	0.0	0.0	0.0	199.2

Abbreviations:

DDM - Department of Disaster Management

MAN - Manikganj SMO

KOI - Koitola SMO

TAN - Tangail SMO

The unit BDTM refers to an estimated cost of Bangladesh Taka 1 Million.

Table A-2 Project Cost Summary

Cost (BDT Mil)

Component	Asset	BWDB	DDM	MAN	KOI	TAN	Totals
A: Civil Works							
A1: Embankment Works	Cons/ReCon: Embank	0	0	0	511	0	511
	New: Embank	0	0	0	484	0	484
	New: Infrastr	0	0	8	0	0	8
	New: Regulator	0	0	0	226	0	226
A2: Riverbank Prot Works	New: Revetment	0	0	1,010	0	841	1,850
A3: Emerg & Adaptation	Emerg: AdpRivProt	81	0	0	0	0	81
A4: Pilot Land Recovery	New: RivTrnWrk	380	0	0	0	0	380
							3,540
B: Materials							
B1: Geotextile, Civil Works	Procure: GeoBag	0	0	788	0	365	1,153
B2: Geotextile, Emerg	Procure: AdpGeoBag	25	0	175	0	0	200
							1,353
C: Vehicles & Equipment							
C1: Vehicles/Transport	Procure: Veh/Trans	35	0	0	0	0	35
C2: Office Equipment	Procure: Equip	4	0	0	0	0	4
C3: Survey Equipment	Procure: Equip	7	0	0	0	0	7
C4: DDM Office Eqpt	Procure: Equip	0	0	0	0	0	0
							46
D: Consulting Services							
D1: ISPM; Consultant Serv.	Service: Feasi.Stud	170	0	0	0	0	170
	Service: Instit.Cap	387	0	0	0	0	387
	Service: Riv.Stabil	461	0	0	0	0	461
D2: INGO BWDB	Service: Liveli.Sup	65	0	0	0	0	65
	Service: Resettle.S	16	0	0	0	0	16
D3: INGO DDM	Service: CBFRM	0	64	0	0	0	64
D4: Survey & Investigation	Service: Eros.Pred	56	0	0	0	0	56
							1,219
E: Capacity Development							
E1: BWDB Training & Study	Service: Training	64	0	0	0	0	64
							64
F: Land Acqn & Resettle							
F1: Land Compensation	Compensate: Land.Acqu	2,083	0	0	0	0	2,083
F2: Resettle Benefits	Compensate: Resettle.B	28	0	0	0	0	28
							2,111
G: Program Management							
G1: Staff Salaries BWDB	Service: Prog.Mngt	84	0	0	0	0	84
G2: Office Opns BWDB	Service: Prog.Mngt	31	0	0	0	0	31
G3: Office Opns DDM	Service: Prog.Mngt	0	5	0	0	0	5
G4: BWDB River Surveys	Service: Riv.Surv	8	0	0	0	0	8
	Service: LandSurvey	0	0	0	0	0	0
							128
X: Misc. Costs							
X1: Misc. Costs	Compensate: CD&SD	12	0	0	0	0	12
	Compensate: Interest	199	0	0	0	0	199
							211
Grand Totals		4,196	70	1,980	1,221	1,206	8,673

Abbreviations:

DDM - Department of Disaster Management

MAN - Manikganj SMO

KOI - Koitola SMO

TAN - Tangail SMO

Table A-3 ADB Categories: Reimbursed Amount, by Donor

Code	Categories	Total Cost Est.	Value of Physical Progress	PMO Expenses	all Values in BDT Mil		
					Reimbursed Amount		Total
					ADB	GON	
<i>Component</i>							
1	Works	3,540.2	1,794.3	1,822.3	1,586.7	0.0	1,586.7
2	Materials	1,352.7	1,292.5	1,162.3	1,105.4	0.0	1,105.4
3A	Vehicles - BWDB	34.5	34.5	34.9	1.5	0.0	1.5
3B	Equipment - BWDB	11.1	11.1	11.1	10.6	0.0	10.6
3C	Equipment -DDM	0.5	0.5	0.5	0.5	0.0	0.5
4	Resettlement	28.4	5.7	2.0	2.0	0.0	2.0
5	Training	63.9	44.7	33.9	37.6	0.0	37.6
6A	Consulting Services - Project Management - BWDB	1,018.2	717.6	438.1	55.5	315.9	371.4
6B	Consulting Services - NGO Services - BWDB	136.8	34.5	24.9	21.6	0.0	21.6
6C	Consulting Services - Project Management - DDM	64.4	0.0				
7A	Project Management - BWDB	38.9	24.3	18.3	16.1	0.0	16.1
7B	Project Management - DDM	5.1	3.1	0.5	0.4	0.0	0.4
8	Interest	199.2	71.7	70.0			
9	Unallocated	2,178.9	1,715.0	1,312.3			
Grand Total		8,672.7	5,749.4	4,931.1	2,837.8	315.9	3,153.7

Table A-4 DPP Categories: Reimbursed Amount, by Donor

Code	Categories	Total Cost Est.	Value of Physical Progress	PMO Expenses	all Values in BDT Mil		
					Reimbursed Amount		Total
					ADB	GON	
Revenue Component							
4826	Interest & Service Charge for Netherland Grant	199.2	71.7	70.0			
4840	Capacity Development Program	63.9	44.7	33.9	37.6	0.0	37.6
4849	Resettlement Support Program	28.4	5.7	2.0	2.0	0.0	2.0
4874	ISPMC; Implementation Consultant Services	387.3	263.4	166.6	21.1	120.2	141.3
4874	ISPMC; River Stabilization and Land Recovery Study	461.2	332.1	198.4	25.1	143.1	168.2
4874	ISPMC; Feasibility of Tranch-2/3 Project	169.6	122.1	73.0	9.2	52.6	61.9
4874	Resettlement Implementation Support	16.2	9.7	6.7	5.9	0.0	5.9
4874	Livelihood Support Program	64.7	0.0				
4874	Community-based Flood Management Program (DDM)	64.4	0.0				
4886	Land/River Survey and Data Processing	8.0	6.3	4.4	0.4	0.0	0.4
4886	Survey and Investigation Data Processing	55.9	24.8	18.1	15.8	0.0	15.8
4700	PMO Salaries and Allowances	83.7	48.5				
4800	PMO Operational Expenses	30.9	17.9	13.8	15.6	0.0	15.6
4899	PMU DDM Operational Expenses	5.1	3.1	0.5	0.4	0.0	0.4
Revenue Totals		1,638.5	950.1	587.6	133.2	315.9	449.1
Capital Component							
6807	Transport Vehicles (Jeep 5, Motorcycle 10 and Speed Boat 1)	34.5	34.5	34.9	1.5	0.0	1.5
6819	Computer and Office Equipment BWDB	4.4	4.4	4.4	4.2	0.0	4.2
6819	Computer and Office Equipment DDM	0.5	0.5	0.5	0.5	0.0	0.5
6851	Survey Equipment	6.7	6.7	6.7	6.4	0.0	6.4
6901	Land Acquisition (136 ha)	2,083.1	1,666.5	1,312.3			
7016	Construction of Inspection Bangalow at Manikganj	7.8	0.0				
7041	Regulator (new 4 and repair 3) in JRB1	225.8	0.0				
7081	Embankment (23 km) along RB Jamuna and LB Baria-Hurasagar, with Road (5 km)	995.4	0.0				
7081	Protective Works at RB Jamuna at Kajjuri, LB Jamuna at Chaulhali, Jafforganj & Harirampur (15 km)	3,003.2	2,947.0	2,879.2	2,601.8	0.0	2,601.8
7081	Land Recovery/River Training Works	379.8	0.0				
7081	Adaptive Protection and Emergency	280.9	139.7	105.4	90.3	0.0	90.3
7091	CD and SD	12.1	0.0				
Capital Totals		7,034.2	4,799.3	4,343.5	2,704.6	0.0	2,704.6
Grand Total		8,672.7	5,749.4	4,931.1	2,837.8	315.9	3,153.7

Table A-5 DPP Categories: Key Physical and Financial Indicators

all Values in BDT Mil

Code	Categories	Total Cost		Fiscal		Total to Date		
		Budget (RDPP)	Revised Est.	Provisional Target	Progress	Progress	Expenses	Reimburs
Revenue								
4826	Interest & Service Charge for Netherland Grant	199.2	199.2	50.0	0.0	71.7	70.0	0.0
4840	Capacity Development Program	76.9	63.9	32.0	9.6	44.7	33.9	37.6
4849	Resettlement Support Program	28.4	28.4	15.0	2.9	5.7	2.0	2.0
4874	ISPMC; Implementation Consultant Services	387.3	387.3	83.0	31.0	263.4	166.6	141.3
4874	ISPMC; River Stabilization and Land Recovery Study	461.2	461.2	50.0	29.2	332.1	198.4	168.2
4874	ISPMC; Feasibility of Tranch-2/3 Project	169.7	169.6	50.0	32.1	122.1	73.0	61.9
4874	Resettlement Implementation Support	17.5	16.2	4.0	3.2	9.7	6.7	5.9
4874	Livelihood Support Program	64.7	64.7	20.0	0.0	0.0	0.0	0.0
4874	Community-based Flood Management Program (DDM)	64.4	64.4	20.0	0.0	0.0	0.0	0.0
4886	Land/River Survey and Data Processing	8.0	8.0	2.0	0.0	6.3	4.4	0.4
4886	Survey and Investigation Data Processing	55.8	55.9	15.6	2.5	24.8	18.1	15.8
4700	PMO Salaries and Allowances	83.7	83.7	2.1	1.0	48.5	0.0	0.0
4800	PMO Operational Expenses	30.9	30.9	10.1	1.5	17.9	13.8	15.6
4899	PMU DDM Oprational Expenses	5.1	5.1	2.0	1.6	3.1	0.5	0.4
		1,652.8	1,638.5	355.8	114.7	950.1	587.6	449.1
Capital								
6807	Transport Vehicles (Jeep 5, Motorcycle 10 and Speed Boat 1)	34.9	34.5	0.0	0.0	34.5	34.9	1.5
6819	Computer and Office Equipment BWDB	4.4	4.4	0.0	0.0	4.4	4.4	4.2
6819	Computer and Office Equipment DDM	0.5	0.5	0.0	0.0	0.5	0.5	0.5
6851	Survey Equipment	6.7	6.7	0.0	0.0	6.7	6.7	6.4
6901	Land Acquisition (136 ha)	2,083.1	2,083.1	1,198.3	511.5	1,666.5	1,312.3	0.0
7016	Construction of Inspection Bangalow at Manikganj	7.8	7.8	3.7	0.0	0.0	0.0	0.0
7041	Regulator (new 4 and repair 3) in JRB1	225.9	225.8	130.0	0.0	0.0	0.0	0.0
7081	Embankment (23 km) along RB Jamuna and LB Baria-Hurasagar, with Road (5 km)	995.2	995.4	560.0	0.0	0.0	0.0	0.0
7081	Protective Works at RB Jamuna at Kaijuri, LB Jamuna at Chaulhali, Jafforganj & Harirampur (15 km)	3,000.8	3,003.2	286.6	26.5	2,947.0	2,879.2	2,601.8
7081	Land Recovery/River Training Works	379.8	379.8	100.0	0.0	0.0	0.0	0.0
7081	Adaptive Protection and Emergency	280.9	280.9	89.1	17.4	139.7	105.4	90.3
7091	CD and SD	12.1	12.1	0.0	0.0	0.0	0.0	0.0
		7,032.2	7,034.2	2,367.7	555.4	4,799.3	4,343.5	2,704.6
Totals		8,685.0	8,672.7	2,723.5	670.1	5,749.4	4,931.1	3,153.7

Appendix-B Work Program Details

Table B-1 Design Progress Details

Description	Total	Design Data Collection			Prog (%)		Remarks
		Surv	Hydraul	Geotech	Desn	Dwg	
Component A: Civil Works							
BWDB PMO							
Emerg: AdpRivProt: 44.75 BDTM: Emergency/Adaptive 1: Riverbank Protection		c	c	na	100	100	Dwgs Complete
New: RivTrnWrk: 380 BDTM: River Training Pilot Work: & Land Recovery		c	c	na	100	100	Dwgs Complete
BWDB PMO Totals	2	2	2	2	2	2	
Koitola SMO							
Cons/ReCon: Embank: 4.8 km: Embankment Reconst. (4.8 km): Baghabari - Verakhola; km 12.5-17.3		c	c	na	100	100	Desn. & Dwg. Complete
Cons/ReCon: Embank: 5.7 km: Embankment Reconst. (5.7 km): Baghabari - Verakhola; km 17.3-23		c	c	na	100	100	Desn. & Dwg. Complete
New: Embank: 5 km: Embankment (5 km): Kaijuri - Bhatpara; km 0-5		c	c	na	100	100	Desn. & Dwg. Complete
New: Embank: 3.5 km: Embankment (3.5 km): Bhatpata - Gala; km 5-8.5		c	c	na	100	100	Desn. & Dwg. Complete
New: Embank: 4 km: Embankment (4 km): Gala - Verakhola; km 8.5-12.5		c	c	na	100	100	Desn. & Dwg. Complete
New: Regulator: 1 No: Kaijuri Reg 2V 1.5x1.8m		c	c	c	100	100	Desn. & Dwg. Complete
New: Regulator: 1 No: Rohindakandi Reg 2V 1.5x1.8m		c	c	c	100	100	Desn. & Dwg. Complete
New: Regulator: 1 No: Verakhola Reg 2V 1.5x1.8m		c	c	c	100	100	Desn. & Dwg. Complete
New: Regulator: 1 No: Andhar Manik Reg 4V 1.5x1.8m		c	c	c	100	100	Desn. & Dwg. Complete
Koitola SMO Totals	9	9	9	9	9	9	
Manikganj SMO							
New: Infrastr: 7.8 BDTM: Construction of Inspection Bungalow		c	na	na	100	100	Dwgs Complete
New: Revetment: 2 km: Revetment (2 km): Zaffarganj; km 6.1-8.1		c	c	na	100	100	Desn. & Dwg. Complete
New: Revetment: 3.5 km: Revetment (3.5 km): Harirampur; km 0-3.5		c	c	na	100	100	Desn. & Dwg. Complete
New: Revetment: 5.3 km: Revetment (3.5 km): Harirampur; km 3.5-7		c	c	na	100	100	Desn. & Dwg. Complete
Manikganj SMO Totals	4	4	4	4	4	4	
Tangail SMO							
New: Revetment: 2.5 km: Revetment (2 km): Chauhali; km 0- 2.5		c	c	na	100	100	Desn. & Dwg. Complete
New: Revetment: 4.5 km: Revetment (4.5 km): Chauhali; km 2.5-7.0		c	c	na	100	100	Desn. & Dwg. Complete
Tangail SMO Totals	2	2	2	2	2	2	
Component Totals	17	17	17	17	17	17	

Legend:

n - not commenced c - completed
p - partially completed na - not applicable/required

Table B-2 Tender Progress Details

Package Code	Description	Dates												
		ISPMC ToR	ADB ToR	Eol Notice	Eol Received	BWDB Eval	Eol Eval.	ADB Bid Doc.	Tender Notice	Tender Received	Eval. Comp.	ADB Concur.	Appr.Compl. Authority	Notif. Award
Goods; B: Materials														
G-01	Supply of Geobags; Chouhali, Sirajganj							26Dec14	31Dec14	19Feb15	04Aug15	29Apr15	07Jan15	01Jul15
G-02	Supply of Geobags; Zaforganj, Harirampur, Manikganj							26Dec14	31Dec14	19Feb15	04Aug15	29Apr15	07Jan15	01Jul15
G-03	Supply of Geobags; Harirampur, Manikganj							19May15	19May15	06Jul15	08Dec15	27Aug15	22Sep15	27Sep15
G-04.1	Supply of Geobags; Chauhali-Harirampur-Kojijuri-Benotia							13Sep16	27Sep16	14Nov16	19Dec16	20Jan17	31Jan17	12Feb17
Component Totals		0	0	0	0	0	0	4	4	4	4	4	4	4
Goods; C: Vehicles & Equipment														
G-05	2016 Supply of Jeep;							26Feb16	29Feb16	31Mar16	13Apr16	19Apr16	19Apr16	07Jun16
G-06.1	2015 Supply of Jeeps;								01Jun16	05Jun16	09Jun16	12Jun16	16Jun16	30Jun16
G-06.2	2016 Supply of Jeep;								10Mar16	24Mar16	14Apr16	21Apr16	28Apr16	05May16
G-06.3	2016 Supply of Motorcycles;								10Mar16	24Mar16	14Apr16	21Apr16	28Apr16	05May16
G-07.1	2015 Office Equipment; BWDB PMO								13Apr15	17May15				28May15
G-07.2	2016 Office Equipment; BWDB PMO							10Apr15	03Jan16	04Feb16	29Feb16	28Mar16	28Mar16	30Mar16
G-08	2016 Supply of Survey Equipments;							10Apr15	03Jan16	04Feb16	29Feb16	14Mar16	14Mar16	16Mar16
G-09	2017 Supply of Office Equip; DDM; DDM								01Jun17	08Jun17	08Jun17	15Jun17	22Jun17	22Jun17
Component Totals		0	0	0	0	0	0	3	8	8	7	7	7	8
Services; D: Consulting Services														
S-01	ISPMC; Tranche 1;			23Oct14	15Dec14				01Apr15	01Jun15				08Sep15
S-02	Resettlement Implementation Support;		22Apr15	09Jun15	09Jul15	24Aug15		22Oct15	11Nov15	10Dec15	11Jan16	04Mar16	15Mar16	16Mar16
S-03	Livelihood Development;	25May16												
S-04	Community Based Flood Risk Mngmt;	30Sep15	01Mar16	28Mar16	26Apr16	27Mar17	23Oct17	23Oct17	12Nov17	17Dec17				
S-06.1	2015 Erosion & Morphological Chg;								23Dec14	01Jan15				29Jan15
S-06.2	2016 & 2017 Erosion Prediction;		23Feb16						23Feb16	15Mar16	24Mar16	28Mar16	09May16	10May16
Component Totals		2	3	3	3	2	1	2	5	5	2	2	2	4
Works; A: Civil Works														
W-02	Embankment; km 5-8.5							06Nov17	07Nov17	11Dec17				
W-03	Embankment; 8.5-12.5							06Nov17	07Nov17	11Dec17				
W-04	Embankment & 1 Regulator; km 12.5-17.3							06Nov17	07Nov17	11Dec17				
W-05	Embankment & 1 Regulator; km 17.3-23							06Nov17	07Nov17	11Dec17				
W-06	Revetment; Jamuna at Chauhali, R1; km 0-2.5							30Mar15	04May15	08Jun15	28Jul15	14Aug15	22Sep15	23Sep15
W-07	Revetment; Jamuna at Chauhali, R2; km 2.5-7.0							30Mar15	04May15	08Jun15	28Jul15	14Aug15	22Sep15	23Sep15
W-08	Revetment; Jamuna at Zaffarganj, km 6.1-8.1							11May15	22Jun15	27Jul15	08Oct15	04Dec15	03Feb16	03Feb16
W-09	Revetment; Padma at Harirampur, R1; km 6.7-10.2							11May15	22Jun15	27Jul15	04Nov15	10Dec15	30Dec15	30Dec15
W-10	Revetment; Padma at Harirampur, R2; km 3.2-6.7							11May15	22Jun15	27Jul15	04Nov15	10Dec15	30Dec15	30Dec15
Component Totals		0	0	0	0	0	0	9	9	9	5	5	5	5
Project Totals		2	3	3	3	2	1	18	26	26	18	18	18	21
Abbreviations:	ADB - Asian Development Bank BDT - Bangladesh Taka Comp. - Completion	Concur. - Concurrence Doc. - Document Eval. - Evaluation		Eol - Expression of Interest Notif. - Notification										

Table B-3 Implementation Progress Details, by Contract

Contract Code	Description	Contractor	Best Estimate of Final Cost (BDT Mil)	Value of Cumulate Progress					Remarks
				during Qtr%	31-Dec-2017 Current Qtr (%)	31-Mar-2018 Next Qtr (%)			
Goods									
B: Materials									
G-01	Supply of Geobags: Chouhali, Sirajganj	BJ Geo-Textile	365.0	0	100	365.0	100	365.0	Implemenation Complete
G-02	Supply of Geobags: Zaforganj, Harirampur, Manikganj	BJ Geo-Textile	472.6	0	100	472.6	100	472.6	Implemenation Complete
G-03	Supply of Geobags: Harirampur, Manikganj	DFL-DCTL(JV)	315.1	0	100	315.1	100	315.1	Implemenation Complete
G-04.1	Supply of Geobags: Chauhali-Harirampur-Kojuri-Benotia	DIRD	174.7	0	80	139.7	100	174.7	Implementation Started
Component Totals			1,327.4			1,292.5		1,327.4	
C: Vehicles & Equipment									
G-05	2016 Supply of Jeep:	Pacific Motors Ltd.	5.5	0	100	5.5	100	5.5	Implemenation Complete
G-06.1	2015 Supply of Jeeps:	Progoti Industries	20.8	0	100	20.8	100	20.8	Implemenation Complete
G-06.2	2016 Supply of Jeep:	Progoti Industries	6.9	0	100	6.9	100	6.9	Implemenation Complete
G-06.3	2016 Supply of Motorcycles:	Atlas Bangladesh Ltd.	1.3	0	100	1.3	100	1.3	Implemenation Complete
G-07.1	2015 Office Equipment: BWDB PMO	Logitech Computer Ltd.	2.2	0	100	2.2	100	2.2	Implemenation Complete
G-07.2	2016 Office Equipment: BWDB PMO	Source & Service	2.2	0	100	2.2	100	2.2	Implemenation Complete
G-08	2016 Supply of Survey Equipments:	Logitech Computers Ltd.	6.7	0	100	6.7	100	6.7	Implemenation Complete
G-09	2017 Supply of Office Equip; DDM: DDM	DDM	0.5	0	100	0.5	100	0.5	Implemenation Complete
Component Totals			46.1			46.1		46.1	
Goods Totals			1,373.5			1,338.6		1,373.5	
Services									
D: Consulting Services									
S-01	ISPMC; Tranche 1:	NHC (JV) Mott MacDonald	1,018.2	5	70	717.6	76	772.1	Satisfactory Progress
S-02	Resettlement Implementation Support:	VRDS-HCL-JV	16.2	5	60	9.7	65	10.5	Satisfactory Progress
S-03	Livelihood Development:		64.7	0	0	0.0	0	0.0	Contract Not Yet Started
S-04	Community Based Flood Risk Mngmt:		64.4	0	0	0.0	0	0.0	Tender Received
S-05	Multi-beam Echo Sounding & River Sur:		26.0	0	0	0.0	0	0.0	Contract Not Yet Started
S-06.1	2015 Erosion & Morphological Chg:	CEGIS	4.6	0	100	4.6	100	4.6	Implemenation Complete
S-06.2	2016 & 2017 Erosion Prediction:	CEGIS	25.3	5	80	20.2	90	22.7	Satisfactory Progress
Component Totals			1,219.4			752.1		810.0	
Services Totals			1,219.4			752.1		810.0	
Works									
A: Civil Works									
W-01	Embankment, & 2 Reg.: km 0-5		293.6	0	0	0.0	0	0.0	Tender Received
W-02	Embankment: km 5-8.5		133.4	0	0	0.0	0	0.0	Tender Received
W-03	Embankment: 8.5-12.5		139.4	0	0	0.0	0	0.0	Tender Received
W-04	Embankment & 1 Regulator: km 12.5-17.3		335.9	0	0	0.0	0	0.0	Tender Received
W-05	Embankment & 1 Regulator: km 17.3-23		318.8	0	0	0.0	0	0.0	Tender Received
W-06	Revetment: Jamuna at Chauhali, R1; km 0-2.5	I-J (JV)	395.4	0	98	387.5	100	395.4	Construction Started
W-07	Revetment: Jamuna at Chauhali, R2; km 2.5-7.0	I-J (JV)	445.2	0	98	436.2	100	445.2	Construction Started
W-08	Revetment: Jamuna at Zaffarganj, km 6.1-8.1	WEL-NZK-PTSL (JV)	492.8	0	92	453.4	100	492.8	Construction Started
W-09	Revetment: Padma at Harirampur, R1; km 6.7-10.2	M.M.Builders & Engineers Lt	268.9	0	100	268.9	100	268.9	Construction Complete
W-10	Revetment: Padma at Harirampur, R2; km 3.2-6.7	M.M.Builders & Engineers Lt	248.3	0	100	248.3	100	248.3	Construction Complete
W-11	Emergency/Adaptive 1: Riverbank Protection		44.8	0	0	0.0	0	0.0	Dwgs Complete
W-14	River Training Pilot Work:		379.8	0	0	0.0	0	0.0	Dwgs Complete
W-15	Construction of Inspection Bungalow:		7.8	0	0	0.0	0	0.0	Dwgs Complete
Component Totals			3,504.0			1,794.3		1,850.5	
Works Totals			3,504.0			1,794.3		1,850.5	
ProjectTotals			6,096.9			3,885.0		4,034.0	

Table B-4 Project Program, by Contract

Code	Description	Cost (BDT Mil)
Goods		
Component B1: Materials Geotextile, Civil Works		
G-01	Geobags 1.25x1.00m; Chouhali, Sirajganj	364.97
G-02	Geobags 1.25x1.00m; Zaforganj & Harirampur, Manikganj	472.64
G-03	Geobags 1.25x1.00m; Harirampur, Manikganj	315.11
		1,152.72
Component B2: Materials Geotextile, Emerg		
G-04.1	Supply of Geobags; Chauhali & Harirampur	174.67
G-04.2	Supply of Geobags;	25.30
		199.97
Component C1: Vehicles & Equipment Vehicles/Transport		
G-05	2016 Supply of Jeep;	5.49
G-06.1	2015 Supply of Jeeps;	20.78
G-06.2	2016 Supply of Jeep;	6.93
G-06.3	2016 Supply of Motorcycles;	1.31
		34.51
Component C2: Vehicles & Equipment Office Equipment		
G-07.1	Supply of Office Equip.; BWDB PMO	2.20
G-07.2	2016 Office Equipment; BWDB PMO	2.18
		4.37
Component C3: Vehicles & Equipment Survey Equipment		
G-08	Supply of Survey Equipments;	6.75
Component C4: Vehicles & Equipment DDM Office Eqpt		
G-09	Supply of Computers & Photocopiers; DDM	0.50
Goods Total		1,398.82
Services		
Component D1: Consulting Services ISPM; Consultant Serv.		
S-01	Implementation Consultant Services; Feasibility Study Tranche-2; River Stabilization & Land Recovery;	1,018.19
Component D2: Consulting Services INGO BWDB		
S-02	Resettlement Plan;	16.20
S-03	Livelihood Development;	64.73
		80.93
Component D3: Consulting Services INGO DDM		
S-04	Cb Flood Risk Mngmt;	64.40
Component D4: Consulting Services Survey & Investigation		
S-05	Multi-beam Echo Sounding & River Sur;	26.00
S-06.1	2015 Erosion & Morphological Chg; Jamuna, Ganges, Padma R	4.60
S-06.2	2016 & 2017 Erosion Prediction;	25.25
		55.85
Services Total		1,219.36
Works		
Component A1: Civil Works Embankment Works		
W-01	Embankment (5 km); Kajjuri - Bhatpara; km 0-5 Kajjuri Reg 2V 1.5x1.8m; Rohindakandi Reg 2V 1.5x1.8m;	293.63
W-02	Embankment (3.5 km); Bhatpata - Gala; km 5-8.5	133.37
W-03	Embankment (4 km); Gala - Verakhola; km 8.5-12.5	139.42
W-04	Embankment Reconst. (4.8 km); Baghabari - Verakhola; km 12.5-17.3 Verakhola Reg 2V 1.5x1.8m;	335.93
W-05	Embankment Reconst. (5.7 km); Baghabari - Verakhola; km 17.3-23 Andhar Manik Reg 4V 1.5x1.8m;	318.81
W-15	Construction of Inspection Bungalow;	7.80
		1,228.96
Component A2: Civil Works Riverbank Prot Works		
W-06	Revetment (2 km); Chauhali; km 0- 2.5	395.41
W-07	Revetment (4.5 km); Chauhali; km 2.5-7.0	445.15

Table B-4 Project Program, by Contract

Code	Description	Cost (BDT Mil)
Works		
Component A2: Civil Works Riverbank Prot Works		
W-08	Revetment (2 km); Zaffarganj; km 6.1-8.1	492.80
W-09	Revetment (3.5 km); Harirampur; km 0-3.5	268.85
W-10	Revetment (3.5 km); Harirampur; km 3.5-7	248.28
		1,850.49
Component A3: Civil Works Emerg & Adaptation		
W-11	Emergency/Adaptive 1; Riverbank Protection	44.75
W-12	Kojihuri-Benotia Revetment; Riverbank Protection	18.36
W-13	Emergency/Adaptive 3; Riverbank Protection	17.82
		80.93
Component A4: Civil Works Pilot Land Recovery		
W-14	River Training Pilot Work; & Land Recovery	379.80
Works Total		3,540.19
eXtra		
Component E1: Capacity Development BWDB Training & Study		
X-05	BWDB Training and Study Tours;	63.90
Component F1: Land Acqn & Resettle Land Compensation		
X-07	Land Compensation;	2,083.11
Component F2: Land Acqn & Resettle Resettle Benefits		
X-08	Resettlement Benefits;	28.36
Component G1: Program Management Staff Salaries BWDB		
X-02	BWDB Staff Salaries;	83.67
Component G2: Program Management Office Opns BWDB		
X-03	BWDB Office Operations;	30.94
Component G3: Program Management Office Opns DDM		
X-04	DDM Office Operations;	5.10
Component G4: Program Management BWDB River Surveys		
X-10.1	River Survey Work; Padma LB & Jamuna LB	0.15
X-10.2	Survey Work for Land Acquisition; Hat-Pachi to Dombaria	0.20
X-10.3	Land/River Survey Work; Jamuna at Chouhali 7km	0.15
X-10.4	Bathymetric River Survey; Dhaka, Pabna and Mymensingh	1.99
X-10.5	2018 Bathymetric River Survey; Manikganj	5.51
		8.00
Component X1: Misc. Costs Misc. Costs		
X-01	ADB Interest & Service Charge;	199.20
X-09	CD and SD;	12.10
		211.30
eXtra Total		2,514.37
Project Total		8,672.75

Table B-5 BWDB PMO Expenditure Summary, by Contract

all Values in BDT

Code	Description	ADB	GON	GOB	Total
Goods					
B1 Geotextile, Civil Works					
G-01	Supply of Geobags; Chouhali, Sirajganj	325,119,259	0	0	325,119,259
G-02	Supply of Geobags; Zaforganj, Harirampur, Manikganj	417,777,105	0	0	417,777,105
G-03	Supply of Geobags; Harirampur, Manikganj	313,997,430	0	0	313,997,430
Component Total		1,056,893,794	0	0	1,056,893,794
B2 Geotextile, Emerg					
G-04.1	Supply of Geobags; Chauhali-Harirampur-Kojuri-Benotia	105,438,735	0	0	105,438,735
Component Total		105,438,735	0	0	105,438,735
C1 Vehicles/Transport					
G-05	2016 Supply of Jeep;	1,940,400	0	4,989,600	6,930,000
G-06.1	2015 Supply of Jeeps;	5,940,900	0	15,276,600	21,217,500
G-06.2	2016 Supply of Jeep;	1,537,200	0	3,952,800	5,490,000
G-06.3	2016 Supply of Motorcycles;	366,940	0	943,560	1,310,500
Component Total		9,785,440	0	25,162,560	34,948,000
C2 Office Equipment					
G-07.1	2015 Office Equipment; BWDB PMO	2,087,749	0	109,882	2,197,630
G-07.2	2016 Office Equipment; BWDB PMO	2,066,333	0	108,754	2,175,087
Component Total		4,154,081	0	218,636	4,372,717
C3 Survey Equipment					
G-08	2016 Supply of Survey Equipments;	6,409,650	0	337,350	6,747,000
Component Total		6,409,650	0	337,350	6,747,000
C4 DDM Office Eqpt					
G-09	2017 Supply of Office Equip; DDM; DDM	473,955	0	24,945	498,900
Component Total		473,955	0	24,945	498,900
Goods Total		1,183,155,655	0	25,743,491	1,208,899,146
Services					
D1 ISPM; Consultant Serv.					
S-01	ISPMC; Tranche 1;	56,948,632	324,169,135	56,948,632	438,066,399
Component Total		56,948,632	324,169,135	56,948,632	438,066,399
D2 INGO BWDB					
S-02	Resettlement Implementation Support;	5,871,467	0	877,346	6,748,813
Component Total		5,871,467	0	877,346	6,748,813
D4 Survey & Investigation					
S-06.1	2015 Erosion & Morphological Chg;	4,002,000	0	598,000	4,600,000
S-06.2	2016 & 2017 Erosion Prediction;	11,749,843	0	1,755,724	13,505,567
Component Total		15,751,843	0	2,353,724	18,105,567
Services Total		78,571,942	324,169,135	60,179,701	462,920,779
Works					
A2 Riverbank Prot Works					
W-06	Revetment; Jamuna at Chauhali, R1; km 0-2.5	359,824,530	0	35,587,041	395,411,571
W-07	Revetment; Jamuna at Chauhali, R2; km 2.5-7.0	361,565,560	0	35,759,231	397,324,791
W-08	Revetment; Jamuna at Zaffarganj, km 6.1-8.1	424,850,997	0	42,018,230	466,869,227
W-09	Revetment; Padma at Harirampur, R1; km 6.7-10.2	277,020,604	0	27,397,642	304,418,246
W-10	Revetment; Padma at Harirampur, R2; km 3.2-6.7	235,013,552	0	23,243,099	258,256,650
Component Total		1,658,275,241	0	164,005,244	1,822,280,485
Works Total		1,658,275,241	0	164,005,244	1,822,280,485
eXtra					

Table B-5 BWDB PMO Expenditure Summary, by Contract

all Values in BDT

Code	Description	ADB	GON	GOB	Total
E1 BWDB Training & Study					
X-05	BWDB Training and Study Tours;	31,861,451	0	2,033,710	33,895,161
Component Total		31,861,451	0	2,033,710	33,895,161
F1 Land Compensation					
X-07	Land Compensation; Tangail and Manikganj	0	0	1,312,304,940	1,312,304,940
Component Total		0	0	1,312,304,940	1,312,304,940
F2 Resettle Benefits					
X-08	Resettlement Benefits;	2,036,260	0	0	2,036,260
Component Total		2,036,260	0	0	2,036,260
G2 Office Opns BWDB					
X-03	BWDB Office Operations;	12,184,480	0	1,661,520	13,846,000
Component Total		12,184,480	0	1,661,520	13,846,000
G3 Office Opns DDM					
X-04	DDM Office Operations;	396,506	0	54,069	450,575
Component Total		396,506	0	54,069	450,575
G4 BWDB River Surveys					
X-10.1	River Survey Work; left bank Padma & Jamuna	122,778	0	16,742	139,520
X-10.2	Survey Work for Land Acquisition; Hat-Pachi to Dombaria	170,702	0	23,278	193,980
X-10.3	Land/River Survey Work; Jamuna at Chouhali 7km	128,040	0	17,460	145,500
X-10.4	2017 Bathymetric River Survey; Dhaka, Pabna and Mymensingh	1,753,294	0	239,086	1,992,380
X-10.5	2018 Bathymetric River Survey; Manikganj	1,731,756	0	236,149	1,967,905
Component Total		3,906,571	0	532,714	4,439,285
X1 Misc. Costs					
X-01	ADB Interest & Service Charge;	70,000,000	0	0	70,000,000
Component Total		70,000,000	0	0	70,000,000
eXtra Total		120,385,268	0	1,316,586,953	1,436,972,221
Project Total		3,040,388,107	324,169,135	1,566,515,389	4,931,072,631

The donor values are calculated using Total Expenditure and percent distribution by Financial Component.

Table B-6 Reimbursement Summary, by Contract

Code	Description	Total Bill Amount		Reimbursed Amount (BDT)		
		(BDT)	ADB	GON	Total	
Goods						
B1 Geotextile, Civil Works						
G-01	Supply of Geobags; Chouhali, Sirajganj	322,485,940	322,485,940	0		322,485,940
G-02	Supply of Geobags; Zaforganj, Harirampur, Manikganj	417,808,694	417,808,694	0		417,808,694
G-03	Supply of Geobags; Harirampur, Manikganj	274,809,368	274,809,368	0		274,809,368
		1,015,104,002	1,015,104,002	0		1,015,104,002
B2 Geotextile, Emerg						
G-04.1	Supply of Geobags; Chauhali-Harirampur-Kojjuri-Benotia	90,279,735	90,279,735	0		90,279,735
C1 Vehicles/Transport						
G-05	2016 Supply of Jeep;	5,490,000	1,537,200	0		1,537,200
C2 Office Equipment						
G-07.1	2015 Office Equipment; BWDB PMO	2,197,630	2,087,749	0		2,087,749
G-07.2	2016 Office Equipment; BWDB PMO	2,175,087	2,066,333	0		2,066,333
		4,372,717	4,154,081	0		4,154,081
C3 Survey Equipment						
G-08	2016 Supply of Survey Equipments;	6,747,000	6,409,650	0		6,409,650
C4 DDM Office Eqpt						
G-09	2017 Supply of Office Equip; DDM; DDM	498,900	473,955	0		473,955
Goods Total		1,122,492,354	1,117,958,623	0		1,117,958,623
Services						
D1 ISPM; Consultant Serv.						
S-01	ISPMC; Tranche 1;	454,742,352	55,496,120	315,900,992		371,397,112
D2 INGO BWDB						
S-02	Resettlement Implementation Support;	6,748,813	5,871,467	0		5,871,467
D4 Survey & Investigation						
S-06.1	2015 Erosion & Morphological Chg;	4,600,000	4,002,000	0		4,002,000
S-06.2	2016 & 2017 Erosion Prediction;	13,590,567	11,749,843	0		11,749,843
		18,190,567	15,751,843	0		15,751,843
Services Total		479,681,732	77,119,431	315,900,992		393,020,423
Works						
A2 Riverbank Prot Works						
W-06	Revetment; Jamuna at Chauhali, R1; km 0-2.5	395,411,571	355,958,542	0		355,958,542
W-07	Revetment; Jamuna at Chauhali, R2; km 2.5-7.0	397,324,791	351,103,511	0		351,103,511
W-08	Revetment; Jamuna at Zaffarganj, km 6.1-8.1	466,869,227	424,850,997	0		424,850,997
W-09	Revetment; Padma at Harirampur, R1; km 6.7-10.2	268,647,758	244,469,460	0		244,469,460
W-10	Revetment; Padma at Harirampur, R2; km 3.2-6.7	245,483,455	210,293,789	0		210,293,789
		1,773,736,803	1,586,676,299	0		1,586,676,299
Works Total		1,773,736,803	1,586,676,299	0		1,586,676,299
eXtra						
E1 BWDB Training & Study						
X-05	BWDB Training and Study Tours;	39,952,856	37,555,684	0		37,555,684
F2 Resettle Benefits						
X-08	Resettlement Benefits;	2,036,260	2,036,260	0		2,036,260
G2 Office Opns BWDB						
X-03	BWDB Office Operations;	17,749,034	15,619,149	0		15,619,149
G3 Office Opns DDM						
X-04	DDM Office Operations;	450,000	396,000	0		396,000

Table B-6 Reimbursement Summary, by Contract

Code	Description	Total Bill Amount (BDT)	Reimbursed Amount (BDT)		
			ADB	GON	Total
G4 BWDB River Surveys					
X-10.1	River Survey Work; left bank Padma & Jamuna	141,500	124,520	0	124,520
X-10.2	Survey Work for Land Acquisition; Hat-Pachi to Dombaria	200,000	176,000	0	176,000
X-10.3	Land/River Survey Work; Jamuna at Chouhali 7km	149,860	131,877	0	131,877
		491,360	432,397	0	432,397
eXtra Total		60,679,509	56,039,491	0	56,039,491
Project Total		3,436,590,398	2,837,793,844	315,900,992	3,153,694,836

Table B-7 Reimbursement Summary, by Application

Acct. Type	Applic. No.	Date	Page	Cat	Exchange Rate (BDT to US\$)	Total Bill Amount		Reimburs (%)	ADB Reimbursed Amount		Grant Applic. No.	Reimburs (%)	GoN Reimbursed Amount		Total Reimbursed Amount			
						(BDT)	(US\$)		(BDT)	(US\$)			(BDT)	(US\$)	(BDT)	(US\$)		
L/C	BW001	30-Jun-16	01	2	77.80	675,913,796	8,687,838	100	675,913,796	8,687,838			0	0	0	675,913,796	8,687,838	
Dir.Pay.	BW002	22-Sep-15	01	2	77.80	27,665,835	355,602	100	27,665,835	355,602			0	0	0	27,665,835	355,602	
Dir.Pay.	BW003	22-Sep-15	01	2	77.80	35,827,904	460,513	100	35,827,904	460,513			0	0	0	35,827,904	460,513	
Imprest	BW006	14-Sep-15	01	7A	77.80	596,191	7,663	88	524,648	6,744			0	0	0	524,648	6,744	
				02	6B	77.80	4,600,000	59,126	87	4,002,000	51,440			0	0	0	4,002,000	51,440
				03	3B	77.80	2,197,630	28,247	95	2,087,749	26,835			0	0	0	2,087,749	26,835
				04	7A	77.80	457,804	5,884	88	402,868	5,178			0	0	0	402,868	5,178
				05	7A	77.80	200,000	2,570	88	176,000	2,262			0	0	0	176,000	2,262
				06	7A	77.80	149,860	1,926	88	131,877	1,695			0	0	0	131,877	1,695
						8,201,485	105,416		7,325,141	94,153			0	0	7,325,141	94,153		
Imprest	BW008	03-Dec-15	01	1	78.74	77,441,455	983,509	91	70,471,724	894,993			0	0	0	70,471,724	894,993	
				02	2	78.74	23,896,480	303,486	100	23,896,480	303,486			0	0	0	23,896,480	303,486
						101,337,935	1,286,995		94,368,204	1,198,479			0	0	94,368,204	1,198,479		
Dir.Pay.	BW009	23-Feb-16	01	6A	77.57	18,202,930	234,649	13	2,366,381	30,504	BW010	74	13,470,168	173,641	15,836,549	204,145		
Imprest	BW011	07-Mar-16	01	1	78.74	154,166,642	1,957,920	91	125,963,608	1,599,741			0	0	0	125,963,608	1,599,741	
				02	2	78.74	887,099	11,266	100	887,099	11,266			0	0	0	887,099	11,266
				03	6A	78.40	4,597,309	58,639	13	597,650	7,623	ED002	74	3,402,009	43,393	3,999,659	51,016	
				04	7A	78.74	800,964	10,172	88	704,848	8,952			0	0	0	704,848	8,952
						160,452,013	2,037,997		128,153,205	1,627,582			3,402,009	43,393	131,555,214	1,670,975		
Dir.Pay.	BW012	20-Mar-16	01	6A	77.57	30,049,770	387,364	13	3,512,027	45,273	ED003	74	19,991,540	257,706	23,503,567	302,979		
Imprest	BW013	05-May-16	01	1	78.60	242,232,508	3,083,883	91	207,335,427	2,639,716			0	0	0	207,335,427	2,639,716	
				02	2	78.40	97,265,910	1,240,637	100	97,265,910	1,240,637			0	0	0	97,265,910	1,240,637
				03	5	78.60	624,855	7,950	94	587,364	7,473			0	0	0	587,364	7,473
				04	7A	78.74	173,409	2,202	88	152,600	1,938			0	0	0	152,600	1,938
						340,296,682	4,334,672		305,341,300	3,889,763			0	0	305,341,300	3,889,763		
Dir.Pay.	BW014	23-Jun-16	01	5	78.40	7,966,561	101,614	94	7,488,568	95,517			0	0	0	7,488,568	95,517	
Dir.Pay.	BW015	29-Jun-16	01	6A	77.57	37,052,991	477,641	13	4,336,393	55,899	ED004	74	24,684,081	318,196	29,020,474	374,096		

Table B-7 Reimbursement Summary, by Application

Acct. Type	Applic. No.	Date	Page	Cat	Exchange Rate (BDT to US\$)	Total Bill Amount (BDT)	Total Bill Amount (US\$)	Reimburs (%)	ADB Reimbursed Amount (BDT)	ADB Reimbursed Amount (US\$)	Grant Applic. No.	Reimburs (%)	GoN Reimbursed Amount (BDT)	GoN Reimbursed Amount (US\$)	Total Reimbursed Amount (BDT)	Total Reimbursed Amount (US\$)
Dir.Pay.	BW016	29-Jun-16	01	6A	77.57	30,310,811	390,729	13	3,552,983	45,801	ED005	74	20,224,672	260,711	23,777,655	306,512
Imprest	BW017	29-Sep-16	01	1	78.40	208,446,710	2,658,759	91	189,686,506	2,419,471		0	0	0	189,686,506	2,419,471
			02	2	78.40	56,809,500	724,611	100	56,809,500	724,611		0	0	0	56,809,500	724,611
			03	3A	78.40	5,490,000	70,026	28	1,537,200	19,607		0	0	0	1,537,200	19,607
			04	3B	78.40	8,922,087	113,802	95	8,475,983	108,112		0	0	0	8,475,983	108,112
			05	5	78.40	6,096,985	77,768	94	5,731,166	73,102		0	0	0	5,731,166	73,102
			06	6A	78.40	36,141,795	460,992	13	4,698,433	59,929	ED006	74	26,744,928	341,134	31,443,362	401,063
			08	6B	78.40	8,620,000	109,949	87	7,499,400	95,656		0	0	0	7,499,400	95,656
			09	7A	78.40	1,584,307	20,208	88	1,394,190	17,783		0	0	0	1,394,190	17,783
			10	7A	78.40	1,585,375	20,222	88	1,395,130	17,795		0	0	0	1,395,130	17,795
			11	7A	78.40	1,595,731	20,354	88	1,404,243	17,911		0	0	0	1,404,243	17,911
			12	7A	78.40	304,456	3,883	88	267,922	3,417		0	0	0	267,922	3,417
			13	7A	78.40	884,047	11,276	88	777,961	9,923		0	0	0	777,961	9,923
						336,480,994	4,291,849		279,677,635	3,567,317			26,744,928	341,134	306,422,563	3,908,451
Imprest	BW018	08-Dec-16	01	6A	78.40	5,385,000	68,686	13	804,655	10,263	ED007	74	4,580,345	58,423	5,385,000	68,686
Dir.Pay.	BW019	09-Jan-17	01	5	78.95	1,599,534	20,260	94	1,503,562	19,044		0	0	0	1,503,562	19,044
Imprest	BW020	02-May-17	01	1	78.84	214,208,421	2,717,002	91	194,929,663	2,472,472		0	0	0	194,929,663	2,472,472
			02	1	78.84	248,912,255	3,157,182	91	226,510,152	2,873,036		0	0	0	226,510,152	2,873,036
			03	2	78.84	89,668,562	1,137,349	100	89,668,562	1,137,349		0	0	0	89,668,562	1,137,349
			04	6A	78.84	33,754,290	428,139	13	4,388,058	55,658	ED008	74	24,978,174	316,823	29,366,232	372,481
			05	6A	78.84	3,033,444	38,476	13	453,273	5,749		74	2,580,170	32,727	3,033,444	38,476
			06	7A	78.84	1,542,815	19,569	88	1,357,677	17,221		0	0	0	1,357,677	17,221
						591,119,787	7,497,717		517,307,385	6,561,484			27,558,345	349,550	544,865,730	6,911,034
Dir.Pay.	BW021	26-Feb-17	01	6A	77.57	43,623,862	562,381	13	4,754,404	61,292	ED009	74	27,063,531	348,892	31,817,935	410,184
Dir.Pay.	BW022	06-Apr-17	01	6A	77.58	10,914,447	140,695	13	1,248,698	16,097	ED010	74	7,107,971	91,627	8,356,669	107,724
			02	6A	77.58	31,422,484	405,059	13	3,594,977	46,342		74	20,463,714	263,793	24,058,691	310,135
			03	6A	77.58	27,536,950	354,972	13	3,150,441	40,612		74	17,933,279	231,173	21,083,720	271,785
						69,873,881	900,727		7,994,115	103,050			45,504,965	586,593	53,499,080	689,643

Table B-7 Reimbursement Summary, by Application

Acct. Type	Applic. No.	Date	Page	Cat	Exchange Rate (BDT to US\$)	Total Bill Amount		Reimburs (%)	ADB Reimbursed Amount		Grant Applic. No.	Reimburs (%)	GoN Reimbursed Amount		Total Reimbursed Amount	
						(BDT)	(US\$)		(BDT)	(US\$)			(BDT)	(US\$)	(BDT)	(US\$)
Imprest	BW023	22-Jun-17	01	1	78.84	125,870,850	1,596,535	91	114,542,474	1,452,847		0	0	0	114,542,474	1,452,847
			02	2	78.84	15,301,650	194,085	100	15,301,650	194,085		0	0	0	15,301,650	194,085
			03	4	78.84	1,209,410	15,340	100	1,209,410	15,340		0	0	0	1,209,410	15,340
			04	5	78.84	1,518,029	19,255	94	1,426,947	18,099		0	0	0	1,426,947	18,099
			05	6A	78.84	16,135,219	204,658	13	2,216,757	28,117	ED011	74	12,618,463	160,052	14,835,220	188,169
			06	6B	78.84	3,128,813	39,686	87	2,722,067	34,526		0	0	0	2,722,067	34,526
			07	7A	78.84	303,043	3,844	88	266,678	3,383		0	0	0	266,678	3,383
					163,467,014	2,073,402		137,685,983	1,746,398			12,618,463	160,052	150,304,446	1,906,449	
Dir.Pay.	BW024	06-Jun-17	01	5	80.63	7,976,591	98,928	94	7,497,996	92,993		0	0	0	7,497,996	92,993
Dir.Pay.	BW025	07-Jun-17	01	6A	77.58	29,445,241	379,571	13	3,368,766	43,426	ED012	74	19,176,051	247,194	22,544,817	290,620
Dir.Pay.	BW026	31-Mar-17	01	6A	77.58	20,192,316	260,294	13	2,310,158	29,780	ED013	74	13,150,130	169,515	15,460,287	199,295
Dir.Pay.	BW027	06-Jul-17	01	6A	77.58	7,582,956	97,750	13	867,549	11,183	ED014	74	4,938,357	63,659	5,805,906	74,842
Dir.Pay.	BW028	06-Jul-17	01	5	80.00	8,000,000	100,000	94	7,520,000	94,000		0	0	0	7,520,000	94,000
Imprest	BW029	06-Nov-17	01	1	80.50	407,515,881	5,062,053	91	368,076,256	4,572,169		0	0	0	368,076,256	4,572,169
			02	2	80.50	58,568,916	727,089	100	58,568,916	727,089		0	0	0	58,568,916	727,089
			03	3C	80.50	498,900	6,198	95	473,955	5,888		0	0	0	473,955	5,888
			04	4	80.50	826,850	10,271	100	826,850	10,271		0	0	0	826,850	10,271
			05	6A	80.50	32,250,000	400,422	13	4,192,500	52,055	ED015	74	23,865,000	296,312	28,057,500	348,367
			06	6A	80.56	13,262,024	164,623	13	1,981,711	24,599		74	11,280,509	140,026	13,262,220	164,625
			07	6B	80.50	6,590,567	81,859	87	5,659,843	70,300		0	0	0	5,659,843	70,300
			08	7A	80.50	2,954,756	36,705	88	2,600,185	32,300		0	0	0	2,600,185	32,300
			09	7A	80.50	1,737,733	21,587	88	1,529,205	18,996		0	0	0	1,529,205	18,996
			10	7A	80.50	2,595,803	32,246	88	2,284,307	28,376		0	0	0	2,284,307	28,376
			11	7B	80.50	450,000	5,590	88	396,000	4,919		0	0	0	396,000	4,919
					527,251,430	6,548,643		446,589,728	5,546,963			35,145,509	436,339	481,735,237	5,983,301	
Imprest	BW030	22-Dec-17	01	1	80.85	94,942,081	1,174,299	91	89,160,489	1,102,789		0	0	0	89,160,489	1,102,789
			02	2	80.85	23,578,085	291,628	100	23,578,085	291,628		0	0	0	23,578,085	291,628

Table B-7 Reimbursement Summary, by Application

Acct. Type	Applic. No.	Date	Page	Cat	Exchange Rate (BDT to US\$)	Total Bill Amount		Reimburs (%)	ADB Reimbursed Amount		Grant Applic. No.	Reimburs (%)	GoN Reimbursed Amount		Total Reimbursed Amount	
						(BDT)	(US\$)		(BDT)	(US\$)			(BDT)	(US\$)	(BDT)	(US\$)
Imprest	BW030	22-Dec-17	03	5	80.56	6,170,300	76,593	94	5,800,082	71,997		0	0	0	5,800,082	71,997
			04	6A	80.56	23,848,512	296,034	13	3,100,307	38,484	ED016	74	17,647,899	219,065	20,748,205	257,550
			05	6B	80.56	2,000,000	24,826	87	1,740,000	21,599		0	0	0	1,740,000	21,599
			06	7A	80.56	774,099	9,609	88	681,207	8,456		0	0	0	681,207	8,456
						151,313,077	1,872,989		124,060,170	1,534,953			17,647,899	219,065	141,708,069	1,754,018
Project Totals						3,436,590,398	43,634,228		2,837,793,844	36,009,070			315,900,992	4,034,062	3,153,694,836	40,043,132

Table B-8 ADB & GON Disbursement Details

ADB Disbursements

ADB Loan Account

Appl. No	Date	US\$	Rate	BDT
WL001	09-Dec-2014	3,682,433.00	77.85	286,677,409
WI007	17-Dec-2015	11,069,711.00	78.70	871,186,256
BW006	15-Oct-2015	94,110.00	77.80	7,321,766
BW008	20-Dec-2015	1,198,478.59	78.70	94,320,265
BW013	30-Jun-2016	3,889,762.94	78.40	304,957,414
BW011	02-Oct-2016	1,627,548.73	78.40	127,599,820
BW017	27-Nov-2016	3,567,316.77	78.65	280,569,464
BW018	04-May-2017	10,263.46	78.40	804,655
BW020	02-May-2017	6,561,484.21	78.84	517,307,415
BW023	22-Jun-2017	1,746,397.55	78.84	137,685,983
BW029	06-Nov-2017	5,546,958.57	80.51	446,585,634
BW030	22-Dec-2017	1,148,309.32		
		40,142,774.14		3,075,016,082

Grant Imprest Account

Appl. No	Date	US\$	Rate	BDT
WG002	09-Dec-2014	1,189,354.00	77.85	92,591,209
WG007	17-Dec-2015	20,651.00	78.70	1,625,234
WG008	04-Oct-2016	319,995.00	78.40	25,087,608
ED002	24-Nov-2016	43,392.97	78.63	3,411,989
ED006	24-Nov-2016	341,134.29	78.63	26,823,389
ED007	04-May-2017	58,422.77	78.40	4,580,345
ED008	02-May-2017	349,549.87	78.84	27,558,512
ED011	22-Jun-2017	160,051.52	78.84	12,618,462
ED015	10-Nov-2017	435,718.95	80.66	35,145,091
ED016	22-Dec-2017	218,279.52	77.58	16,934,125
		3,136,549.89		246,375,963

Reimbursement

Dir.Pay Applic	Date	Category	ADB & GoN	
			US\$	(BDT)
BW002	22-Sep-2015	2	355,602	27,665,835
BW003	22-Sep-2015	2	460,513	35,827,904
BW009/BW010	23-Feb-2016	6A	204,145	15,836,549
BW012/ED003	20-Mar-2016	6A	302,979	23,503,567
BW014	23-Jun-2016	5	95,517	7,488,568
BW015/ED004	29-Jun-2016	6A	374,096	29,020,474
BW016/ED005	29-Jun-2016	6A	306,512	23,777,655
BW001 (LC)	30-Jun-2016	2	8,687,840	675,998,236
BW019	20-Jan-2017	5	19,044	1,503,562
BW021/ED009	10-Mar-2017	6A	410,184	31,819,987
BW022/ED010	06-Apr-2017	6A	689,589	53,499,087
BW024	06-Jun-2017	5	92,993	7,497,996
BW025/ED012	07-Jun-2017	6A	290,620	22,544,814
BW026/ED013	22-Jun-2017	6A	199,295	15,460,289
BW027/ED014	06-Jul-2017	6A	74,843	5,805,907
BW028	06-Jul-2017	2	94,000	7,520,000
Totals			12,657,771	984,770,430

Total Disbursement

Currency	ADB & GON
BDT Mil	4,306
US\$ Mil	55.94

Total Disbursement is the sum of the ADB Loan and Grant Imprest Account deposits, plus the total ADB & GoN Reimbursement amount.

Appendix-C Administrative Details

Table C-1 Utilization of Consultant Person-Months

No.	Position	Firm	Name	Person-Months		
				Contract	Used	Balance
MAIN TEAM - INTERNATIONAL						
I-1	Team Leader / River Management Specialist	NHC	Knut Oberhagemann	31.50	20.57	10.93
I-2	Institutional Development Specialist/	EMM	Robert A. van de Putte	4.50	2.01	2.49
I-3	Morphologist	DELTARES	Erik Mosselman	4.50	2.58	1.92
I-4	River Engineer	NHC	Bruce Walsh	9.00	2.22	6.78
I-5	Construction / Quality Control Engineer	EMM	Basistha Adhikari	21.60	0.87	20.73
I-6	Flood Risk Management Specialist	NHC	Dave Burkholder	10.80	9.13	1.67
I-7	Social Development / Resettlement Specialist	EMM	Jean Louis Leterme	8.80	8.59	0.21
I-8	Economist	NHC	John D. M. Roe	3.30	0.00	3.30
I-9	Financial Management Specialist	EMM	J. Spurr	0.00	0.00	0.00
I-10	Hydrologist	NHC	Derek Stuart	5.00	3.45	1.55
I-11	Environmental Specialist	EMM	Wandert Benthem	7.00	2.59	4.41
I-12	Information and Data Management Specialist	NHC	Dave Burkholder	6.00	4.19	1.81
I-13-1	Int'l Construction Advisor-Engineer	NHC	Graeme Vass	3.00	3.00	0.00
I-13-2	Junior Engineer	NHC	Jesper Mathiesen	5.00	8.40	-3.40
I-13-3	Numerical Modeller	NHC	Angela Thompson	5.00	5.00	0.00
I-13-4	Unallocated Engineering Services	NHC	Seth Bryant	2.00	1.37	0.63
I-13-5	Unallocated Engineering Services	NHC	TBA	2.00	0.00	2.00
I-14	Senior Geotechnical Engineer	NHC	Dr. Horst Kramer	2.00	0.20	1.80
I-15	River Engineer	NHC	Brad Hall	4.50	3.56	0.94
I-16	Water Resources Specialist	EMM	Hiba Khan	1.00	0.30	0.70
I-17	Water Resources Specialist	NHC	Marieke Nlewaal	2.00	0.00	2.00
Totals				138.50	78.04	60.46
N-1	DTL / Flood & Erosion Risk Management Spec.	EMM	Sharif Al Kamal	37.40	25.50	11.90
N-2	Institutional / Capacity Development Specialist	RPMC	Dr. M. A. Qassem	10.00	9.80	0.20
N-3	River Engineer (Morphologist)	CEGIS	Dr. Maminul Haque Sarker	8.80	7.40	1.40
N-4	Community-based Flood Risk Mngt. Spec.	RPMC	Quazi Towfique Islam	36.00	24.33	11.67
N-5	Resettlement Specialist	EMM	Shireen Akhter/ Begum S. Nahar	13.50	9.32	4.18
N-6	Project Economist	RPMC	Amiul Islam	7.70	7.00	0.70
N-7	Procurement Specialist	RPMC	A. Abdullah Chowdhury / Md Abdullah Sadeque	9.00	2.12	6.88
N-8	Construction Engineer	RPMC	Mirza Harunar Rashid	29.00	21.07	7.93
N-9	Financial Management Specialist	EMM	Md. Habibur Rahman/ Ektedar Rahman	11.00	4.72	6.28
N-10-1	River Engineer Flood Management Infr. - 1	RPMC	Mukhles uz zaman	12.50	12.49	0.01
N-10-2	River Engineer Flood Management Infr. -2	RPMC	Md. Motiur Rahman	20.50	16.60	3.90
N-11	Social Development and Gender Specialist	EMM	Ruh Afza Ruhi/ Begum S. Nahar	16.00	7.49	8.51
N-12	Environment Specialist	EMM	Dr. Md. Nurul Islam/ Md. Amir Faisal	16.00	13.29	2.71
N-13	Training Coordinator	EMM	Jahangir Kabir/ Shameem Ahmed	20.00	17.73	2.27
N-14	Information and Data Management Specialist	EMM	Asrafuzzamen	0.00	0.00	0.00
N-15	Hydraulic Structural Engineer	RPMC	Md. Dabir Uddin/ Aminul Haque Shah	5.00	2.79	2.21
N-16	Road Engineer	RPMC	Zakir Hossain	6.00	3.16	2.84
N-17	Geotechnical Engineer / Geotechnical Expert (Local)	EMM	Md. Korban Ali / Md. Shamsul Islam	7.00	2.66	4.34
N-18-1	Site Engineer 1 (PRB-1)	RPMC	Md. Nurul Amin	36.00	24.09	11.91
N-18-2	Site Engineer 2 (JLB-2 Chauhali)	RPMC	KM Nazmul Haque/ Ekram Sarder	36.00	8.20	27.80
N-18-3	Site Engineer 3 (JLB-2 Zaffarganj)	EMM	Md Faridul Alam	36.00	20.47	15.53
N-18-4	Site Engineers 4 (PLB-1 Harirampur)	EMM	Abdul Jalil/ Saiful Islam	36.00	8.04	27.96
N-19	Surveyor	EMM	Osman Ghani	13.00	4.00	9.00
N-20	Unallocated Engineering Services	TBN		6.00	0.00	6.00
N-21	Morphologist	CEGIS	Sudipta Kumar Hore	7.50	0.76	6.74
Totals				435.90	253.03	182.87

Flood and Riverbank Erosion Risk Management Investment Program (FRERMIP), Project-1

Table C-1 Utilization of Consultant Person-Months

No.	Position	Firm	Name	Person-Months		
				Contract	Used	Balance
RIVER STUDY TEAM - INTERNATIONAL						
IR-1	Task Leader / Flood & River Management Spec.	NHC	Carsten Stuab	11.00	10.98	0.02
IR-2	Institutional Development Specialist	EMM	Robert A. van de Putte	2.70	0.33	2.37
IR-3	Morphologist	DELTARES	Sanjay Giri	6.30	4.63	1.67
IR-4	River Engineer (River Training)	NHC	Gerritt Klaassen	7.70	8.15	-0.45
IR-5	Water Resources Management Specialist	DELTARES	W. J. Oliemans	4.50	1.87	2.63
IR-6	Economist	EMM	Alexander Mueller/ John D.M. Roe	3.60	2.47	1.13
IR-7	Social / Regional Development Specialist	NHC	Mark Hopkins	5.50	5.81	-0.31
IR-8	Environmental Specialist	EMM	Wandert Benthem	3.60	2.88	0.72
IR-9	Hydrologist	NHC	Malcolm Leytham	2.00	1.94	0.06
IR-10	Climate Change Specialist	NHC	Mariza Coba Cabralle	1.00	0.99	0.01
IR-11	Dredging Specialist	NHC	Pieter Van Groen	1.00	1.07	-0.07
IR-12	urban & Master Planner	NHC	Dr. Douglas Webster	1.00	0.55	0.45
IR-13	Morphologist Modeller	DRS	Mohammed Yossef	1.00	0.46	0.54
			Totals	50.90	42.13	8.77
RIVER STUDY TEAM - NATIONAL						
NR-1	Water Resources Management Specialist	RPMC	G M Akram Hossain	10.00	9.97	0.03
NR-2	Flood Management Specialist	RPMC	Md. Makbul Hossain	6.60	7.55	-0.95
NR-3	River Engineer (Morphologist)	CEGIS	Dr. Maminul Haque Sarker	8.10	2.66	5.44
NR-4	Economist	EMM	Dr. Shaker Ahmed	3.60	0.00	3.60
NR-5	Regional / Spatial Planner	RPMC	Dr. Shamim M Haque	4.00	3.37	0.63
NR-6	Institutional Development Specialist	RPMC	Dr. M. A. Qassem	4.00	4.00	0.00
NR-7	River Engineer	RPMC	Md. Motiur Rahman Jewel	8.00	7.84	0.16
NR-8	Hydrologist	EMM	Imdadul Haque Siddiqui	6.00	0.00	6.00
NR-9	Social Development and Gender Specialist	EMM	Ruh Afza Ruhi/ Begum S. Nahar	5.00	5.00	0.00
NR-10	Environment / Climate Change Specialist	EMM	Md. Rakibul Haque	5.00	0.00	5.00
NR-11	Water Supply and Water Quality Specialist	EMM	Md. Mozammel Hossain/ Dr. Khairul Bashar	5.00	3.63	1.37
NR-12	Agriculture Specialist	RPMC	Dr Quazi Reasul Islam	4.00	3.34	0.66
NR-13	Fishery Specialist	RPMC	Dr. Md. S. Howlader	5.00	6.00	-1.00
NR-14	Environmental Avisor	EMM	Dr. Alnun Nishat	0.50	0.00	0.50
			Totals	74.80	53.37	21.43
			Grand Total International	189.40	120.17	69.23
			Grand Total National	510.70	306.40	204.30

Flood and Riverbank Erosion Risk Management Investment Program (FRERMIP), Project-1

Table C-2 Work Schedule revised in December 2017

	Year Month	2015				2016												2017												2018												2019					
		S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
Scope of 3 Over-lapping Projects	Project-1 (US\$ 108.6 million): tendering and construction of 3 priority subprojects for 18 km of river bank protection, 23 km of embankment (new & rehab).	Project-1 (US\$ 108. million) - tendering & construction of 3 priority Sub-Projects																																													
	Project-2 (US\$ 201.3 million): tendering and construction of 28 km of river bank protection, 23 km of embankment (new & rehab), and a 6 km closure dam.	Project-2 (US\$ 201.3 million) - implementation of 4 Sub-Projects																																													
	Project-3 (US\$ 124.8 million): tendering and construction of 19 km of river bank protection, and 23 km of embankment (new)	Project-3 starts mid-2020																																													
T1: Capac & RM	T1:1: Overarching Task for the Entire Services																																														
	T2:1 Institutional Capacity (Capac) Strengthening: Flood and River Management (RM)																																														
	T2:2 Planning, Design, Organizing and Conducting Capacity Strengthening Programs																																														
	T2:3 Data and Knowledge Base: River Survey Database																																														
	T2:4 Data and Knowledge Base: Flood and River Management																																														
	T2:5 Support Implementation Management: Construction, Social and Environment Activities																																														
	T2:6 Support DDM for Implementing the Cbfrm Sub-component																																														
T3: Supporting Preparation of Project-2	T3:1 Updated Site Selection, and Technological Approach																																														
	T3:2 Field Work and Data Collection																																														
	T3:3 Basic Structural Project Design																																														
	T3:4 Updating Design of Non-Structural Activities																																														
	T3:5 Safeguard, Gender and Poverty Assessment																																														
	T3:6 Project-2 Formulation and Economic Feasibility																																														
	T3:7 Project-2 Formulation																																														
	T3:8 Detailed Design and Bidding Documents																																														
	T3:9 Support for Project Processing																																														
T4 Develop Long Term Strategic and Holistic River Stabilization and River Training Plan	T4:1 Holistic Morphologic Analysis																																														
	T4:2 Alternative Planform Study																																														
	T4:3 Morphological Impacts on and from Structures																																														
	T4:4 Morphological Impacts on Land Use, Navigation, etc.																																														
	T4:5 Define River Corridor																																														
	T4:6 Discuss River Training Techniques																																														
	T4:7 Offtake study																																														
	T4:8 : Flood Embankment Alignment																																														
	T4:9 Examine River Reach Priorities																																														
	T4:10 Preliminary Social and Environment Impacts																																														
	T4:11 Economic Feasibility																																														
	T4:12 Strategic Environmental Assessment																																														
	T4:13 Future Planform and Long Term Implementation Plan																																														

Table C-2 Work Schedule revised in November 2017

		Year												Year												Year												Year																											
		2015												2016												2017												2018												2019															
		Month												Month												Month												Month												Month															
		S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
T5 Developing a Preliminary River Management Master Plan	T5:1 Existing Use of Rivers	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
	T5:2 Existing Studies and Plans	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
	T5:3 Required Discharge of Distributaries	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
	T5:4 Required Opening Size and Shape of Offtakes	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
	T5:5 Required Protection and Drainage in Upper Meghna	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
	T5:6 Future Studies for Healthy Distributaries	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
	T5:7 Potential Use of Distributaries and Upper Meghna	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
	T5:8 Economic Use of Reclaimed Land	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
	T5:9 Impacts of Interventions	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
	T5:10 Cost Estimate and Implementation Planning	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
T6 Piloting Schemes	T6:1 Identifying Engineering Challenges & Site Selection	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
	T6:2 Design of Piloting Schemes	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
	T6:3 Support for Procurement and Construction Supervision	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
	T6:4 Monitoring and Analyses	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
	T6:5 Developing Recommendations - Findings and Lessons From the Piloting	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
T7 Confluence Analysis	T7:1 Morphology Analysis	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
	T7:2 Hydraulic Modelling	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
	T7:3 Verifying Project-2 and 3 Works	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
	T7:4 Define Future Studies	[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]												[Full Time Activity]															
Project Milestones																																																																	
ISPMC contract signature and letter to proceed		Δ																																																															
Draft Inception Report Workshop														Δ																																																			
Draft River Stabilization & Preliminary River Management Master Plan Workshop																										Δ																																							
Stakeholder Workshop on River Stabilization Plan for Jamuna & Padma Rivers																																						Δ																											
Processing Milestones																																																																	
Project-2 Consultation Mission																																						Δ																											
ECNEC approval of DPP for Project-2																																						Δ																											
ADB approval of Project-2																																						Δ																											

Part Time Activity [Light Blue Bar]
 Full Time Activity [Dark Blue Bar]
 Milestone Δ
 Monsoon Period [Light Blue Box]

Appendix-D Status of River Study Technical Notes

Table D-1 Status of River Study Technical Notes

New Number	Old Number	Title	Main Author(s)	Review/Approval	A	B	C	D	E	F	G	Status
					Background information	Morphology - General	Morphology - Bifurcations & Offtakes	River Engineering	Water Resources and Flood Modelling	Ecological Issues	Land Use & Economic Benefits	
A1	1	Background data, river use, studies and plans	MH	CS	x							Completed
A2	40	Inland Navigation – Past, Present and Future Expectations	MRJ	GJK	x							Draft received on 22-Nov-2017.
A3	12	Nomenclature of river corridors	EM	BH	x							Completed - to be included as section in River Stabilization Plan
B1	2	Holistic river morphology analysis for the Brahmaputra river system	MHS	CS/EM		x						Completed
B2	36	Effects of sinuosity on channels and bars	MY	EM		x						Completed
B3	5	Char characteristics and dynamics – past and present conditions on basis of satellite imagery	MHS	GJK		x						Completed
B4	4	Upper Meghna - present conditions and issues	JAA/MHS	CS		x						Completed
C1	6	River bifurcations: Theory and model experience	EM	KO			x					Completed
C2	7	Anabranching Channels of the Jamuna and Padma Rivers	MHS	CS			x					Review received on 22-Nov-2017.
C3	8	River bifurcations: Simplified numerical modelling	AT	SG/GJK			x					Completed
C4	9	Reach 3 and bifurcation: numerical modelling	AT/SG	EM			x					Review to be finished by 31-Jan-2018.
C5	10	Offtake and Flow Dynamics of the Major Rivers	MHS	CS			x					Review received on 26-Nov-2017.
C6	11	Offtakes part 2 Numerical model studies and generic guidelines	MY	EM			x					Draft due at end of Feb-2018.
D1	13	River Stabilization Plan -Technical Aspects	GJK	BH				x				Complete by mid-March, requires inputs from other TNs.
D2	14	River stabilization of other main rivers	GJK/BH	BH				x				Complete by mid-March, required inputs from Chinese Specialist.
D3	15	Earlier proposals and attempts for stabilization Jamuna River (including Capital dredging)	GJK	BH				x				Draft available in end-Feb-2018, due to other priorities.
D4	39	Cross-Section Analysis on Brahmaputra, Jamuna and Padma Rivers	MRJ	GJK				x				Draft received on 20-Nov-2017
D5	17	Intermediate and final planform alternatives	MRJ/GJK	GJK				x				Draft received on 29-Jan-2018.
D6	18	Feasible techniques and methods for riverbank protection and future channel narrowing	BW	GJK/BH				x				Complete by end-Mar-2018, due to other priorities.
D7	35	Overview of the Design of Geotextile Bag (Geobag) Revetments for use in Bangladesh and Underwater Apron for Chandpur Town	BW	KO				x				Draft received on 27-Jan-2018.
D8	16	Protection	MRJ/AT	SG				x				Completed
E1	19	Main river flood risk and management	MHo	DS					x			Review expected by mid-Feb-2018.
E2	20	Flooding numerical modelling	DS/SG	BH					x			Draft expected early-Feb-2018.
E3	21	Distributaries: Water resources preparation and baseline	WO/ML	ML					x			Completed; 10-Jan-2018
E4	22	Distributaries: Water balance, potential measures and study plan	WO/ML	ML					x			Draft due in Feb-2018.
E5	38	Old Dhaleswari characteristics	MZ/GJK	KO					x			Complete by mid-Mar-2018, due to other priorities.
F1	23	Socio-economic Aspects	MH/SN	JLL						x		Completed; 07-Dec-2017
F2	24	Environmental and social aspects of river stabilization: Remedial measures	WB/MH	CS						x		Completed
F3	25	Fisheries Impacts of FRERMIP and their Management: A Pre-project Status Review	SH	CS/WB						x		Completed
F4	26	Sediment management	GJK/MHS	BH						x		Draft ready by end-Feb-2018.
F5	27	Long-term effects of river narrowing on water levels	EM	KO						x		Completed; 22-Nov-2017.
F6	37	Effects of narrowing on earthquake-induced aggradation waves	EM	KO						x		Draft due at end of Feb-2018.
F7	28	Future conditions affecting flows	MCC	ML						x		Review complete, to be finalized by mid-Feb-2018.
G1	29	Planning the Use of Stabilized and Reclaimed Land, Procedure and Issues	MH	CS							x	Completed
G2	30	Charland amelioration and agriculture development	QRI	AC							x	Basic text ready. Much editing required.
G3	31	Charland development: Preliminary economic assessment	JR/AI	KO							x	Draft received in May 2016.
G4	32	Economic analysis different alternatives	JR	KO							x	To be completed when alternatives finalized, by the end of Mar-2018.

Abbreviations:

AC = Alan Clark	EM = Erik Mosselman	MCC = Mariza Costa-Cabral	MZ = Mukhles uz Zaman
AF = Amir Faisal	GJK = Gerrit Klaassen	MH = Mark Hopkins	QRI = Qazi Reasul Islam
AI = Aminul Islam	JAA = Jakia Akter	MHo = Makbul Hossain	SG = Sanjay Giri
AT = Angela Thompson	JLL = Jean Louis Leterme	MHS = Mamin H. Sarker	SH = Shajahan Howlader
BH = Brad Hall	JM = Jesper Mathiesen	ML = Malcolm Leytham	SN = Shamsun Nahar
BW = Bruce Walsh	JR = John Roe	MRJ = Motiur Rahman Jewel	WB = Wandert Bernthem
CS = Carsten Staub	KO = Knut Oberhagemann	MY = Mohamed Yossef	WO = William Oliemans
DS = Derek Stuart			

Reports	
15	Completed
11	Draft
11	Under Preparation
37	Total

Appendix-E Detailed Resettlement Progress

Table E-1 Acronyms Associated with Resettlement Activities

ADB	Asian Development Bank
BRM	Bangladesh Resident Mission
AP	Affected Person
CCL	Cash Compensation under Law
char	low-lying island or bar
CRO	Chief Resettlement Officer
DC	District Commissioner
DP	Displaced Person
Dhara	A collection of official government forms
GRC	Grievance Redress Committee
EP	Entitled Person
khas	government land
ID	Identification
INGO	Implementation Non-Government Organization
ISPMC	Institutional Strengthening and Project Management Consultants
JVT	Joint Verification Team
JRB-1	Jamuna Right Bank, Phase-1
LAP	Land Acquisition Plan
PAP	Project Affected Person
PD	Project Director
PM	Prime Minister
PMO	Project Management Office
PVAT	Property Valuation Assessment Team
RP	Resettlement Plan
SE	Superintending Engineer
XEN	Executive Engineer

Table E-2 Detailed Resettlement Progress by Individual Site

Sites	Resettlement Activities	Progress During Current Quarter	Projected Progress During Next Quarter
Chauhali Riverbank Protection	<ul style="list-style-type: none"> • Acquisition of a strip of land for Riverbank Protection • Assessment of Resettlement Impacts 	<ul style="list-style-type: none"> • Information campaign started • Payment of compensation to 36 EPs completed; INGO submitted to BWDB details of RC payment to 36 EPs • Estimate for CCL of Tangail part not yet received from DC office • 55 out of 104 EP ID Card and EP EC File prepared for agriculture vulnerable payment • One GRC meeting held in October 2017 and reported to PMO 	<ul style="list-style-type: none"> • Information campaign to be continued • INGO to ensure payment of compensation to 5 EPs having bank accounts • BWDB to confirm RC payment to 36 EPs • XEN-Tangail to follow up for estimate for CCL of Tangail part • INGO to prepare 49 EP ID Card and EP EC File for agriculture vulnerable payment that has to be paid immediately after CCL payment • INGO to organize at least one meeting with GRC in every month and report to PMO

Table E-2 Detailed Resettlement Progress by Individual Site

Sites	Resettlement Activities	Progress During Current Quarter	Projected Progress During Next Quarter
Zafarganj Riverbank Protection	<ul style="list-style-type: none"> • Acquisition of a strip of land for Riverbank Protection • Assessment of Resettlement Impacts 	<ul style="list-style-type: none"> • INGO had completed all process of pending payments (12) of Zafarganj 1.4km and submitted to PMO • Out of 114, 1-CCL payment done by DC and other EPs are preparing documents for payment • One GRC meeting held in October 2017 and reported to PMO 	<ul style="list-style-type: none"> • Pending payments of Zafarganj 1.4km to be completed by January 2018 • INGO to Follow-up for CCL payment by DC • INGO to organize at least one meeting with GRC in every month and report to PMO
Harirampur Riverbank Protection	<ul style="list-style-type: none"> • Acquisition of a strip of land for Riverbank Protection • Assessment of Resettlement Impacts 	<ul style="list-style-type: none"> • Household Survey completed • LAP submitted to DC by BWDB • No GRC meeting held at this site 	<ul style="list-style-type: none"> • Start compensation payment planning process • INGO to organize at least one meeting with GRC in every month and report to PMO

Table E-2 Detailed Resettlement Progress by Individual Site

Sites	Resettlement Activities	Progress During Current Quarter	Projected Progress During Next Quarter
Koitola Embankment; Kojuri to Baghabari, Shahjadpur, Sirajganj	<ul style="list-style-type: none"> • Acquisition of land for Embankment Construction • Assessment of Resettlement Impacts • Resettlement site preparation • Relocation of PAP 	<ul style="list-style-type: none"> • Updated RP has been approved • ID cards issued to all 866 PAPs • Resettlement Questionnaire has been completed for all PAPs • Squatters database list for 866 had been completed 	<ul style="list-style-type: none"> • Information campaign ongoing • Start Payment of Compensation; DC to issue 7-Dhara notices to EPs • Finalize relocation sites for squatters • Start to assist resettlement of PAPs • INGO to organize at least one meeting with GRC in every month and report to PMO

**Table E-3 Corrective Action Plan to comply with the Loan Agreement
Chauhali, Tangail**

Sl. No	Corrective Actions	Date line and related remarks	Responsible Party	Status as on 31 December 2017	Revised Deadline
1	Based on the RP verify DPs with and without title that need to received compensation and other entitlement, the inventory should be able to show the following group of DPs	Submitted to ADB in June 2017	BWDB assisted by the INGO	Done	
	Identified DPs with titleholder that have been included in the list of DC and received notification and verified by JVC and payment should be from Government budget			Done	
	Identify DPs with titleholders that includes in the DC list but compensation for loss other properties such as tree, structures, moving grants, and transition allowance due loss income but will not be paid by DC and should be paid by the Project budget			NA	
	Identify DPs with titleholder but were not included in the list of DC (because during DC and JVC survey, these DPs have moved) and identify compensation and other entitlement for these DPs that should be paid by the project budget			Payment of compensation to 36 EPs completed.	
	Identify DPs without titleholders that needs to be pay full compensation and entitlement by the project budget – should describe detail compensation and entitlement that should be paid e.g. loss tree, structures, moving grants, and transition allowance due loss income			Identified DPs and payment from Project Budget	
	Identify as clearly as possible where the source of funding that will be used for paying compensation and other entitlement either government budget or project budget under the ADP 2017/2018			Done	
2	Continue with actions to follow up approval from the Prime Minister and obtain Prime Minister Approval for land acquisition	31 July 2017	BWDB	Approval obtained from the Prime Minister office on 3 rd December 2017 for Sirajganj part for land acquisition and notice u/s 6 Dhara issued;	

Flood and Riverbank Erosion Risk Management Investment Program (FRERMIP), Project-1

Sl. No	Corrective Actions	Date line and related remarks	Responsible Party	Status as on 31 December 2017	Revised Deadline
3	Expedite completion of DC tasks including JVC tasks to complete the process under LA Act	15 August 2017	Respective DCs submit to BWDB and BWDB will provide the required budget	Done	
	Submission of DC budget to compensate DPs with title holders received by BWDB for Chauhali	16 August 2017		For Tangail district estimate received from DC;	
4	Transfer Fund from BWDB to Respective DCs	First week of September 2017	BWDB	Sirajganj district done and for Tangail district fund to be transferred to DC	End January 2018
5	Payment Compensation and other entitlement by DC to DPs with titleholders	September 2017	Respective DC in close coordination with BWDB	Yet to be done	7 February 2018
6	Payment compensation and other entitlement to the DPs without title from project budget	September 2017	BWDB assisted by INGO	Payment Resettlement Grant has been done at Chauhali among 52-EPs out of 191 nos.	Mid-January 2018
7	Submit letter to ADB to report the progress in implementing Corrective Actions in monthly basis	5 July, 5 August, 5 Sept, 2017	BWDB	Monthly Report of October and December 2017 received from INGO and submitted to ADB.	
8	Submit report to ADB on completion of implementation the corrective actions for Chauhali	10 October 2017	BWDB	QPR of October-December 2017 submitted to ADB with updated corrective action plan.	10 February 2018

**Table E-3 Corrective Action Plan to comply with the Loan Agreement
Zafarganj 1.4 Km, Manikganj**

Sl. No	Corrective Actions	Dateline and related remarks	Responsible Party	Status as on 30 September 2017	Revised Deadline
1	Inventory DPs to show the following list of group of DPs:	Submitted to ADB 18 June 2017	BWDB assisted by the INGO	Inventory DPs has been submitted on 22 June 2017	
	Identified DPs received resettlement Grant			Identified DPs and payment from government budget through DC	
	Identify DPs that will received land compensation through DC			Identified DPs and payment from government budget through DC	
	Identify DPs with titleholders that loss other properties such as tree, structures, moving grants, and transition allowance due loss income but will not be paid by DC and those who will be paid by DC			NA	
	Identify DPs with title holders but were not included in the DC list for payment			NA	
	Identify DPs without title that have received full compensation and other entitlements			Identified DPs and payment from Project Budget	
	Identify DPs without title that have not received/ have not been paid a compensation and other entitlements, and describe clearly what needs to be paid			Identified DPs and payment from Project Budget	
	Identify as clearly as possible where the source of funding that will be used for paying outstanding compensation and other entitlement for each group listed above (either from government budget through DC or project budget).			Done	
2	Submission Estimate from DC to BWDB for paying compensation and other entitlement based on Joint Verification Committee	15 June 2017	BWDB has to urge respective DCs submit on time	Estimate from DC received and notice u/s 7 issued and 1 EP already received CCL	Mid February 2018
3	Transfer of fund from BWDB to respective DC	20 June 2017	BWDB	Done	
4	Payment compensation to DPs by DC	20 to 25 June 2017	Respective DC in close coordination with BWDB	Notice u/s 7 (payment notice) already issued on 12 November 2017 and 40 EPs out of 111 applied for CCL	Beginning of February 2018

	Corrective Actions	Date line and related remarks	Responsible Party	Status as on 31 December 2017	Revised Deadline
5	Payment Compensation and other entitlement to DPs without titleholders by the Project	Complete by 25 June 2017	BWDB assisted by INGO	88 EPs received resettlement benefit on 15-Apr-2017; pending payment of 12 EPs process completed (10 wage earner & 2 title holders)	7 February 2018
6	Submit report to ADB on completion of implementation the corrective action plan for Zafarganj 1.4 km	9 July 2017	BWDB	QPR of October-December 2017 submitted to ADB with updated corrective action plan.	

**Table E-3 Corrective Action Plan to comply with the Loan Agreement
Zafarganj 0.6 Km, Manikganj**

Sl. No	Corrective Actions	Date line and related remarks	Responsible Party	Status as on 30 September 2017	Revised Deadline
1	Based on the RP verify DPs with and without title that need to receive compensation and other entitlement, the inventory should be able to show the following group of DPs	Submitted to 18 June 2017	BWDB assisted by the INGO	Inventory DPs has been submitted on 22 June 2017	NA
	Identified DPs with titleholder that have been included in the list of DC and received notification and verified by JVC and payment should be from Government budget			Done	
	Identify DPs with titleholders that includes in the DC list but compensation for loss other properties such as tree, structures, moving grants, and transition allowance due loss income but will not be paid by DC and should be paid by the Project budget			Done	
	Identify DPs with titleholder but were not included in the list of DC survey and verification committee. Detail list of compensation and other entitlement for these DPs should be identified and whether these compensation and entitlement should be paid by the project budget			NA	
	Identify DPs without titleholders that needs to be pay full compensation and entitlement by the project budget – should describe detail compensation and entitlement that should be paid e.g. loss tree, structures, moving grants, and transition allowance due loss income			Identified DPs and payment from Project Budget	

Flood and Riverbank Erosion Risk Management Investment Program (FRERMIP), Project-1

Sl. No	Corrective Actions	Date line and related remarks	Responsible Party	Status as on 30 September 2017	Revised Deadline
	Identify as clearly as possible where the source of funding that will be used for paying compensation and other entitlement, and indicate how much payments can be made under the available project budget under the ADP 2016/2017 and how much fund needed under ADP 2017/2018				
2	Expedite completion of DC tasks to complete the process under LA Act	25 June 2017	Respective DCs submit to BWDB. Needs	Done	
	Submission DC budget to compensate DPs with title holders received by BWDB For Zafarganj 0.6 km	25 June 2017	BWDB's efforts to ensure DCs submit the required budget to BWDB	Done	
3	Transfer Fund from BWDB to Respective DCs from budget under 2017/2018 ADP - As the available government fund can only cover payment for titleholder DPs for Zafarganj 1.4 km section	First week of September 2017	BWDB	Done	
4	Payment Compensation and other entitlement by DC to DPs with titleholders	September 2017	Respective DCs in close coordination with BWDB	Notice u/s 3, 6 & 7 already issued; All 26 title-holders applied for CCL payment	7 February 2018
5	Payment compensation and other entitlement to the DPs without title from project budget under ADP 2016/2017	30 June 2017	BWDB assisted by INGO	26 EPs received payment of resettlement benefit	
6	Payment compensation and other entitlement to the DPs without title from project budget under ADP 2017/2018	September 2017	BWDB assisted by INGO	NA	
7	Submit letter to ADB to report the progress in implementing Corrective Actions in monthly basis	5 July, 5 August, 5 Sept, 2017	BWDB	Monthly Report of October and December 2017 received from INGO and submitted to ADB.	
8	Submit report to ADB on completion of corrective action for implementing RP for Zafarganj 1.4 km	10 October 2017	BWDB	QPR of October-December 2017 submitted to ADB with updated corrective action plan.	

Appendix-F Gender Action Plan

Output/Activities	Indicators and Targets	Responsibility	Time frame	Progress since Inception	
Output I: Integrated flood and riverbank erosion disaster risk mitigation measures for the subproject areas developed, implemented and maintained					
Sub-Component A1: Infrastructure improvement					
Activity:	A1-1 Construction of riverbank protection structures using appropriate technology and methods A1-2 Rehabilitation/construction of embankments				
Tasks:	<ul style="list-style-type: none"> Ensure women benefit from employment in construction Emphasize gender aspect of labor standard including equal wage for women and men for equal work Occupational health and safety, safe water supply, sanitation Separate toilet for women, where identified 	<ul style="list-style-type: none"> Include specific condition of contract in contractors' bid document with provision of 15% women in unskilled labor Orient field staff to supervise, verify and ensure that the conditions are met Incorporate relevant sex disaggregated information in field monitoring reports and contractors' compliance reports 	PMO and work contractors	Entire Project-1 period	<ul style="list-style-type: none"> Not done. During Feasibility Study the plan was to make a geo-textile bag filling 125 kg but detailed design proposed 250 kg. So, it is not possible to include women for this work

Output/Activities		Indicators and Targets	Responsibility	Time frame	Progress since Inception
Sub-Component A2: Community-based Flood Risk Management					
Activity:	A2-1. Formulating community disaster management units				
Tasks:	<ul style="list-style-type: none"> Form 40 Community Disaster Management Units (CDMUs) consisting of 15 volunteers (male and female) each Identify specific risks for women and men; disaster response mechanism, risk reduction measures and disaster preparedness measures on household and village level, specifically related to flood and erosion warning; and Identify location and build community flood markers for flood warning information through Community flood risk assessment Integrate strategy and action in community risk reduction plan and disaster resilience action plans to address specific needs of women and men 	<ul style="list-style-type: none"> 40 Units established with minimum 33% women as general members and in leadership in the units (unit records) Community flood risk assessment report prepared containing risks, coping mechanism, and needs of women and men and recommended response Community risk reduction plan prepared for 40 Units through participation of women volunteers specifying roles, targets and benefits for women and men 	PMU-DDM and community disaster management NGO	End of Project-1	<ul style="list-style-type: none"> These issues have been incorporated to the INGO TOR but INGO not yet recruited; so, work is yet to be started

Output/Activities		Indicators and Targets	Responsibility	Time frame	Progress since Inception
Activity:	A2-2. Capacity development for community disaster management Unit				
Tasks:	<ul style="list-style-type: none"> Establish community-based flood warning dissemination procedures; including indigenous techniques Establish and disseminate regular warning messages relevant to local context/language and linked with the national warning network Where possible, conduct separate sessions with community women for flood risk mapping and needs assessment 	<ul style="list-style-type: none"> 50% of the units have flood warning mechanisms after three years (field survey at the end of each Project) 50% of the households, including 75% of women-headed households, and poor women living on the embankment, have increased resilience through preventive measures at household level after three years (field survey at the end of each Project) 	PMU-DDM and community disaster management NGO	End of Project -1	<ul style="list-style-type: none"> Not yet started
Sub-Component A3: Participatory Regular O&M					
Activity:	A3-1 Capacity development of communities				
Tasks:	<ul style="list-style-type: none"> Include women in the planning phase Training of CDMU members, both female and male beneficiaries, in water management and O&M Training on gender and different social awareness issues using the guidelines for gender requirements Ensure gender- friendly time and venue for training 	<ul style="list-style-type: none"> 30% women participation in planning phase, as recorded in meeting minutes 30% women members in management committee, as reflected in members' list Women constitute 30% of all community training for O & M 	PMO and community disaster management NGO	End of Project-1	<ul style="list-style-type: none"> Deferred to Project-2 due to fund constraints

Output/Activities		Indicators and Targets	Responsibility	Time frame	Progress since Inception
Sub-Component A4: Livelihood support for project affected people					
Activity:	A4-1. Construction of resettlement areas with basic infrastructure and facilities				
Tasks:	<ul style="list-style-type: none"> • Ensure effective consultation with women in the affected areas and maintain sex-disaggregated data on Project Affected Persons (PAPs) along with entitlement benefits, as per Resettlement Plan (RP) • Assure that gender issues are considered when planning resettlement villages and community facilities • Employ willing women in labor-intensive geo-textile bag filling, head loading, embankment and roadside tree planting, and in maintenance activities 	<ul style="list-style-type: none"> • Full compensation for 100% women PAPs, as per RP entitlement. • 33% women involved in planning meetings • 15% to 20% women wage earners engaged in the project construction activities • At least 50% women participants will operate livelihood support programs in 3 community groups in and around resettlement areas. 	PMO and Partner NGOs	By June 2018	<ul style="list-style-type: none"> • These issues have been incorporated in the TOR of INGO for Livelihood Development • INGO TOR is submitted to ADB for approval

Output/Activities		Indicators and Targets	Responsibility	Time frame	Progress since Inception
Activity:	A4-2. Support for project affected people				
Tasks:	<ul style="list-style-type: none"> Establish contact with local representatives of the Departments of Agriculture, Fisheries, Cooperatives, Women's Affairs and so on to integrate with and build social networking at the local level Establish the priority groups of abandoned, divorced, separated, widowed, and deserted women Provide special training and financial support for women-headed households and for women in ultra-poor households Ensure Gender-friendly time and venue for training Training on skills and leadership development, gender equality and other social awareness issues Ensure adequate follow-up to help women manage their IGAs 	<ul style="list-style-type: none"> Groups organized covering 90% women-headed households and women in ultra-poor households who are living on the embankment, as established by resettlement surveys, for special training and financial support. Organize and impart training on skills and leader development to 30 persons including 10 women. 	PMO and resettlement NGOs	End of Project-1	<ul style="list-style-type: none"> INGO for Resettlement supposed to do this work, but not yet started

Output/Activities		Indicators and Targets	Responsibility	Time frame	Progress since Inception
Output II: Strengthening Institutional System for Flood and Riverbank Erosion Risk Management					
Sub- Component B1: Institutional capacity strengthening for flood and riverbank erosion risk management					
Activity:	B1-1 Capacity enhancement of BWDB				
Tasks:	<ul style="list-style-type: none"> Integrate a gender-specific module in the BWDB training Include women in the training program 	<ul style="list-style-type: none"> 10% women in training programs Gender aspects integrated in the relevant training program/module 	BWDB	End of Project-1	<ul style="list-style-type: none"> Gender specific course has been implemented for BWDB officials in last quarter Women are included in training
Activity:	B1-2 Support the initial set-up of the office of the chief engineer river management				
Tasks:	<ul style="list-style-type: none"> Deploy women staff 	<ul style="list-style-type: none"> Give priority to women having required qualification for staff positions (approximately 10%) 	BWDB	Entire Project-1 period	<ul style="list-style-type: none"> Work is in progress
Output III: Efficient program management system established					
Component C: Program Management					
Activity:	C-1: Implementation management				
Tasks:	<ul style="list-style-type: none"> Establish ADP MIS system with sex disaggregated data base for project reporting 	<ul style="list-style-type: none"> Identify gender indicators, incorporate in monitoring system and ensure regular reporting on progress of GAP implementation based on gender analysis 	BWDB	By Dec 2016	<ul style="list-style-type: none"> Deferred to Project-2 due to fund constraints
Activity:	C1-2: Preparation for Projects 2 and 3				
Tasks:	<ul style="list-style-type: none"> Incorporate gender issues in the planning process 	<ul style="list-style-type: none"> Prepare gender action plans for Project-2 	BWDB	By Dec 2016	<ul style="list-style-type: none"> Draft gender action plans for Project-2 prepared

Appendix-G Compliance with Loan Agreement Covenants

Sl.No.	Covenant Description	Comply ²	Evidence to Support Claim
Implementation Arrangements			
1	Project is implemented in accordance FAM.	Yes	All Environmental, Social and Financial provisions outlined in the FAM are being satisfactorily implemented.
2	PMO, SMOs and PMU shall employ sufficient and experienced staff.	No No	<ul style="list-style-type: none"> • BWDB: on average, the PMO has only 55% of Senior Staff as specified in DPP. • DDM: PMU only has only 2 staff, and the Project Manager is on additional charges.
3	PMO, SMOs and PMU staff shall remain for a reasonable period of time.	Yes No	<ul style="list-style-type: none"> • BWDB: PD stayed for over 4 years • DDM: has had 3 Project Managers in 2.5 years
4	The PMO PD shall have a rank not less than a Superintending Engineer.	Yes	PMO PD had rank of Superintending Engineer.
5	BWDB shall establish a CE River Management office responsible for flood and riverbank erosion risk management.	Yes	On 22-Nov-2017, BWDB established the office of CE River Management, and appointed a Chief Engineer.
Counterpart Support			
6	If Borrower cannot avail of the proceeds of the Grant, the Borrower shall find an alternative source of funding.	na	No problem has occurred in availing Grant money.
7	The Borrower shall reimburse BWDB for any taxes and duties imposed for Goods, Works and Consulting Services.	Yes	Typically, taxes and duties are being reimbursed by the Borrower as per their portion of each Loan Category.
Selection of Subproject areas			
8	BWDB shall ensure that Subprojects are selected in accordance with FFA Schedule 4.	Yes	All 3 selected Subprojects are included in the approved Project-1 Feasibility Study completed in Dec-2013.
Environment			
9	Project facilities comply with environmental safeguards, laws and regulations, EARF, EIA/EMP, and reported upon in Monitoring Reports.	Yes	EIA approved, EMP being implemented, SESA drafted, and Quarterly and Semi-Annual Monitoring Reports submitted. These reports document satisfactory compliance with environmental safeguards.
Land Acquisition and Involuntary Resettlement			
10	BWDB shall ensure that all land and all rights-of-way are available to contractors in a timely manner.	Yes	Contractors' work have not been delayed due to land acquisition issues.
	(a,b,c&d) Land acquisition and resettlement comply with applicable laws, Involuntary Resettlement Safeguards, RF, and RP.	No Yes	<ul style="list-style-type: none"> • Riverbank Protection: land acquisition done after construction, due to severe erosion potential and local public demand. A Corrective Action Plan is currently being implemented. • Embankment: land acquisition and resettlement processes have been properly followed.

Flood and Riverbank Erosion Risk Management Investment Program (FRERMIP), Project-1

Sl.No.	Covenant Description	Comply ²	Evidence to Support Claim
11	BWDB shall ensure that there is no physical or economic displacement until:		
	(a) compensation and other entitlements have been provided to affected people	No	Refer to Sl.No. 10 above. However, compensation process is now actively ongoing for both Riverbank Protection and Embankment.
	(b) a comprehensive income and livelihood restoration program has been established	No	Not yet started. ToR for Livelihood Support Study sent to ADB for concurrence in May 2016.
Indigenous Peoples			
12	BWDB shall ensure that the Project does not have any indigenous peoples' impacts.	Yes	No indigenous people affected by project.
Human and Financial Resources to Implement Safeguards Requirements			
13	BWDB shall fully implement the EMPs and the RPs.	Yes	EMPs included in all Civil Work contracts, and an INGO is actively engaged to develop all RPs. Monitoring results are regularly being reported.
Safeguards			
14	BWDB shall ensure that all Works contracts require contractors to:		
	(a) comply with EIA, EMP and RP; and Safeguards Monitoring Report actions	Yes	Covered in 'Technical Specifications' under Section 2. Environmental Management Plan and Safety at the Site.
	(b) include a budget for environmental and social measures	Yes	Included in Bill of Quantities, Bill No. 02: Environmental Management Works.
	(c) provide written notice of unanticipated environmental, resettlement or indigenous peoples' risks	No	No special clause found to provide written notice of unanticipated environmental, resettlement or indigenous peoples' risks. Clause to be added to all 5 pending embankment contracts.
	(d) adequately record pre-Work condition of roads, agricultural land and infrastructure	No	No special clause found requiring contractors to record pre-Work condition. Clause to be added to all 5 pending embankment contracts.
	(e) fully reinstate pathways, other local infrastructure, and agricultural land pre-Work condition	Yes	Adequately covered in Section 2. 'Environmental Management Plan and Safety at the Site' of the Technical Specifications.
Safeguards Monitoring and Reporting			
15	BWDB shall:		
	(a) submit semi-annual Safeguards Monitoring Reports to ADB	Yes	ISPMC submit Monitoring Reports on quarterly and bi-annual basis on environmental and social issues.
	(b) promptly document any unanticipated environmental and social risks and impacts	Yes Yes	<ul style="list-style-type: none"> • Environ: No serious unanticipated risks or impacts have occurred. • Social: Resettlement Issues documented in QPR.
	(c) within 6 months, engage external experts to verify information regarding land acquisition and involuntary resettlement	No	The bid document has been received and evaluated, short-listing completed, and negotiations are ongoing for External Expert. Contract award is expected by early Feb-2018.

Flood and Riverbank Erosion Risk Management Investment Program (FRERMIP), Project-1

Sl.No.	Covenant Description	Comply ²	Evidence to Support Claim
	(d) promptly report any breach of compliance with EMP or RP	Yes Yes	<ul style="list-style-type: none"> • Environ: No serious compliance breach with EMP has occurred. • Social: Resettlement Issues documented in QPR.
Prohibited List of Investments			
16	BWDB shall ensure that Loan or Grant funds are not used for prohibited investment activities.	Yes	Accounting procedures are being rigorously maintained by PMO and no evidence of misuse has been found.
Labour Standards			
17	All civil works contracts require contractors to:		
	(a) comply with labour standards, labor laws and applicable health and safety principles	Yes	Covered in 'Conditions of Contracts for Construction', under Section: 6. Staff and Labour.
	(b) eliminate discrimination between men and women for work of equal value	Yes	Adequately covered in 'Conditions of Contracts for Construction', under clause: 6.24 Non-Discrimination and Equal Opportunity.
	(c) eliminate child labour, and forced or compulsory labour; and allow freedom of association	Yes	Covered in 'Conditions of Contracts for Construction', under clause: 6.21 Child Labour.
	(d) maximize employment of local poor and disadvantaged persons	No	No special clause found to employ local poor and disadvantaged person. Clause to be added to all 5 pending embankment contracts.
	(e) disseminate information on sexually transmittable infections and HIV/AIDS	Yes	Covered in 'Conditions of Contracts for Construction', under clause: 6.7 'Health and Safety'.
	(f) implement applicable provisions of GAP	No	No special clause found related to provisions of GAP. Clause to be added to all 5 pending embankment contracts.
Gender and Development			
18	BWDB shall implement the GAP, and monitor and report on key gender outcome and output targets.	Yes	GAP outcomes and outputs are being documented in QPR.
Quality Assurance			
19	Engage external experts to inspect and store results of completed riverbank protection works using accurate surveying equipment.	Yes	ISPMC performs a rigorous and regular Flood Monitoring Program including Multi-Beam Echo-Sounder surveys at Chauhali and Kojuri in Nov-2018. Scuba diving investigations also conducted.
Panel of Experts			
20	BWDB shall engage experts to analyze project implementation constraints, and advise on remedial measures.	Yes	There has been four Technical Advisory Committee(TAC) Meetings to review Project technical issues and make recommendations. A Technical Committee has also been formed by BWDB to investigate slope failures at Chauhali.
Inter-agency Coordination			
21	BWDB shall timely notify all relevant agencies of their riverbank protection works.	Yes	ISPMC has one Specialist permanently deputed to DDM, who updates PM PMU on project activities.

Flood and Riverbank Erosion Risk Management Investment Program (FRERMIP), Project-1

Sl.No.	Covenant Description	Comply ²	Evidence to Support Claim
Operation and Maintenance of Project Facilities			
22	Ensure that:		
	(a) BWDB inspect and maintains all Works rehabilitated according to O&M plans	Yes	ISPMC performs a rigorous Flood Monitoring Program to identify status of Riverbank Protection Works.
	(b) BWDB submits annual budgets to MoWR for O&M works according to the plans	Yes	Provisional 2017/18 ADP funding for Adaptive Protection and Emergency work is BDT 89 million; other funding also available.
	(c) Borrower allocates adequate resources for BWDB to carry out O&M works	Yes	Funding for 2017/18 Emergency/Adaptive work is expected to be around BDT 160 million. Koitola riverbank protection transferred to O&M Division in Dec-2017.
23	BWDB shall maintain adequate stockpiles of geo-textile bags for emergency riverbank protection works and repairs.	Yes	BWDB has purchased enough geo-bags to accommodate all expected emergency and adaptive work for 2017/18.
24	BWDB shall provide local communities with land use rights for embankment to promote livestock grazing and tree cultivation.	na	Construction work of embankments not yet started. However, Social Forestry is mentioned in the CbFRM Support Services INGO Contract.
Road Map and Policy and Institutional Reforms			
25	BWDB shall implement timely institutional reform actions identified under Investment Program policy framework.	Yes	Refer to Sl.No. 5 reply regarding the establishment of CE River Management office.
Policy Dialogue and Coordination with Development Partners			
26	BWDB shall keep ADB informed of discussions with government and quasi-government bodies responsible for water sector development.	Yes	This is being done through periodic ADB Missions, and regular discussions and correspondence between PMO and ADB BRM.
Governance and Corruption			
27	BWDB shall comply with ADB's Anticorruption Policy and cooperate with any investigations.	Yes	No evidence of corruption in dealing with any project activities have been reported or found.
28	BWDB shall include anticorruption provisions in contracts, allowing ADB to audit records of contractors, suppliers, and consultants.	Yes	Covered in the 'Conditions of Contracts for Construction' Section, under clause: 15.6 Corrupt and Fraudulent Practices.
29	BWDB shall announce all business opportunities on their websites, including participating bidders, winning bidders and contract award amounts.	Yes	Adequate contract information is available on: www.bwdb.gov.bd/index.php/site/live_tender
30	Borrower shall periodically inspect financial activities related to the procurement of Goods, Works and Consulting Services.	Yes	Foreign Aided Project Audit Directorate (FAPAD) audits carried out on a annual basis.

Notes: 1. Implementation Arrangement Covenants are defined in Loan Agreement Schedule 5.
2. Valid Comply answers include: Yes, No or na (non-applicable)

Appendix-H 2017-18 Flood Survey Monitoring Program

During the 2017 flood survey monitoring, 2 different types of surveys were conducted:

1. General River Monitoring
2. Site Monitoring

For general river monitoring, ADCP (acoustic Doppler current profiler) discharge, bathymetry and float track measurements were collected. For the 3 riverbank protection sites (Chauhali, Harirampur and Zafarganj), plus Solimabad (2 km downstream of Chauhali), bathymetry and float track measurements were collected.

A multi-beam survey was conducted in November 2017 at Chauhali and Kojjuri. An adaptation and repair work design has been prepared for Chauhali based on the multi-beam data. A dry-season, partial river, single-beam bathymetric and ADCP survey started on 21 December 2017 and is expected to be completed by 9 January 2018.

A list of survey types, locations and dates included in the 2017-18 Flood Survey Monitoring Program are shown in **Table 1**. All major findings from the program will be documented in the 2017 Flood Season Monitoring Memo which is intended to be finalized in early February 2018.

Table 1. 2017-18 Flood Survey Monitoring Program

Date/Site	Chauhali	Zafarganj	Harirampur	Solimabad	Kaijuri	Full/Partial River
Single-Beam Bathymetric Survey						
Post work	19 to 23-Feb-2017	21 to 28-Dec-2016	24 to 31-Jan-2017			
Apr-2017				10-Apr-2017		
May-2017	03 to 08-May-2017					
Jun-2017	09 to 10-Jun-2017					
Jul-2017	01-Jul-2017					
Aug-2017	04-Aug-2017	05-Aug-2017	06 to 08-Aug-2017			15 to 29-Aug-2017
Sep-2017				24 to 28-Sep-2017		
Dec-2017						21-Dec to 09-Jan-2018 ¹
Multi-Beam Bathymetric Survey						
Oct-2017	04 to 08-Nov-2017				09 to 10-Nov-2017	
ADCP Velocity and Discharge Survey						
Jul-2017						31-Jul to 02-Aug-2017
Aug-2017						1. 14 to 16-Aug-2017 2. 17 to 19-Aug-2017 3. 25 to 27-Aug-2017
Dec-2017						21-Dec to 09-Jan-2018 ¹
Float Track Velocity Survey						
May-2017	10-May-2017					
Jun-2017	04-Jun-2017					
Jul-2017	1. 10-Jul-2017 2. 17-Jul-2017					31-Jul to 03-Aug-2017
Aug-2017				17-Jul-2017		16 to 17-Aug-2017
Topographic Survey						
Apr-2017				07-Apr-2017		
Jul-2017	09 to 12-Apr-2017					

Note: 1. The Single-beam and ADCP survey in December 2017 was a partial river survey, all other surveys in 'Full/Partial River'-column are full river surveys.

Chauhali Multi-beam Survey

The multi-beam survey at Chauhali was performed from 5 - 8 November 2017. The survey length was 5 km along the permanent protection, from Station 0 - 5 km, and 100m wide. Oblige views of survey results together with relevant cross sections and long sections provide a clear and accurate illustration of the underwater protection. Using results from the multi-beam survey, an adaptation dumping plan for 2018 was prepared. A number of underwater slope failures were observed, which were incorporated into the adaptation and repair work program. To illustrate this new technology, three typical slope failure examples are given below (Figures 1 - 13).

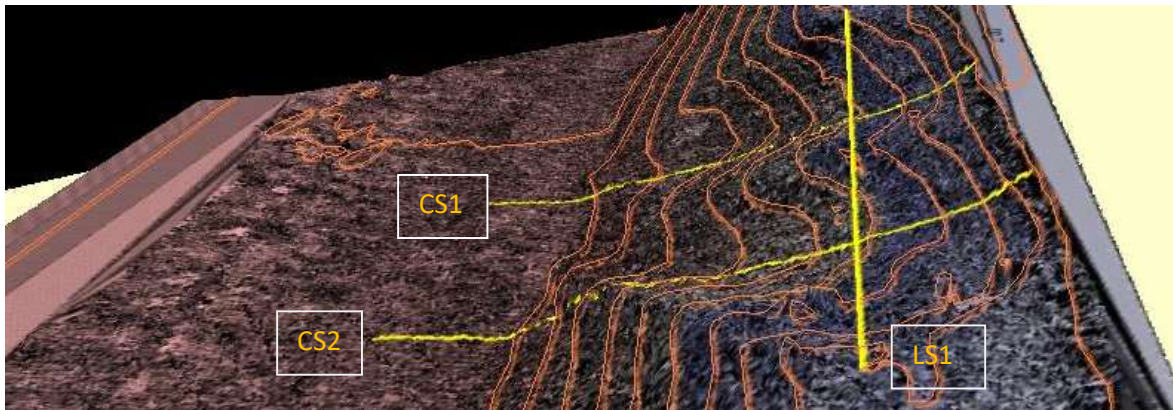


Figure 1: Oblige view of Slope Failure 1

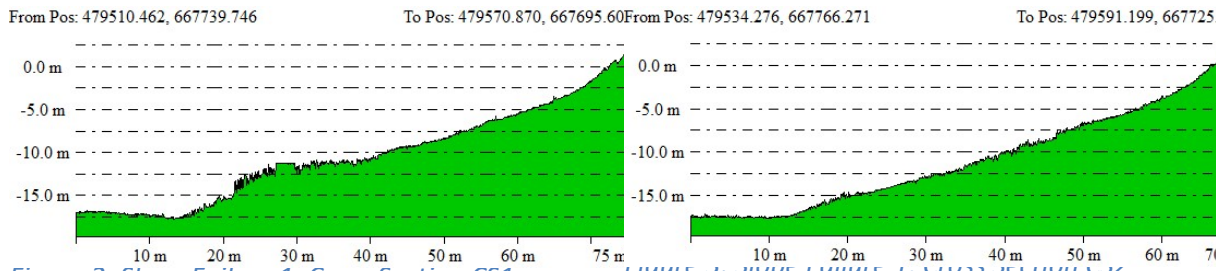


Figure 2: Slope Failure 1, Cross Section CS1

Figure 3: Slope Failure 1, Cross Section CS2

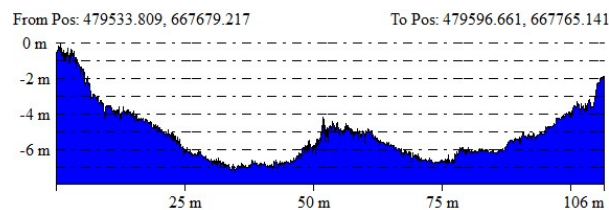


Figure 4: Slope Failure 1, Long Section LS1

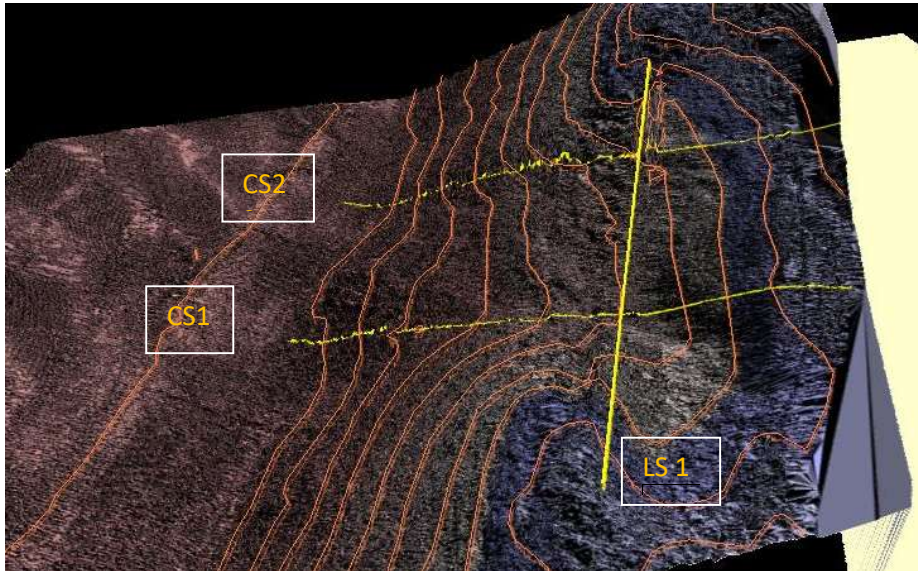


Figure 5: Oblique view of Slope Failure 2

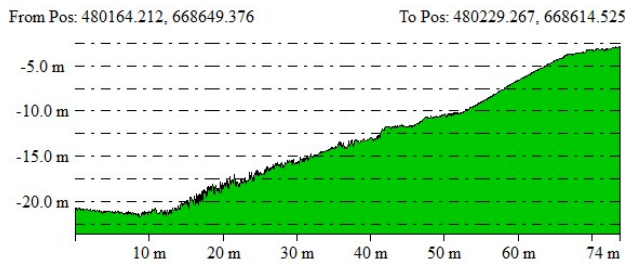


Figure 6: Slope Failure 2, Cross Section CS1

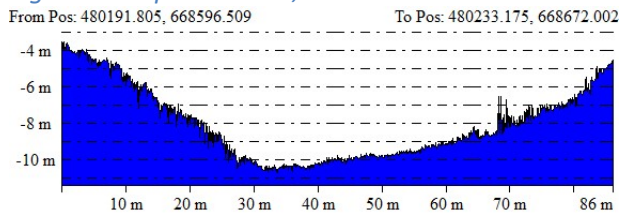


Figure 8: Slope Failure 2, Long Section LS1

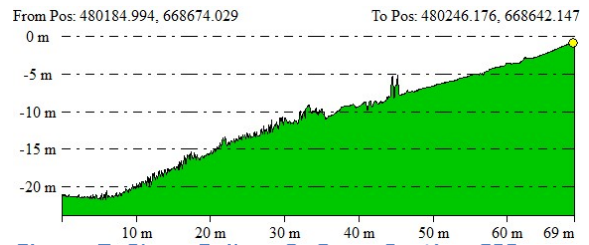


Figure 7: Slope Failure 2, Cross Section CS2

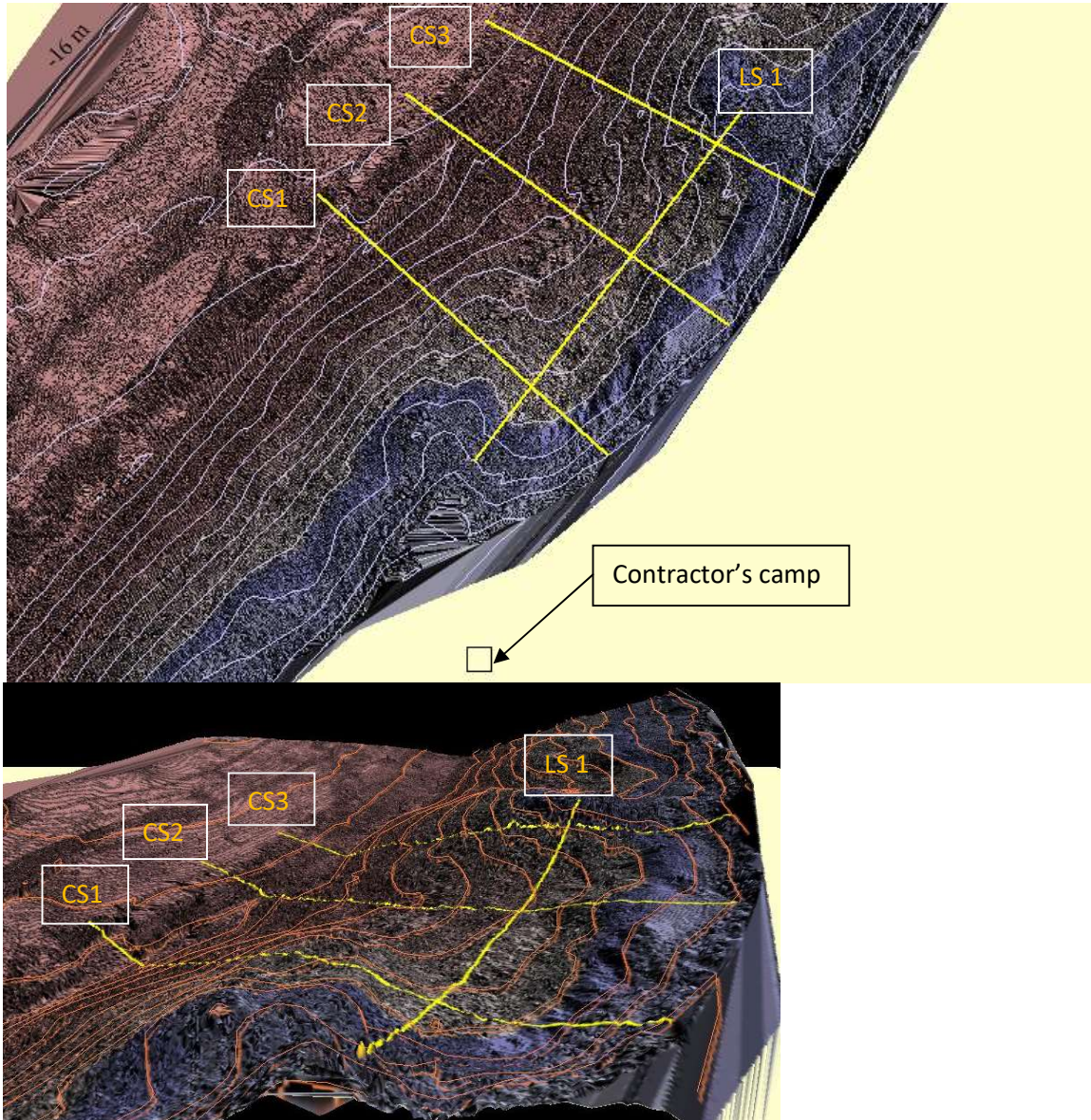


Figure 9: Plan and Oblique views of Slope Failure 3

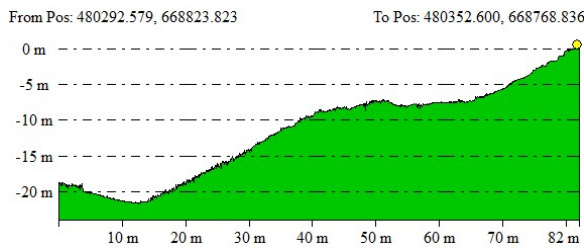


Figure 10: Slope Failure 3, Cross Section CS1

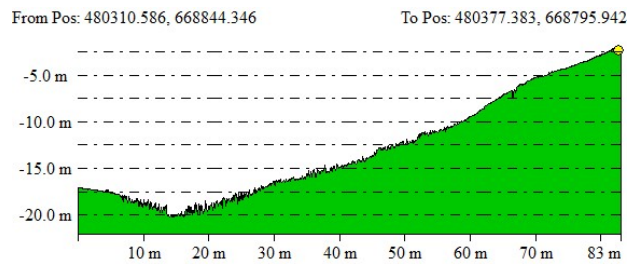


Figure 11: Slope Failure 3, Cross Section CS2

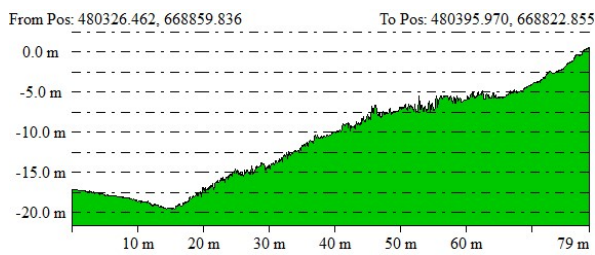


Figure 12: Slope Failure 3, Cross Section CS3

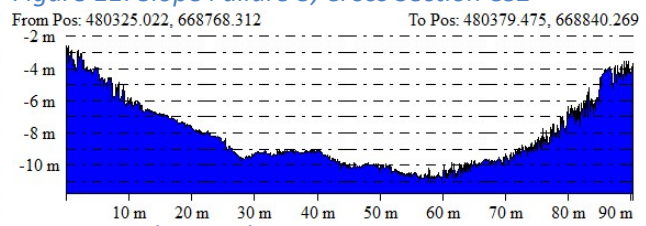


Figure 13: Slope Failure 3, Long Section LS1

Adaptation and Repair work 2018

Adaptation and repair works have been proposed for the Chauhali site based on the multi-beam survey results. Adaptation work has been proposed from Station 0 - 4 km. No adaptation work was suggested beyond Station 4 km due to sedimentation of more than 10 m above previously observed bed elevations along that reach. A long section (Figure 14) developed by considering periodic survey data illustrates the Chauhali apron development.

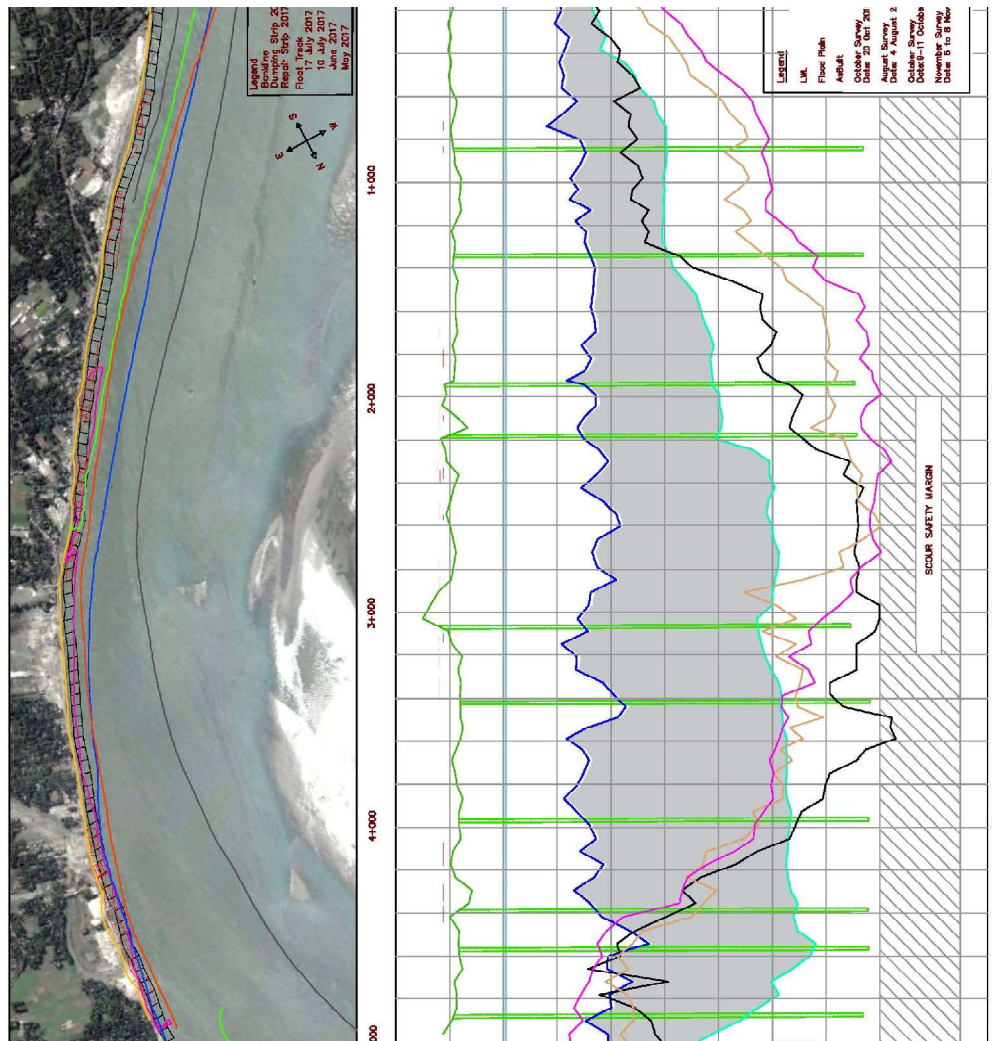


Figure 14: Long Section of Chauhali during flood season 2017-18

For the adaptation and repair work, 3 different general designs are proposed:

1. New Apron (3 Layer Bags)
2. Launched Slope (2 Layer Bags)
3. Repair Works (3 Layer Bags)

The general design consideration for the new apron was the length required to reach the maximum design scour level. A minimum 5 m apron will be provided where the apron has already reached its design scour level. Two layers of geobags are proposed along the launched slope (Figure 15). For underwater repair works, 3 layers of geobag will be dumped over the damaged area (Figure 16).

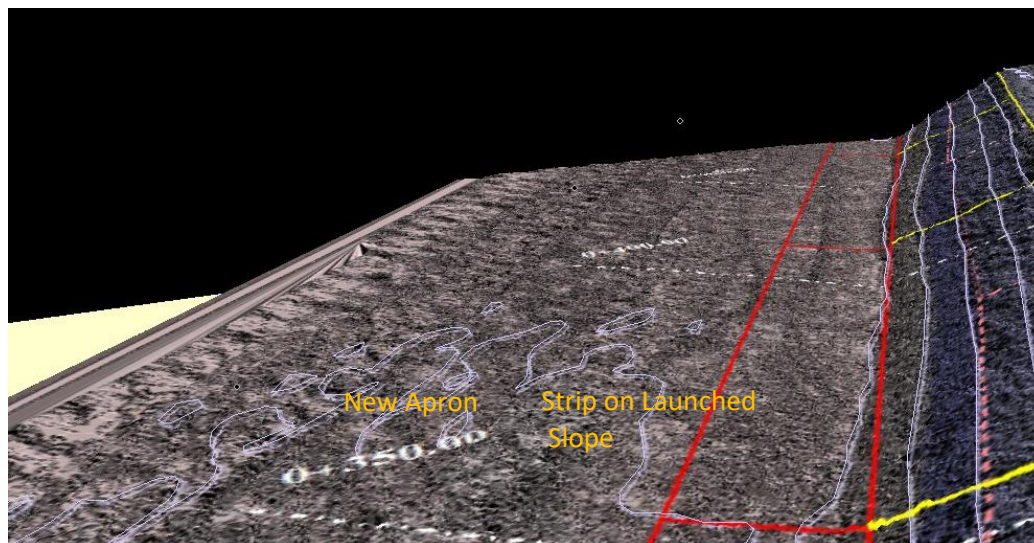


Figure 15: Adaptation Plan; New Apron(Red) & Strip on Launched Slope(Yellow)

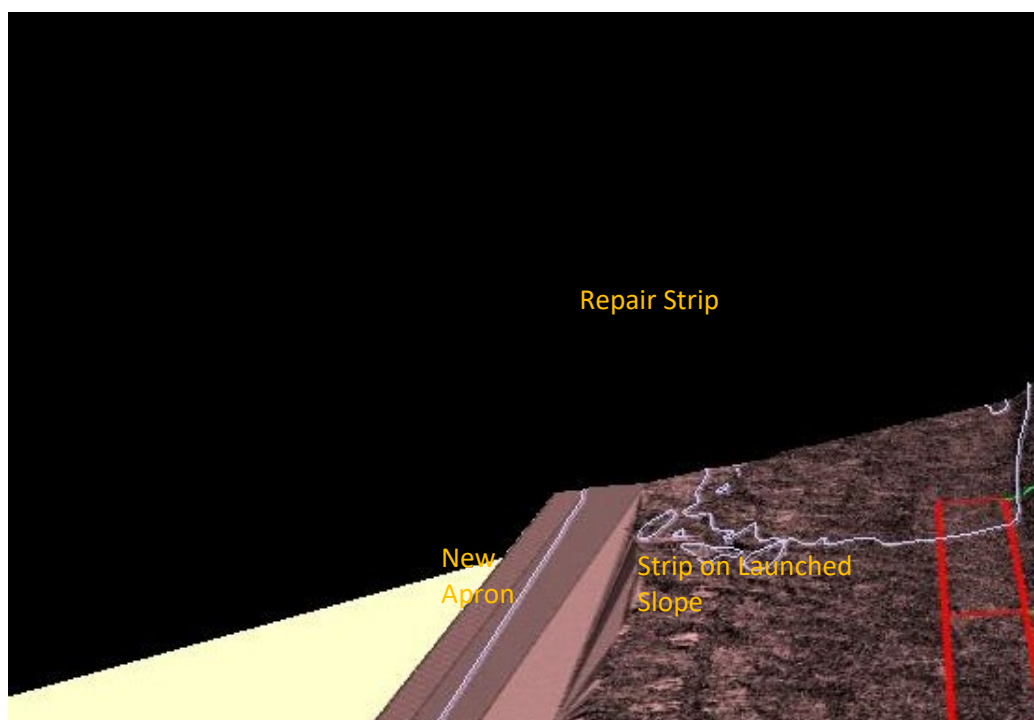


Figure 16: Repair Work; Repair Strip (Green)

Koijuri Multi-beam Survey

On 9 - 10 November 2017, a multi-beam survey was conducted at Koijuri where 10 km of embankment were constructed in 2008. Bank erosion has been primarily observed from Station 0 – 6 km. A new char has formed from Station 6 - 10 km. An example of the underwater erosion (slope failures) is provided in **Figures 17 - 21**.

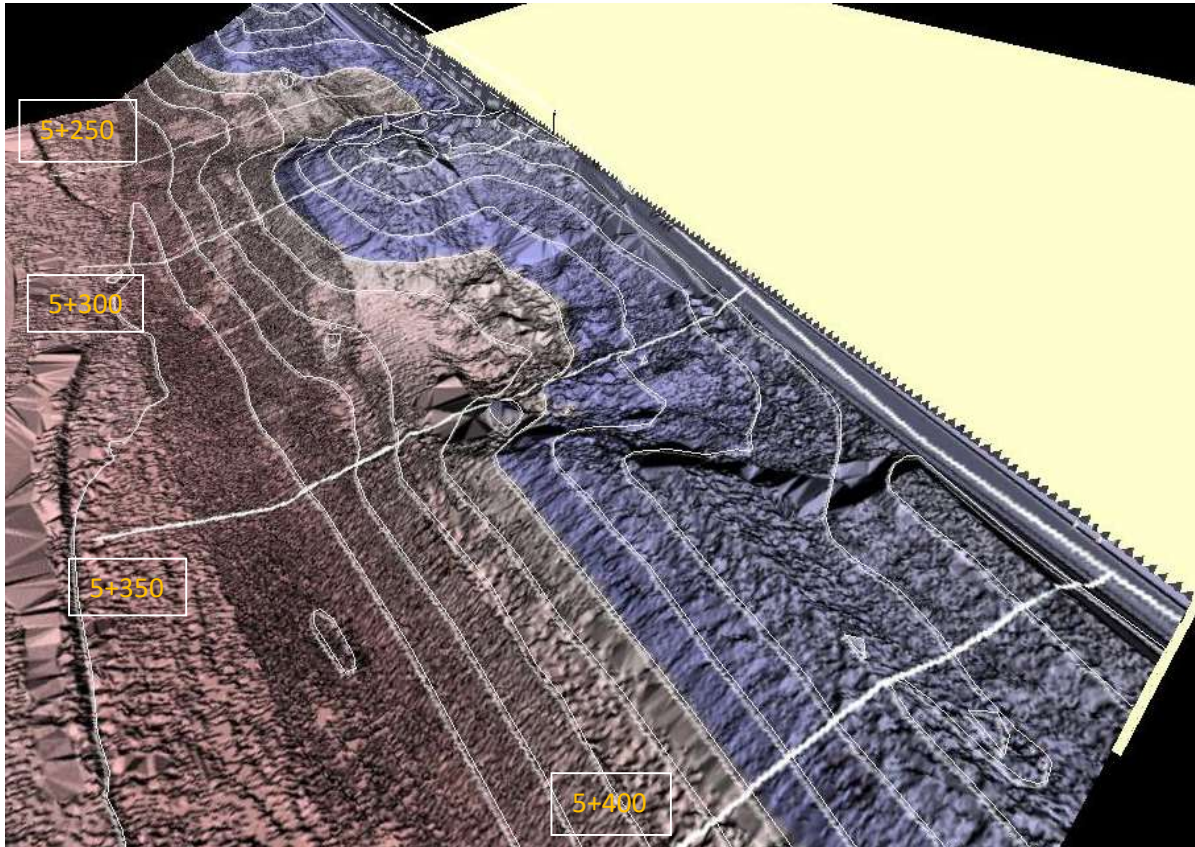


Figure 17: Kojjuri Slope Failure Example

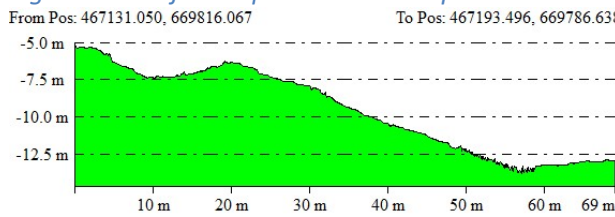


Figure 18: Cross Section, 5+250

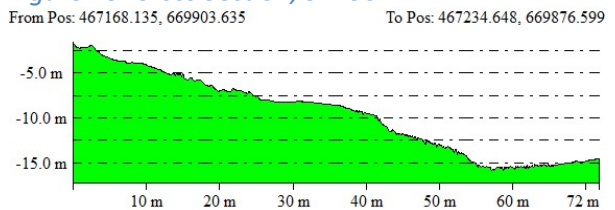


Figure 20: Cross Section, 5+350

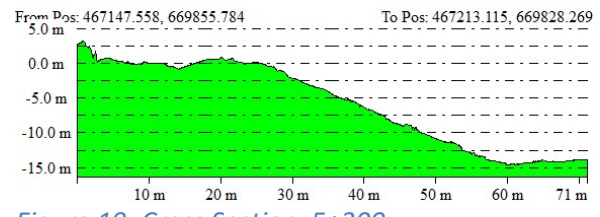


Figure 19: Cross Section, 5+300

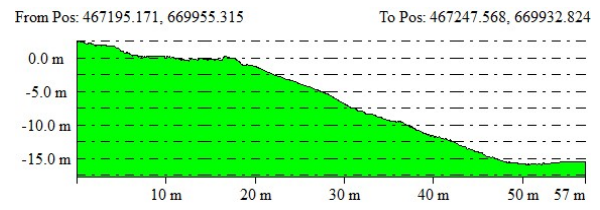


Figure 21: Cross Section, 5+400

A map of the multi-beam survey results has already been provided to the PMO showing the underwater failure locations. The proposed geobag requirement has also been estimated. The BWDB Design Office will provide a detailed design for the Kojjuri repair work. It is intended that the repair work will be done under Project-1, but any adaptation work will likely be implemented under Project-2, due to fund and time constraints.

Appendix-I Capacity Building: Implementation Progress

Table I-1 Implementation Progress of Training Activities: PMO Program

Sl.	Description	No. of Courses			Total No. of Trainees			Implementation Progress				Date				Remarks
		M	F	Total	Discussed	Prepared	Approved	Completed	FY 15-16	FY 16-17	FY 17-18	FY 18-19				
A. Local Training																
1	River Engineering	2	34	6	40	2	2	2	2	3-9 & 24-30 Apr-2016					By BUET: FY 2015-2016	
2	River Training Techniques	2	38	2	40	2	2	2	2	12-16 & 18-23 Feb-2017					By BUET: FY 2016-2017	
3	Riverbank Geotechnical Stability	2			40	2					Feb-2018				Back to back, US Resource Person, geotechnical training including software use - TL & Afnan working on it	
4	Riverbank Protection	2			40	2	2	2			Feb-2018				Geotextile, B. Walsh & Mr. Michel - Hydraulic Design/Slope Protection - TL & Afnan working on it	
5	Strategic Planning	2			40	2					Feb-Mar-2018				Back to back, Combined: To be completed under FY 17-18	
6	Survey and Evaluation	2			40	2					Mar-Apr-2018				Back to back, Combined: Mr. Atique, Mr Ghani. To be completed under FY 17-18	
7	Underwater Investigations	1			20	1					Mar-Apr-2018				To be completed under FY 17-18	
8	Resettlement	2			30	2					Jan-Feb-2018				One training done by ISPMC- 3 sites, CEGIS interested to execute under FY 17-18	
9	Environment	2			30	2					Within 2018				We can reprocess	
10	Leadership	2			40	2	2	2			Mar-Apr-2018				Mr. Bruce Hunter-RTW. (To be prepared soon)	
11	Project Management	2			40	2	2	2			Mar-Apr-2018				To be organized by ISPMC	
12	Construction Management	2			40	2	2	2			Feb-2018				Completed	
13	Technology Transfer (counterpart)	8				8					Within 2018					
13.1	Demonstration and Presentation: Use of Grout-Filled Jute Mattresses for Riverbank Protection	1	27	3	30	1	1	1	1		18-May-2017				Completed	
14	Capacity Building for DDM	2			30	2	2	2			Before Jun-				Dr. Towfique, preparing the programme	
Sub Total		34	99	11	500	34	15	5	5							
B. Overseas Training																
1	River Morphology	1	7	1	8	1	1	1	1	01-Dec-2016					Completed by IHE (Netherlands) on Sep-2016 (FY: 15-16 & 16-17)	
2	River Training Techniques	1	7	1	8	1	1	1	1		Jun-Jul-2017				Completed by IHE (Netherlands) on 5 June- 2 July- 2017 (FY: 16-17)	
Sub Total		2	14	2	16	2	2	2	2							
C. Overseas Study Tour																
1	Study Tour-1 (Australia)	1			5	1	1	1	1		Feb-Mar-2018				To be executed before June 2018	
2	Study Tour-2 (North America)	1	9	0	9	1	1	1	1		Oct-2017				Completed on 5-21 October 2017	
3	Study Tour-3 (China)	1	10	0	10	1	1	1	1	Jun-2016					Completed on June 2016; FY 2015-16	
4	Study Tour-4	1			10	1					Within 2018				To be held in 2018	
Sub Total		4	19	0	34	4	3	2	2							
Totals		40	132	13	550	40	20	9	9							
Gender Percentages (%)			91	9												

Table I-2 Implementation Progress of Training Activities: ISPMC Program

Sl.	Description	Completed			Date			Remarks	
		No. of Courses	No. of Trainees			FY 15-16	FY 16-17		FY 17-18
			M	F	Total				
ISPMC Line Item-1: Workshops, Training and Seminars (Provisional Sum)									
A. Workshops									
1	Workshop on Draft Inception Report	1	83	40	123	09-Dec-2015		Pan Pacific Sonargaon, Dhaka	
2	River Stabilization and Preliminary Master Plan	1	99	41	140		07-Dec-2016	Pan Pacific Sonargaon, Dhaka	
3	National Stakeholder Workshop on the River Stabilization Plan	1	170	80	250		29-Nov-2017	Hotel Radisson, Dhaka	
Sub Total		3	352	161	513				
B. Training:									
1	Training on Environmental Management at 3 sites	3	30	0	30	26-28 Apr-2016		Chauhali, Harirampur &	
2	Training on International River Stability	1	90	20	110		08-Dec-16	Level-4 of WAPDA Building	
3	Training for Task Force on Sand-filled Geotextile Bags	1	24	0	24		22-Dec-16	Level-4 of WAPDA Building	
4	Training: Gender Awareness for BWDB Engineers	1	7	25	32		31-Jul-17	BWDB Design Office Conference Room	
Sub Total		6	151	45	196				
C. Conferences & Discussions									
1	International Conference on Scour and Erosion	1	3	0	3		12-15 Sep-2016	Oxford University, UK With the DG, BWDB & PD, FRERMIP	
2	International Large Rivers Conference	1	3	0	3		17-22 Apr-2017	Delhi, India with solely ISPMC	
3	a) Round Table Discussion: River Management	1	20	0	20	28-Mar-16		Pan Pacific, Sonargaon	
	b) Round Table Discussion: Presentation from the DG, BWDB	1	20	0	20	25-May-16		Lake Castle, Gulshan	
	c) Round Table Discussion: Capacity Development	1	30	0	30		28-Oct-16	Pan Pacific Sonargaon	
Sub Total		5	76	0	76				
ISPMC Totals		14	579	206	785				
Gender Percentages (%)			74	26					

Appendix-J Capacity Building: Overseas Study Tours

Study Tour-2 (North America)

An Overseas Study Tour to America and Canada entitled "Mississippi River Management, and allied Erosion Protection Work" under BWDB Capacity Development Program of Flood and Riverbank Erosion Risk Management Investment Program (FRERMIP), BWDB was conducted during the reporting quarter. Nine senior government officials participated in the Overseas Study Tour from 5 to 18 October 2017:

1. Dr. Zafar Ahmed Khan. Senior Secretary. Ministry of Water Resources (MoWR)
2. A N Shamsuddin Azad Chowdhury. Member. Agriculture. Water Resources and Rural Institution Division.
3. Md. Mofizul Islam. Secretary In Charge. Implementation Monitoring and Evaluation Division (IMED)
4. Md. Mahfuzur Rahman. Director General (Former Additional Director General. Western), BWDB
5. Dr. Jiban Ranjan Majumder, Chief. ADB Wing, Economic Relations Division (ERD)
6. Mantu Kumar Biswas, Joint Chief. Ministry of Water Resources (MoWR)
7. A. M. Aminul Haque Project Director. Project Management Office. FRERMIP, BWDB
8. Kazi Tofail Hossain. Chief Monitoring. Bangladesh Water Development Board (BWDB)
9. Md. Monirul Islam. Superintending Engineer. Project Management Office. FRERMIP, BWDB

The technical program for the North American Study Tour is summarized in **Table 1** below:

Table 1. Technical Program of North American Study Tour

Sl. No.	Training Location	Major Topics of Discussion
1	The Water Institute of the Gulf New Orleans, Louisiana, USA	Introduced to riverbank protection and river training works along Mississippi River. Given a presentation on integrated natural system modeling, river management, and riverbank protection.
2	Bonnet Carré Spillway New Orleans, Louisiana, USA	Learned about flood control and riverbank stabilization.
3	Haster Retarding Basin and Pump Station Los Angeles, California, USA	Gained knowledge on storm water management which is essential to prevent erosion and flooding of urban and rural areas.
4	Cascade Pump Company Santa Fe Springs, California, USA	Inspected a pump manufacturing facility at the Cascade Pump Company. Discussed about latest machinery and range of products.
5	Northwest Hydraulic Consultants (NHC; lead ISPMC consultant headquarters) Vancouver, BC, Canada	Presented with an overview of both physical, and 2D & 3D numeric modeling, and hybrid solutions which involve both types of modeling from NHC.



Photo 1. Meeting Session with the Water Institute of the Gulf, New Orleans, Louisiana, USA



Photo 2. Visit to Bonnet Carré Spillway, New Orleans, Louisiana, USA



Photo 3. Tour of Cascade Pump Company, in Santa Fe Springs, California, USA

Appendix-K National Workshop on the River Stabilization Plan

The 'National Stakeholder Workshop on the River Stabilization Plan for the Jamuna and Padma Rivers' was held at the Hotel Radisson, in Dhaka, on 29 November 2017.

The workshop presented the river stabilization plan to a broad audience for comments and guidance. Five parallel breakout sessions allowed experts from different fields to discuss key aspects of river stabilization and recommend a way forward.

Chief and Special Guests included the following:

- **Barrister Anisul Islam Mahmud M.P**, Honorable Minister, Ministry of Water Resources (MoWR)
- **Mr. Muhammad Nazrul Islam, Bir Protik, psc, M.P**, Honorable State Minister, MoWR
- **Mr. Md. Abul Kalam Azad**, Principal Coordinator (SDG's), Prime Minister's Office
- **Professor Shamsul Alam**, Member, GED, Planning Commission

The national workshop was attended by: 47 BWDB personnel, 58 other senior government officers, 34 university professors, 18 people from the Prime Minister's office, and 50 consultants, technical experts, diplomats, entrepreneurs and land developers; for a total of 207 participants⁷.

The National Workshop included 3 key-note presentations attended by all participants:

- 'Welcome Speech and Introductory Presentation', by Mr. A.M. Aminul Haque, Project Director, PMO
- 'River Stabilization Plan', by Mr. Knut Oberhagemann, Team Leader, ISPMC
- 'Brahmaputra in Assam', by Dr. Mohammad Shariful Islam, Prof. Civil Eng. BUET

The Breakout Sessions were chaired by Dr. Zafar Ahmed Khan, Senior Secretary, MoWR and included the following 5 Sessions:

- **River Engineering**: 'Brahmaputra River Engineering and Morphology', by Dr. Maminul Haque Sarker, CEGIS
- **Pilot Works**: 'Pilot Interventions for Land Development in the Jamuna River', by Engr. Waji Ulla, CEGIS
- **Environment**: 'Environmental Enhancement and Impact Mitigation related to the River Stabilization Plan', by Mr. Shahad Chowdhury, IUCN
- **Social**: 'Social Implications of River Stabilization on Char and Floodplain Population', by Ms. Shamsun Nahar, ISPMC
- **Institutional Change**: 'Institutional and Financing Arrangements for River Stabilization', by Dr. Robert Van de Putte, ISPMC

Each of the 5 Breakout Sessions had a Moderator who was responsible for collecting and summarizing comments from session participants. After the Breakout Sessions, the Moderators presented major session comments and findings to the entire workshop attendees.

A detailed compilation of all session presentations and participant comments has been retained for future reference. Similarly, copies of all 3 key-note presentations, and a handout on the 'Stabilization of the Jamuna and Padma Rivers' have been compiled and saved.

⁷ The total of 207 participants only includes those that actually signed attendance sheets, so the actual number of attendees could be significantly more.



Photo 1. Speech by Barrister Anisul Islam Mahmud M.P, Honorable Minister, MoWR



Photo 2. Speech by Muhammad Nazrul Islam, Bir Protik, psc, M.P, Honorable State Minister, MoWR



Photo 3. Summary of Environmental Breakout Session by Moderator: Dr. Ainun Nishat, Professor Emeritus BRAC University



Photo 4. Workshop Venue and some Participants

Appendix-L Photo Library

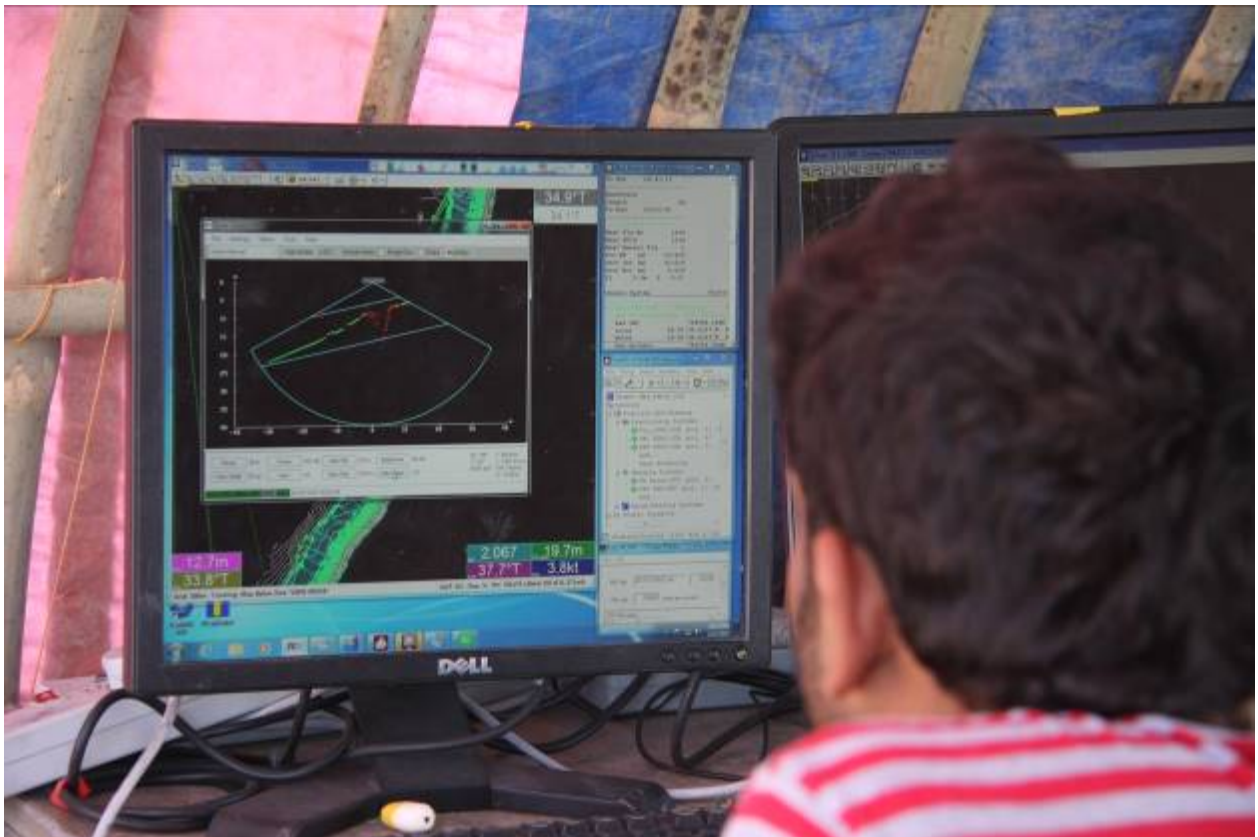


Photo 1. Multi-beam echo-sounder survey at Chauhali, 24 November 2017



Photo 2. Chauhali riverbank protection, central reach after flood season, 24 November 2017



Photo 3. Surficial slope failure at Chauhali, with concrete blocks to be salvaged, 24 November 2017



Photo 4. Grout-filled mattress installed in 2006 at Koitola, 1 December 2017



Photo 5. Riverbank erosion between Kojjuri revetment and Hurashagar, 1 December 2017



Photo 6. Bandalling erosion protection⁸ works along Kojjuri revetment, 1 December 2017

⁸ This type of low-cost and low-tech initiatives by the local people for erosion control will be considered by the project in future, along with other 'soft-construction' solutions such as the planting of vetiver grass to help stabilize riverbanks and chars.



Photo 7. Localized revetment damage at Kojjuri, 1 December 2017



Photo 8. Erosion upstream of Chauhali, 1 December 2017



Photo 9. Joint PMO, ADB and DDM team at Chauhali, 1 December 2017



Photo 10. Joint Dutch embassy and land developer site visit to Harirampur, 12 December 2017



Photo 11. Revetment work alongside major navigation route at Harirampur, 12 December 2017



Photo 12. Localized damage of temporary wave protection at Harirampur, 12 December 2017