BANGLADESH
ACTION PLAN FOR FLOOD CONTROL

COMPARTMENTALIZATION PILOT PROJECT, TANGAIL

TECHNICAL ASSISTANCE PROJECT PROFORMA (TAPP) FOR SIRAJGANJ

FLOOD PLAN COORDINATION ORGANIZATION
MINISTRY OF WATER RESOURCES

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TAPP PART A PROJECT ID (1)	PROJECT NO. (2)	TAPP DATE JULY, 1990	REVISED (3) DUE TO SEPARATION JULY, 1995
PROJECT TITLE (4) COMPARTMENTALIZATION PILOT PROJECT, SIRAJGANJ COMPARTMENT (FLOOD ACTION PLAN COMPONENT NO 20)			
ADM. MINISTRY (5) MINISTRY OF WATER RESOURCES		EXEC. AGENCY (6) FLOOD PLAN COORDINATION ORGANIZATION (FPCO) & BANGLADESH WATER DEVELOPMENT BOARD (BWDB) (MINISTRY OF WATER RESOURCES)	
SECTOR: (7)		WATER RESOURCES	
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TAPP PART B PROJECT DATES	PLANNED MM YY (10) START: NOV. 1990 REVISED: MAY 1996	PLANNED MM YY (11) COMPLETION:DEC. 1994 REVISED: JUNE 2000	
TAPP PART C PROJECT FINANCING (APPENDIX-A/O)		DONOR: NETHERLANDS, GERMANY (12)	
LOCAL COST SOURCE (13) GOB/NETHERLANDS/GERMANY	FOREIGN EXCHANGE (14) NETHERLANDS, GERMANY	CURRENCY/RATE (15) US $ = TK 40.00	

PROJECT COST

YEAR	TOTAL COST (16)	F/E COST (17)	TK. COST (18)	GOB COST (19)	PROJECT AID (20)	RPA (FA) (21)	CDST (22)
May'96-June'96 (2 month)	61.10 (1.53)	43.95 (1.10)	17.15 (0.43)	11.80 (0.29)	49.30 (1.23)	5.35 (0.13)	
96-97	1610.59 (40.26)	381.40 (9.53)	1229.19 (30.73)	365.70 (9.14)	1244.89 (31.12)	863.49 (21.59)	49.50 (1.23)
97-98	2110.77 (52.77)	315.67 (7.89)	1795.10 (44.88)	458.30 (11.46)	1652.47 (41.31)	1336.80 (33.42)	
98-99	994.59 (24.86)	294.80 (7.37)	699.79 (17.49)	68.30 (1.71)	926.29 (23.16)	631.49 (15.79)	
99-2000	503.31 (12.59)	297.09 (7.43)	206.42 (5.16)	68.30 (1.71)	435.21 (10.88)	138.12 (3.45)	
TOTAL	5280.56 (132.01)	1332.91 (33.32)	3947.65 (98.69)	972.40 (24.31)	4308.16 (107.70)	2975.25 (74.38)	49.50 (1.23)
Escalation	106.78 (2.67)	-	106.78 (2.67)	106.78 (2.67)	-	-	-
GRAND TOTAL	5387.34 (134.68)	1332.91 (33.32)	4054.43 (101.36)	1079.18 (26.98)	4308.16 (107.70)	2975.25 (74.38)	49.50 (1.23)

FINANCIAL ARRANGEMENTS WITH DONOR (23)
FINANCIAL COMMITMENT YET TO BE NEGOTIATED

NAME/DESIGNATION OF DONOR CONTACT (24) NETHERLANDS, GERMANY

FINANCING AFTER COMPLETION OF THE PROJECT To be arranged

FUNDS REQUIRED : (25)
YEAR-Wise Funds requirement has been indicated

MODE OF FINANCING (26)
DONOR GRANT GOB ADP-BUDGET REVENUE BUDGET

SELF-FINANCING % (27) 20.03%

Note: 1. Cost in lakh Tk.
2. Figure in parenthesis is US$ in lakh
3. 1 US $ = Tk. 40.00

1 BACKGROUND

The floods in Bangladesh in the summers of 1987 and 1988 were on a catastrophic scale. Immediately after the 1988 flood disaster, several studies were carried out to find a lasting solution to the flood problem. The Government of Bangladesh drafted a National Flood Protection Programme which was followed by a UNDP funded Flood Policy Study and studies made by other donors. In June 1989, the World Bank agreed with the Government of Bangladesh to coordinate the various flood control initiatives and in November 1989, produced an Action Plan for Flood Control covering the 1990-95 Five Year Plan period.

The Action Plan for Flood Control comprises a phased programme of flood control activities supported by special studies, surveys and pilot projects. During the five-year plan period, it is planned to start the main task of protecting the flood-prone areas from the major rivers. Priority is given to controlling Brahmaputra River because it has been the main source of severe flooding. In order to derive maximum benefits from flood protection and drainage, it has been proposed to subdivide the protected areas into compartments in which water control (controlled flooding and controlled drainage) can be effectively managed. Component 20, the Compartmentalization Pilot Project, is a key step in the Plan so that criteria and guidelines are available for planning and designing the first full-scale flood control developments on the Brahmaputra left and right bank and for other regions.

The Action Plan was discussed among relevant donors at a meeting, in London in December, 1989. During this meeting the Governments of the Netherlands and the Federal Republic of Germany expressed their interest in participating in the execution of Action Plan Component No. 20: "Compartmentalization Pilot Project".

The project was divided initially into three components: Tangail and Sirajganj Pilot Projects and Jamalpur Pilot Study. Soon after, Jamalpur Pilot Study was proposed to be implemented as a separate project.

The work of FAP-20 consisting of Tangail and Sirajganj Compartments was started in 1991 . Works in Sirajganj Compartment stated one year late than Tangail in order to modified work procedures to accommodate lessons learned in Tangail . Several social, physical and engineering surveys were completed and Interim Reports submitted in 1993.

A Memorandum of Understanding signed at the conclusion of a Review Mission in June 1994, between the joint donors DGIS (Netherlands)/ Kfw (Germany) and the Govt. of Bangladesh specified a decision to deal with the Sirajganj Compartment as a separate project . This TAPP refers to Sirajganj only.

2 THE CONCEPT & THE PILOT AREA

2.1 The concept

The flood protection policy adopted in the Flood Action Plan is that of controlled flooding and controlled drainage. This involves the building of embankments along the main rivers to prevent unusually early, rapidly rising, high or late river floods from damaging crops and property on adjoining flood plains and providing regulators/sluices in the embankments to allow 'normal' flooding of land to occur to depths with which farmers are familiar for HYVs and LIVs (local improved varieties), to allow fish to move between the rivers and their flood plain feeding and spawning areas and to evacuate excess rainwater flooding when external river levels are low enough. The protected area behind the river embankments would be divided into 'compartments', making use of existing road/railway embankments where possible, so as to facilitate the retention or drainage of water, as required. The compartment is basically a management unit in which the involvement of beneficiaries is considered essential for its success. The overall objective is to provide, through water management, a more secure environment for intensive agriculture, fisheries and integrated rural development and thereby improve the economic security and quality of life of the floodplain population.

Controlled flooding and compartmentalization are relatively new concepts in Bangladesh. The application of these concepts need to be tested and developed into a practical land and water management system. Because of the regional differences in agro-ecological conditions, studies need to be carried out in several areas including Sirajganj. In order to establish systems for water management and criteria for full scale development the following aspects will be examined:

- the physical works and their management
- social issues and programmes
- the environment; its preservation/enhancement
- institutional arrangements
- economic justification

2.2 Sirajganj Pilot Area

The Sirajganj Pilot Project area lies on the right bank of the Brahmaputra river, north of Sirajganj Town. The compartment is bordered in the east by the Brahmaputra Right Embankment (BRE) between Sirajganj town and Banglabazar and in the west by the Ichamati river between Bhadraghat and Brahmagacha. In the south, the border follows the New Bogra road from Bhadraghat to crossing of Soyadhan Khara road going northward along Kazipur road to Old Bogra road. Following Old Bogra Road till Railway tract and connecting the BRE near Ranigram Groyne. In the north, Ichamati branch up to Bagbati Ghat and then along Ichamati khal to the BRE at Banglabazar (Figure 1).

The area comprises of 12057 hectares and occupies part of the Karatoya-Bangali floodplain. The overland drainage is parallel or away form the BRE. The area slopes from north-east towards south-west. The land levels vary between 10.9 m to 14.5 m +PWD. The low lying area is located in the center of the compartment connecting Par Shimla to Pangashi. The characteristic topographical features of the area is its flatness. As a consequence of the low gradients, the rivers and drainage channels are generally heavily meandered and braided. The BRE generally provides protection from the Brahmaputra flood. However, breaches in the BRE either within or outside the CPP area caused unexpected flooding since 1984.

Traditionally, Sirajganj had been a B.Aus/Jute and B. Aman area. The BRE did successfully changed the area into an area of irrigated HYV Boro - HYV T.Aman cropping pattern. The flood water of embankment breaches since 1984 have caused T. Aman production vulnerable to flood damage. Sugarcane, a minor crop of the past, occupies 39% of the net cultivable area. Reliability of the BRE to provide flood protection and impeded drainage due to silted up khals and rivers are the major limitations for agricultural development.

Fisheries in the project area have gradually declined over the years after the construction of the BRE. There are only 9 beels in the project area. Approximately 65% of the 383 tons of annual fish catches of the area comes from the Jamuna river. Only 11% of the annual fish catch comes from floodplains and beels.

Major features of the project are shown in Table 1.

Table 1: Sirajganj compartment "At a Glance"

Implementing Agency	Bangladesh Water Development Board (BWDB)
Collaborating GOB Agencies	LGED,DAE, DoF, BRDB, Local Govt., BWDB(O&M),Dept.of Forest,Dept.of Environment
Coordinating Agency	Flood Plan Coordination Organization (FPCO)
Funding Partners	Bangladesh Government, Directorate Generaal International Samenwerking (Government of the Netherlands), Kreditanstalt fur Wiederaufbau (Federal Republic of Germany)
Compartments	Sirajganj
Location	Right side of the Brahmaputra river
Coverage	24.26-2 N and 89.37-89.43 E
Unions involved	34% of Sirajganj Sadar, 3.6% of Kazipur, 1% of Raiganj and 0.2% of Kamarkhand
Number of villages	Thanas of Sirajganj District
Gross area (ha)	10
Net cultivable area (NCA)(ha)	196
No. of sub-compartments	12057
Total Households (1991 census)	9579
Total Population (1991 census)	8
Annual Rainfall (mm)	48500 (estimated)
Temperature (C)	292000 (estimated)
Rivers of Direct Influence	1779
No. of Beels	Maximum 42 Minimum 5
No. of Canals	Jamuna, Ichamati, Baniajan and Karotoya
Existing Periperal Embankment	9 (3 perenneal)
Existing Peripheral Regulators	10
Land Types (% of net cultivable area	19.5 km
High (FO)	5
Medium High (F1)	30
Medium (F2)	34
Low (F3)	28
Present Cropping Intensity	3
Projected Cropping Intensity	184
	205

3 OBJECTIVES, OUTPUTS AND SCOPE OF PROJECT

3.1 Objectives

The overall objective is to establish appropriate water management systems for the development of protected areas so that criteria and principles for design, implementation and operation can be made available for the Action Plan. Specifically this will entail the testing of the compartmentalization concept in the field under real operating conditions, addressing all the relevant socio-economic, institutional and environmental issue and trying out water control works and water management systems. The Pilot Project will have to demonstrate the practicability, viability and justification of compartmentalization. Through a systematic assessment of the advantages and disadvantages, the concept has to be justified. Although the full economic and financial analyses will be carried out at project preparation stage, cost benefit assessments will be carried out under this project before the system can be recommended for the Action Plan.

The general objectives of the Pilot Project are to establish water management system which is feasible achievable and sustainable.

3.2 Outputs

The outputs of the pilot project will be:

A A final assessment report on the economic feasibility, the social acceptability and the environmental viability of the compartmentatlization concept under the Siranganj conditions. This report will present a full overview of all interventions and programmes involved and give recommendations on further implementation.

B A series of guidelines and manuals, based on field trials and supported by technical notes and study reports, that will be used by those organizations responsible for the planning and implementation of water management systems in protected areas. Manuals should pay explicit attention to aspects of training and demonstration programmes. More specifically, the following manuals will be produced.

i) **Construction of physical works**
Principles and criteria for planning, design and construction of physical water control systems. This manual will include, among other things: planning procedures; type of structures, their specification and outline design; and systems of construction.

ii) **Operation and maintenance of physical works**
Principles and criteria for the operation and maintenance of physical water control systems. This manual will pay attention to different models for cost recovery, considering willingness and ability to pay by beneficiaries.

OBJECTIVE: A
ESTABLISH APPROPRIATE WATER MANAGEMENT SYSTEMS FOR THE DEVELOPMENT OF PROJECTED AREAS
Output 1
Establishing an **achievable** water management system:

1.1 *Physical* objectives:
- 1.1.1 Controlled flooding into and within compartments
- 1.1.2 Controlled drainage within compartments and between neighboring compartments
- 1.1.3 improving agriculture and irrigation
- 1.1.4 improving fisheries and aquaculture
- 1.1.5 improving communication

1.2 *Social* objectives:
- 1.2.1 involving beneficiaries in planning, design, operation and maintance of works
- 1.2.2 providing disadvantage groups particularly women, with employment opportunities

Output 2
Establishing a **sustainable** water management system:

2.1 *Environmental* objectives:
- 2.1.1 preventing environmental degradation
- 2.1.2 enhancing the environment

2.2 *Institutional* objectives:
- 2.2.1 providing appropriate local organizations
- 2.2.2 providing appropriate central organizations

Output 3
Establishing a **feasible** water management system:

3.1 *Multi-criteria* objectives:
- 3.1.1 assessing the costs, both monetary, social and environmental of compartmentalization
- 3.1.2 assessing the potential benefits, both monetary, social and environmental of compartmentalization

OBJECTIVE:B
POLICES AND GUIDELINES FOR THE DEVELOPMENT OF PROJECTED AREAS IN THE FAP
Output 1

Documents and plans regarding the **structural** elements of compartmentalization:

1.1 Documents and plans on compartmentalization systems design:
planning procedures, outline designs, construction systems, operation and maintance

1.2 Special sectorial reports on additional policies and guidelines:
agriculture, fisheries, markets, communication including waterways

Output 2
Policies and guidelines regarding **non-structural** elements of compartmentalization:

2.1 Special reports on social aspects
2.2 Special reports on environmental provisions
2.3 Special reports on institutional arrangements
2.4 Special reports on economic (multi-criteria) analysis

iii) **Institutional arrangements**
This manual will describe the institutional organization of water resources management systems. This includes the structure, mandate, task description of local water management groups and the corresponding legal procedures and mechanisms for coordination and communication, both among each other and with government agencies on district and national level.

iv) **People's participation and social aspects**
Guidelines for: (a) people's participation: involving the scheme beneficiaries and disadvantaged groups in the planning, construction, operation and maintenance of physical works and their management; and (b) creation of employment opportunities for disadvantaged groups in the construction and maintenance of the works and in other activities. The manual will pay due attention to different models for compensation of those who will be adversely affected.

v) **Environmental issues**
Guidelines for: (a) ensuring that adverse environmental impacts are avoided or reduced to an acceptable level, and (b) identifying where specific measures to improve the environment can be taken.

3.3 Specific conditions and constraints

3.3.1 Existing situation

As mentioned in section 1, the Sirajganj project was started in 1991. Figure 2 gives an overview of the activities already carried out till June 1994 and planned up to the assumed start of the project at May 1, 1996. In summary, most of the surveys are completed, the consultation process is completed in 5 out of the 8 sub-compartments and design criteria for the works of 1996/1997 have been submitted. No implementation of physical works has started.

3.3.2 Brahmaputra right embankment (BRE)

The Brahmaputra right bank has been protected by an embankment since 1968. Parts of the left bank have also been embanked since the 1970s. The main purpose of these embankments is to prevent river water from spilling over to the flood plains, during high river stages. Unfortunately, because of river bank erosion, several sections of the BRE have needed to be retired, some several times, and several breaches have occurred in recent years causing serious floods accompanied by sand deposition on neighboring land. For taking care of these breaches action plan has taken under FAP-1 and FAP 21/22. Operation and Maintenance Division, BWDB, Sirajganj look after its repair and maintenance work every year.

In the last 3(three) years O&M Division Sirajganj has spent Taka 170.24 Lac and wheat 2289.69 mt in retiring new embankment and re-sectioning work in BRE. Tables 2 and 3 give more details on the maintenance and repair works of BRE.

3.3.3 The process of land acquisition

The land acquisition (LA) procedure consists of the following steps:

Submission of proposal:
The LA proposal is prepared by the requiring body (RB) on the basis of design demarcating the land to be acquired on concerned mouza map on usual procedure and then the proposal is submitted to the Deputy Commissioner.

DLAC clearance:
There is a District Land Allocation Committee (DLAC) in every district comprising some district level officers including one representative of the RB. The committee generally sits once in a month and approves the proposal after necessary scrutiny. Minimum 30 days are kept for this process but sometimes it delayed due to various reason. Considering the importance of cases, committee sits earlier also.

Notice under Section 3:
After clearance by the DLAC processing of land acquisition starts. Notice is served under this section exhibiting in public place/informing the land owners about the intention of acquiring the proposed land. This process takes about 15 days.

Submission to Ministry by DC:
There are two process of acquisition. If the proposal is within 10 bighas of land, then D.C. can proceed for acquisition of land as per power delegated for him. If the proposal is more than 10 bighas (1.35 ha) then it is submitted to the Ministry of Land Reforms for approval.

Ministry Clearance:
Generally the Ministry takes about 30 days to accord the approval but sometime it takes 60 days or even more. There is no time limit for this purpose.

Notice under Section 6:
On receipt of approval from the Ministry, notice is served by the DC under section-6 on the affected land owners informing them the intention of acquisition. The DC will hear them if they have any objection on the proposed acquisition and will answer them as required. For this procedure 15 days are kept but often it takes much more time.

Table 2: Maintenance and Repairing works of BRE in the vicinity of Sirajganj CPP area in the last four years

Sl. No.	Name of project	Length (Km.)	Estimated cost (Lakh Taka)	Financial year			
				1990-91	1991-92	1992-93	1993-94
1	2	3	4	5	6	7	8
01	Maizbari Retired Embankment (138.328 km to 142.57 km)	4.25	61.98	61.98	-	-	-
02	Khudbandi Ret. Embt. 144.18 km to 149.01 km)	4.83	38.48	-	38.48	-	-
03	Charmara Ret. Embkt. (151.69 km to 152.19 km)	0.50	9.22	-	9.22	-	-
04	Khudbandi Ret. Embkt. (145.78 km to 150.09 km)	4.31	612.58 MT (Wheat)	-	-	612.58 MT (Wheat)	
05	Charmara Ret. Embkt. (151.00 km to 154.45)	3.45	483.98 MT (Wheat)	-	-	483.98 MT (Wheat)	-
06	Motiarpur Rtd. Embkt. (156.83 km to 159.03 km)	2.20	38.06	-	-	38.06	-
07	Ring bund Repair (147 km to 148.38 km)	2.07	22.50	-	-	22.50	-
08	Resectioning of BRE 142.24 km to 144.10 km)	1.86	73.49 MT (Wheat)	-	-	-	73.49 MT (Wheat)
09	Resectioning of BRE (142.24 km to 144.10 km)	1.90	85.07 MT (Wheat)	-	-	-	85.07 MT (Wheat)
10	Breach closing (147.18 km to 147.78 km)	0.60	882.17 MT (Wheat)	-	-	-	882.17 MT (Wheat)
11	Resectioning of BRE (151.00 km to 153.45 km)	2.45	151.40 MT (Wheat)	-	-	-	151.40 MT (Wheat)

Table 3: Maintenance Programme of BRE in the Vicinity of Sirajganj CPP area, 1994-1997

Cost in Lakh Taka

Sl. No.	Name of project	Proposed allocation in ADP		
		1994-95	1995-96	1996-97
1.	Retire Embankment at Bangla Bazar in Kazipur P/S.	252.00	-	
2.	Retired Embankment at Chand Nagar in Kazipur P/S	151.00	-	
3.	Retired Embankment at Panch Thakuri in Sirajganj Sadar	121.00	-	
4.	Resectioning of Maizbari Embankment at Kazipur Thana	200.00 MT (Wheat)	-	
5.	Resectioning of Shingrabari Embankment at Kazipur P/S	250.00 MT (Wheat)	-	
6.	Brick matressing in shank of Ranigram Groyne	15.00	10.00	
7.	Stock of c.c. Block for Emergency repairement of Ranigram Groyne	12.50	-	
8.	Stock of c.c. Block for Emergency protective work of River bank	12.50	8.00	
9.	Shouldering work of Bituminous road from Zia Mour to Sirajganj Ferryghat.	1.70	2.00	
10.	Re-sectioning of BRE at Motiar Pur	100.00 MT (Wheat)	-	-
11.	Right Bank Protection work of the River Jamuna at Simla of dt. Sirajganj		-	147.00
12.	Bank Erosion Protection works at Kazipur of dt. Sirajganj		-	160.00

Estimate received from DC:
The DC after hearing the affected land owners and ensuring that the LA proposal has been initiated for greater interest of the general mass, will prepare an estimate for compensation of land and other properly within the proposal. This estimate is prepared on the basis of average cost prevailing in the area during previous 12 months (as per ordinance, 1982) from the date of issuing notice under section-3. The estimate is then sent to requiring body for placing necessary fund. This process is takes 15 to 60 days.

Fund placed to DC:
On receipt of the estimate from the DC, the RB places fund to the DC after observing the formalities of their own. Normally, this procedure does not take much time approximately 15 days.

Possession received:

After the money is placed, the DC finally issues another notice under Section-7 to the land owners to receive the compensation money on specified date and place. After making partial payment to the land owners, the possession of land is handed over to the requiring body. This process takes 15 to 60 days.

Theoretically, a period of 120 days is required for completion of all the procedures of land acquisition from the date of submission of L.A. proposal but generally it takes much more time even the possession is not available within one year.

Recently the Ministry of Land Reform, agreed that more power will be delegated to the DC for quick finalization of L.A. cases of 10 bighas of land within one mouza. It is hoped that is this process it will take only 70 to 80 days for handing over possession of land to the R.B. This will be an interim arrangement till the new law is promulgated after getting approval of the Parliament.

The present status of the land acquisition procedures for the works to be implemented in 1996/1997 is presented below.

3.3.4 Preparation, tendering and contracting procedures

After receiving the final design of any structure or any other development work the implementation agency first prepares a new cost estimate, which may take about three week for one small type of work (up to Taka 50 lakh; all Sirajganj structures fall into this category of small works). For these type of works no further preparation (pre-qualfication) is needed and contractors can be immediately invited to prepare bids, which will take about three weeks. Then the implementation agency awards the contract, normally within ten days, and contractor can start mobilization.

In summary, the total time required for preparation, tendering and contracting of small works, will be about 50 days. This should be considered a minimum; experience shows that on average these procedures take about 75 days.

3.3.5 Adequate information to local people

Information dissemination is a prerequisite for proper communication between the project and the people. The people, in general, can be interest groups such as farmers, fishermen, women and landless on one hand and government agencies, NGOs, politicians, journalists and elected representatives on the other. The need for such information dissemination is more important specially for a complex and multi-disciplinary project like CPP.

The distribution of printed materials and appropriate displays for demonstrating project activities at meeting, in an easily understandable format is essential to the strategy for people's participation. Pamphlets or brochures in Bangla should be prepared and distributed adequately. Moreover, an information center will be established where copies of relevant project documents will be available for consultation and a forum for providing answers to public questions.

3.3.6 Coordination

It will be essential to maintain close coordination with other agencies and organizations working in the project area and also with other relevant activities of the Action Plan. For this reason, coordination is envisaged at three levels:

a) Compartment level; between CPP Tangail and Sirajganj: A regular meeting between managements of both compartments is essential. Such meetings should be more frequent at the start of Sirajganj and later on can be at regular intervals of once a month. However, the key issue will be regular discussion among professionals and executing engineers of both projects.

b) FPCO level: As part of the Action Plan, the Pilot Project will be coordinated and supervised by the Action Plan Technical Committee. Interaction with Northwest Regional Studies, (2) the Flood Forecasting and Early Warning (10) and Flood Preparedness (11) programmes and the relevant supporting studies 12 to 17 (particularly 16, 17) and 19 will be important. Modelling activities will be carried out in coordination with the Surface Water Modelling Center. In any discussion meeting relevant for one compartment, resource people from the other compartment should be invited so that activities performed by different compartments can led to a conclusive result. FPCO has a coordinating role in securing a justifiable answer to compartmentalization.

   Regular coordination meetings will be organized by FPCO. Steering Committee established by the MIWDFC for FAP 20 will monitor the progress of the project activities regularly. Depending on the agenda those involved would include:
   - staff from the pilot projects,
   - representatives from the Netherlands and FRG,
   - staff from related projects/studies, and
   - BWDB, FPCO, World Bank Coordinator and Panel of Experts.

c) At District and Thana levels: Detailed proposals have been submitted in the Sirajganj Interim Report regarding coordination between the project and district and thana level officials. The perquisite for development of inter-departmental cooperation is the agreement of different departmental heads at Dhaka level to support the requirement of the project. District and relevant thana level officials should be made responsible for activities within the project area. This should be done by identifying specific activities for each of the departments.

3.3.7 NGO involvement

Participation and cooperation of NGOs in a development project like CPP are essential and important. NGOs can be taken as a cooperating partner like other Govt. agencies. This cooperation is built on the basis of discussion based on welfare of interest groups. CPP can seek cooperation from national and local NGOs working in the area. NGOs can be involved in the process of people's participation not only in the planning phase but also during implementation, operation and maintenance phases.

4 WORKPLAN AND DESCRIPTION OF SPECIFIC PROJECT ACTIVITIES

4.1 Overview of time schedule and activities

There are six phases recognized in CPP: assessment, planning, implementation operation & testing, monitoring and evaluation. The assessment phase and the largest part of the planning phase has been completed already. The Sirajganj CPP will now entered the implementation phase and operation & testing and monitoring would start in 1998. A detailed planning schedule and accomplished progress till June 1994 is shown in Figure 2. The project activities consist of three groups:

A	1	Physical interventions
	2	Institutional interventions
	3	Additional programmes
B		Surveys, studies and M&E
C		General project activities

4.2 Detailed descriptions of activities

4.2.1 Physical interventions

4.2.1.1 Description of the project

Physical interventions of Sirajganj compartments consisting of subcompartments 1-8 aims at five different purposes presented in detail below.

Primary flood control

In Sirajganj, the BRE provides the primary protection to the CPP area from the Jamuna river flooding along the eastern boundary. Provision has been made for possible retirement of sections if breaches occur through river bank erosion. However, no flood protection is available along the Ichamati river. Hence, a new embankment is proposed following existing roads at places and river bank at others . Peripheral embankment includes construction of following regulators.

- A main regulator at Bir Subgacha .
- Four additional 3-5 vent regulators at: Shampur , East Garudaha, Ichamati and Beel Gazaria.
- Two inlet regulators along the BRE at: Par Shimla and Bhatperai.
- Two inlet regulators along the Ichamati at: Kangati and Sharatil

Breach mitigation

Breach mitigation measures are those which can cope with the impact of breaches occurring as a result from the erosive power of the Jamuna river. The direct impact of the BRE beach are damage of infrastructure and damage of crops.

In physical terms this means that the actual impact of a breach occurrence is mitigated through the construction or upgrading of roads which serve as embankments. Also the water control structures need to be constructed for control of excess floodwater to be conveyed form the affected sub-compartments to the main drainage system.

- Upgrading of existing roads serving as boundaries between sub-compartments 1 and 3 (Par Shimla-Itali road), 3 and 5 (Decree Para-Harina road,) 5 and 7 (Khokshabari-BRE road), 4 and 6 (Chak Fulkocha-Garudaha road,).

- Construction of eight new 3-5 vent regulators at (Itali , Peopleharia , Aminpur , Decree Para , Bahuli , Chawk Fulkocha, Jhinaigati and three minor regulators at: Khokshabari , Dithpur, Nailsapara .
- Improvement of an existing 3 vent regulator at Salua Bhita .

Drainage Improvement

- Drainage congestion in pre-monsoon and post-monsoon within the context of the existing of the existing infrastructure is one of the constraints in further developing the area with an improved water resources control. Works include:

  - Excavation and re-excavation of all existing khals within the project boundary is planned. Total length of main khals is assessed as 125 km.

  - Construction of new canals linking water congested areas to existing drainage system.

Field Level Water Management

A set of small scale interventions is needed to ensure water management on field level. They include:

- Development of beels (recharging/excavation). Purpose is pre-and post-monsoon drainage to ensure harvesting of Boro and early planting of rabi crop, in such a way that in beel areas water will be retained to minimize damage to beel fisheries.

- Sub-division of sub-compartments to establish field level water management. Each of the sub-compartments has been divided into smaller field units or chawk using existing network of roads. Chawks are characterized for source of water, existing water bodies, existing water inlets and outlets, source of water for irrigation, etc.

Water Retention

Water retention plays a considerable role in the overall water management practices in the CPP area. The objective is to retain rainfall run-off in a specific area and gradually release into the next sub-compartment. Water retention measures may be performed by :

- the construction of bunds on the fields

- by actual construction of water recharge + depth lower area retention structures in order to create a storage of surface water.

4.2.1.2 Procedures

The varies steps for the implementation of physical development is are described below.

Consultation process

Following the needs assessment, the consultation process has been completed in sub-compartments 1, 2, 3, 5 and 7; it is ongoing in sub-compartments 4 and 6 and has yet to start in sub-compartment 8 and in the adjacent areas.

Surveys, design criteria

The surveys and design criteria for the construction season 1996-97 have been completed and submitted to the Design Office of the BWDB.

It is planned that all remaining surveys and design criteria would be completed by May 1997.

Design approved
A number of designs have already been approved. It is planned that all designs for interventions with a construction time of 5 months or longer should be completed by July 1997.

Land acquisition
A start has been made. Further reference is made to section 3.3.3.

Tendering and award
See Section 3.3.4.

Implementation
Normally (preparation of) construction should start in November, to make maximum use of the dry season. All construction works should be completed by June 1998.

Maintenance
The first year after implementation, maintenance should start. The project should prepare a manual for the various maintenance activities.

4.2.2 Social and institutional interventions

4.2.2.1 Description

The project considers the following groups, which have specific interest in the operation and construction of water management infrastructure:
- farmers
- fishermen
- women
- landless.

For the disadvantaged categories -- women and landless -- special programmes are to be developed for the creation of employment opportunities, for example, through landless contracting societies (LCS) and embankment maintenance groups (EMG).

Landless people are organized in LCS, both male and female to offer execution of earthworks of the project. It is targeted that 50 % of the total earthworks will be executed through LCS, of which 50 % is reserved for women.
Landless and destitute women are organized in EMG, in numbers of maximum 10, to offer the execution of preventive maintenance of embankments of the compartments. Activities may include as well the maintenance of excavated canals and drains.

Institutionally, the following arrangements are proposed .
- Water Users Groups (WUGs) made up by a functionally and socio-economically defined category of people (farmers, fishermen, women and landless). Essentially these are relatively homogeneous groups, as far as their interest in water management is concerned. This does not exclude differences at other levels. Within one sub-compartment a considerable number of WUGs can exist, say between 5 and 20.

- Sub-Compartmental Water Management Committees (SCWMCs): made up by representatives of the above WUGs, selected field staff of Government agencies and 3 Union Parishad Members. This Committee will essentially be in charge of water management at this level, will facilitate local resource mobilization and upward representation.

- A Compartment Water Management Committee (CWMC) will be in charge of water management at the compartmental level. It will comprise representatives of the SCWMCs, technical departments, NGOs and local government. The CWMC will initially be preceded by a temporary institution: the Initial Compartmental Water Management Committee (ICWMC). This Committee will oversee and facilitate project implementation, interdepartmental collaboration and it will advice the Project Team. Its composition will roughly be similar to the SCWMC.

4.2.2.2 Procedures

The following steps are included in establishing the proposed institutional structure.

Identification of organized groups
Female, landless, and fishermen WUG's will be based on existing (NGO/BRDB and other) groups; inventory and assessment to be made in cooperation with NGOs, BRDB, DOF.

Contact has been made with BRDB and NGOs to identify their groups in the project area.

Formation/strengthening WUGs
Existing groups to be strengthened to accommodate role in water management, new groups to be organized.

Support to WUG activities
Continuous on-the-job support including group management, liaison, planning, water management, training, representation etc.

Establishment Initial CWMC (ICWMC)
Draft proposal was discussed in the FPCO and the final proposals under process for approval by MIWDFC.

Formation SCWMC
At the conclusion of formation of WUGs within a sub-compartment, SCWMC needs to be formed to coordinate activities of WUGs and take responsibility of operation of water control structures within the sub-compartment.

Support SCWMC
Continuous and on-the-job support to enable SCWMC's to perform their roles satisfactorily.

Establishment CWMC
Will be the main responsible committee to plan, decide and implement the water management mechanism of the compartment. The ICWMC, as mentioned earlier, is the precursor to this committee. Experience during the project period will determine final shape of the CWMC.

Selection/Formation of LCSs, EMGs
Giving direct benefit to the disadvantaged groups, earthworks and periodic maintenance works are to be carried by the Landless Contracting Societies or Embankment Maintenance Groups both male and female.

Training

- WUGs. On-the-job-training, and formal training on group organization, leadership, conflict management, joint planning, water management, O&M, etc.
- SCWMCs. On-the-job-training, and formal training on institutional setting, roles of SCWMC, group discussion and planning, record keeping, financial aspects, etc.
- ICWMCs. On-the-job-training, and formal training on institutional setting, coordination and cooperation with interest groups and GO/NGO agencies, roles of SCWMC and CWMC, group discussion and planning, record keeping, financial aspects, etc.
- LCSs. Training to BWDB staff, NGO staff, and LCS leaders.

4.2.3 Additional programmes and mitigation measures

The following additional programmes and mitigation measures are proposed .

Crop Demonstration Programme (in cooperation with the DAE)
This is crop demonstration on farmer's plots. The main thrust in this programme will be to suggest and test varietywise cropping patterns suitable in improved water managed condition. Depending on the acceptability of introduced variety, modification will be made on the suggested cropping pattern. This programme will also help in speedy extension of introduced high yielding varieties of rice and other crops in the region, and possible diversification.

Integrated Pest Management (IPM) (in cooperation with the DAE)
Effects of residual pesticides from modern farming practices is a well known fact. CPP is aimed at increased agricultural production and therefore increased use of pesticides is likely to be in these areas. The main objective of IPM is to train the farmers about the beneficial and harmful effects with the idea of crop pest control with limited use of pesticides.

Plantation on Embankment & Homestead (in cooperation with Dept. of Forest)
Uncontrolled population growth and increased human activities have created constant pressure on the exploitation of natural resources specially on the renewable bioresources. Plantation on embankment and homesteads is aimed to provide scopes for floral and faunal diversity and to enhance the supply of common goods such as timber, fruit, fuel, grazing land for fodder, etc. in the CPP area.

Aquaculture Development and Extension Programme (in cooperation with Dept. of Fisheries)
In order to mitigate the loss of fish due to project interventions, aquaculture development in the area is considered. With the programme, the total production of cultured fish of the project area will be boosted.

Pond Culture Demonstration Programme (in cooperation with the Dept. of Fisheries)
Modern techniques of pond culture will be demonstrated in selected ponds of the project area. Pond owners will be encouraged to repeat the techniques in their own pond with strong extension and follow-up programmes.

Environment Management Plan and Interventions (in cooperation with the Dept. of Environment)
Environment management plan (EMP) mainly aimed at the mitigation and enhancement measures in respect of the negative impacts elaborated in the EIA.

Mitigating measures
Mitigating measures refer to additional flood protection works or to changes of existing works in adjacent areas, affected by the implementation of the project. Identified impact areas will be developed into new compartments as proposed in the Bangladesh Flood Policy Study and Action Plan for Flood Control. These areas will be surveyed, identifying major features in order to recommend areas of 10-12,000 ha as adjacent compartments.

4.2.4 Surveys, support studies and M&E

The schedule for surveys, support studies and activities related to monitoring and evaluation (M&E) are described below:

Household Survey
The household survey designed to provide statistically valid baseline data mainly covering social, economic and agricultural issues. The survey was of the questionnaire type. The data were used in the planning process and in the multi-criteria analysis. The household survey of the Sirajganj compartment is completed.

Needs Assessment Survey
The focus of this survey is in the interrelation between all the relevant facets of life in both inside and outside the compartment. Typical items are hydrological situation, environment, transport, fisheries, agricultural status etc. Data was collected using a Rapid Rural appraisal approach. An emphasis was given to identify water related needs, problems and possible local solutions by talking to different interest groups such as farmer, fishermen, landless and women. This survey is completed.

Landuse Survey
This survey aims at getting a detailed picture of the way land in the area is used, with particular attention for the agricultural use. Information on cropping patterns, crop varieties and other inputs used etc. The landuse surveys is completed.

Wetland Conservation

The conservation of permanent and seasonal swamps (beels) is of national concern because they are under the continuous threat from cropland conversion and pollution. Although wetlands of the Sirajganj CPP areas are only of local importance (class C in the IUCN classification), the few remaining sites should be maintained. At key areas, wetland conservation initiatives should be planned aiming at multiple beel uses (fisheries, waterfowl and wildlife, aquatic flora, common goods for utilization). Proposals for implementation will aim at a community based development and may include structural and non-structural measures for wildlife sanctuaries.

Ecological Survey

Baseline data will be collected on terrestrial and aquatic habitats, wildlife and biological imbalances in the CPP Sirajganj area. A broad classification of the ecosystem, its importance and status in the regional context and a description of important habitats and their fauna and flora will be prepared. Emphasis will be given to threatened/endangered terrestrial and aquatic species. The ecological survey is completed and the wet season survey is ongoing.

Farming System (in cooperation with the On-Farm Research Division of the BARI and the DAE)

The farming family, having a number of limitations and resources constraints, operates its land in such a way to derive maximum benefit i.e. it has its own farming system. The main objective of this study is to have "a good understanding of the farmer and his family's way to cope with the risks and benefits of the floods for better understanding of the bottlenecks in their farming system".

WID (women in development) Studies

To collect specific data on women roles and needs in the project area which are related to the compartmentalization concept, special studies are and will be in near future, identified. These studies will be conducted in cooperation with local government offices (e.g. with the Dept. of Women's Affairs) and/or with local active NGO's.

4.2.5 General project activities

Information Center

An "information dissemination center" should be set-up to ensure good communication to the people at large. Reference is made to section 3.3.5.

Training

A management training programme should be worked out, as described in Annex 7 of the Sirajganj CPP Interim Report 1. The following components, tentatively, are considered, as shown in Appendix A/7:

- training in The Netherlands for the PD and the SE in the field of project management for 2 months each
- training elsewhere abroad, including study tours and fellowships for 12 persons, three weeks each
- training in Bangladesh for Thana level and field staff
- training and support of local water management groups

Workshop and Seminars

Workshops, involving representation of all interest groups in the activities of CPP, will be organized at regular intervals focusing on specific topics related to the project. Seminars will be organized, to present results of multi-disciplinary project activities.

5 ORGANIZATION AND STAFFING

The suggested arrangements for the implementation of the Pilot Project are shown in different Appendixes. This TA and project staffing has been formulated after detailed discussion at the FPCO level. On discussion with the pre-appraisal mission consultant, appointed by DGIS.

5.1 Organization and management

The project will be executed by the Bangladesh Water Development Board (BWDB) of the Ministry of Water Resources . The Flood Plan Coordination Organization (FPCO) of the same Ministry will coordinate and monitor the Pilot Project activities.

A Steering Committee will be constituted at the BWDB to guide and monitor the implementation progress of the project.

At local level, Initial Compartmental Water Management Committee (ICWMC) will be formed. This could relevant District GOB officials: involvement of local government councilors and officials in the management of the pilot areas is seen as a vital precursor to the management of the future compartments.

BWDB will provide a Project Team for the execution of the project and the Netherlands Technical Assistance Programme will provide Consultants to formulate plan layout and to advise and assist the Project Team. FPCO will nominate specialists to monitor progress and to coordinate activities with other relevant Flood Action Plan activities.

5.2 Task and responsibilities of the Project Team

The Project Team will be responsible for all aspects of Pilot Project planning & implementation, specifically these responsibilities will include:

- surveys
- planning and designs
- tendering
- supervision of construction including quality control
- operation and maintenance
- monitoring and data collection
- organizational aspects etc.
- dissemination of information to the public

The Project Director will be assisted by the two Executive Engineers and other officials augmented from other ministries. The Executive Engineer (Planning) of the project team with his other officials will work as counterpart with the Consultant Team in planning, preparation of design criteria etc. The Executive Engineer (Execution) will be in-charge of the surveys, construction, O & M and monitoring etc. and will maintain constant liaison will the Consultant Team for the implementation of the activities. Beyond the Project Team, BWDB Design office will prepare the designs of all the project features on the basis of design criteria and relevant data. The Project Team provided by BWDB would be augmented as necessary by local consultants. Because of the integrated nature of the programme, the team is composed of specialists from the various ministries and organizations involved in rural development, including Agriculture, Fisheries, Forests, Local Government Engineering Department, Bangladesh Rural Development Board (BRDB), the Department of Environment and BWDB. For the project to be as effective as possible, a close definition of individual assignments, roles and responsibilities will be necessary.

The composition of Project Team under CPP Sirajganj should include O&M officials responsible for the maintenance of the BRE as BRE is vital for testing & operation of the CPP Sirajganj. In this context Bogra circle should be involved in CPP Sirajganj. In line with this provisional staffing arrangements are as follows:

a) Project Director (Part time) in the rank of Superintending Engineer
b) Executive Engineer (Planning)/Deputy Project Director
c) Executive Engineer (Execution)
d) Sub-Divisional Engineers/Assistant Engineer (2 Planning 3 Execution, 1 Project Director)
e) Agronomist
f) Socio-Economist
g) Public Relation Officer
h) Other Ministries : DAE, DF, LGED, BRDB, Fisheries and Environment.

5.3 Tasks and responsibilities of the consultant team

The consultant team will assist and advise the project team in the preparation of plans, the lay out of the project and the quality control of the implemented works. The team will have a major role in providing training to all parties involved in the preparation, operation and evaluation of the implemented works. The consultant will cover land and water use, flood control and drainage, socio-economic and institutional aspects, environmental issues, fisheries and other relevant disciplines.

The team consists of expatriate and national experts and is composed as follows. The composition of the expatriate team is as follows:

- one land and water management specialist (long term, team leader)
- one institutional cum training specialist (short term)
- one sociologist (short term)
- one economist (short term)
- one quality control engineer (short term)

The national consultant team is composed of:

- one water resource/drainage engineer (long term)
- one institution cum training specialist (long term)
- one sociologist (short term)
- one agronomist (short term)
- one environment specialist (short term)
- one fisheries specialist (short term)
- one economist/ M&E specialist (short term)
- one women in development specialist (short term)
- one quality control engineer (short term)

6 COST ESTIMATE

The estimated cost of the Sirajganj compartment is US$ 13.47 million with contingencies as shown below:

Donors contribution:

a)	Financial Assistance	:	US$ 7.44 million
b)	Technical Assistance	:	US$ 3.33 million
			==========
			US$ 10.77 million
GOB contribution:			US$ 2.70 million
			==========
		Total	US$ 13.47 million

Financial Assistance covers cost of surveys and investigation, construction, maintenance and testing of the water management system. Technical Assistance covers the cost of studies, operation and management. GOB contribution covers the cost of land acquisition, salaries of GOB personnel, project equipment and operational and management costs related to GOB personnel.

Details of cost estimates are shown in different appendices .

7. CONSEQUENCES IF NOT APPROVED (30)

Compartmentalization Pilot Project is a component of Flood Action Plan aims to test the real operating conditions addressing all relevant socio-economic, institutional environmental issues to establish appropriate water management methods. This will make available the principles for design implementation and operation to other components of flood action plan. In absence of the approval of the TAPP the results of the pilot project will not be available and proper water management under flood control environment will be disturbed.

8. LINKAGE TO OTHER PROJECTS/ORGANIZATION (31)

It will be essential to maintain close coordination with other agencies and organizations working in the project areas and also with the other relevant activities of the Action Plan.

The project having an integrated one, has linkage with various departments such as LGED, BADC, BRDB, Fisheries, DAE, Livestock & Municipality.

TAPP PART-E PROJECT OUTPUT (IN QUANTITATIVE OR QUALITATIVE TERMS) (32)

9. PREPARATORY ASSISTANCE

9.1 TECHNOLOGY TRANSFER

The project provides a great scope for technology transfer in the field of planning, design, and implementation of pilot project dealing with various field tests on water management by different agencies under the close guidance of consultants. This will help in transfering of technology.

9.2 TRAINING

The project provides training in the developed countries to GOB personnel in the field of land and water management related to compartmentalization - which is a new concept in water resources development of Bangladesh.

9.3 MANAGEMENT IMPROVEMENT

The study will help to improve the quality of management of the GOB and local specialists in the planning design and implementation of water management in the pilot projects.

9.4 INSTITUTIONAL SUPPORT

The project will indicate the possible support from BWDB, BARI, BARC, BAU, LGED, Livestock and Fisheries.

10. ACTION EXPECTED AFTER COMPLETION OF THE PROJECT (33)

Results from the pilot project experiments are expected to be incorporated in the other components of FAP.

TAPP PART F-1 PROJECT INPUT PERSONNEL

EXPATRIATE CONSULTANTS (34) APPENDIX A/1	MAN MONTH 76	NO.OF CONSUL-TANTS 10	COST/MAN MONTH TK.8.65 LAKH

TASK AND QUALIFICATION REQUIRED (35)

VIDE APPENDIX A/I

NATIONAL CONSULTANTS (36) APPENDIX A/2	MANMONTH 251	NO. OF CONSULTANTS 15	COST/MANMONTH TK.0.933 LAKH

TASK AND QUALIFICATION REQUIRED (37)
VIDE APPENDIX A/I

PROJECT PERSONNEL GOB (38) APPENDIX A/3	MAN MONTH 4750	NO.OF PROFESSIONAL 95	COST/MAN MONTH TK.0.052 LAKH

NO. OF STAFF AVAILABLE (39) 41 NOS	NO. OF STAFF AVAILABLE (40) PART-TIME 8 NOS	NO. OF STAFF TO BE (41)RECRUITED (including temporary staff) = 46

TASKS AND QUALIFICATIONS REQUIRED (42)
AS PER GOVT. REGULATION

PROJECT PERSONNEL OTHERS (43) A/2 & A/2.1	MANMONTHS 856+400=1256	NO. OF PERSONNEL 30	COST/MANMONTH TK.0.10 LAKH

TASKS AND QUALIFICATIONS REQUIRED
VIDE APPENDIX A/I

ESTIMATED (44) PERSONNEL COST	EXPATRIATE CONSULTANTS Tk.(lakh)	LOCAL CONSULTANTS Tk. (lakh)	PROJECT PERSONNEL GOB Tk. (lakh)	PROJECT PERSONNEL OTHERS	
				AUGMENTATION P.T. Tk. (lakh)	SUPPORTING STAFF
95-96	12.80	3.73	9.80	1.85	3.32
96-97	164.80	86.86	58.80	11.10	22.24
97-98	164.80	56.04	58.80	11.10	21.82
98-99	148.80	42.03	58.80	11.10	18.36
99-2000	164.80	45.77	58.80	11.10	17.22
GRAND TOTAL	656.00	234.43	245.00	46.25	82.96

TAPP PART F-2 PROJECT INPUT EQUIPMENT

SPECIFICATION OF ITEMS (45) APPENDIX A/4	QUANTITY	COST

ANNUAL PHASING OF ESTIMATED COSTS (46) TOTAL: TK. 181.17 LAKH

May'96-96	96-97	97-98	98-99	99-2000
15.75	140.73	16.58	4.86	3.25

TAPP PART F - 3		PROJECT INPUT TRAINING	
SPECIFICATION (47)	INSTITUTION (48)	NO. OF (49) MAN-MONTH	COST (50) TK.125 LAKH.

APPENDIX A/7

ANNUAL PHASING OF ESTIMATED COSTS (51) TOTAL:TK.125.00LAKH

95-96	96-97	97-98	98-99	99-2000					
-	29.50	46.00	33.00	16.50					

TAPP PART F - 4 PROJECT INPUT OTHERS
SPECIFICATION (52)

APPENDIX A/5
ANNUAL PHASING OF ESTIMATED COSTS TOTAL TK:155.00 LAKH

May'96-96	96-97	97-98	98-99	99-2000
7.12	36.97	36.97	36.97	36.97

TAPP PART F-5 FIELD SURVEY & INVESTIGATION
SPECIFICATION OF ITEMS COST
APPENDIX A/6 TK. 139.78 LAKH
ANNUAL PHASING OF ESTIMATED COSTS (53) TOTAL: TK.139.78 LAKH

May'96-96	96-97	97-98	98-99	99-2000
2.38	46.85	53.10	24.85	12.60

PROVISION IN FOURTH FIVE YEAR PLAN (54) Included in FFYP	PROVISION IN ADP/ATAP (55) Included in ADP
NO. OF ENCLOSURES: A/O = 1 No. A/O/1 = 1 No. A/1 = 3 Nos. A/2 A/2.1 = 1 No. A/3 A/3.1 A/4-A14 A/I --- TOTAL = 19 Nos	

SIGNATURE/APPROVAL
AUTHORITY (56)

Joint Chief
Ministry of Irrigation, Water Development

Appendix-A/0/1

COST ESTIMATE OF TAPP FOR CPP, SIRAJGANJ COMPARTMENT

1.Total Project Cost

a) Summary cost

Financial head	Cost
(a) FEC(TA)	1332.91
(b) FEC(FA)	2975.25
(c) GOB	1079.18
Grand Total	5387.34

b) Headwise cost:

Sl. No.	Head of expenditure	Appendix	FEC(TA)	FEC(FA)	GOB	Total
1.	Expatriate Consultant	A/1	656.00			656.00
2.	National Consultant	A/2	282.89			282.89
3.	Augmentation project team	A/2.1		80.75		80.75
4.	GOB Personnel	A/3			245.00	245.00
5.	Project input equipment	A/4	77.55	40.72	62.90	181.17
6.	Project input others	A/5	128.00		27.00	155.00
7.	Field survey investigation	A/6		139.78		139.78
8.	Project input training	A/7	125.00			125.00
9.	Land acquisition	A/10			637.50	637.50
10.	Implimentation	A/11		2435.00		2435.00
11.	O&M during implimentation	A/11		279.00		279.00
12.	Cost escalation	A/9			106.78	106.78
13.	Sub-total		1269.44	2975.25	1079.18	5323.87
14.	Contingencies	A/6	63.47			63.47
15.	Total		1332.91	2975.25	1079.18	5387.34

Note: 1. All figure in lakh taka.

Appendix A/0

SUMMARY OF COST ESTIMATES

Year	May'96-96	96-97	97-98	98-99	99-2000	Total
Study	62.28 (1.56)	622.89 (15.57)	481.04 (12.03)	439.71 (10.99)	429.92 (10.75)	2035.84 (50.90)
Implementation	-	1011.34 (25.28)	1650.22 (41.26)	582.20 (14.56)	107.74 (2.69)	3351.50 (83.79)
Total:	62.28 (1.56)	1634.23 (40.85)	2131.26 (53.28)	1021.91 (25.55)	537.66 (13.44)	5387.34 (134.68)

1. Figures indicate Tk. in lakh
2. Figure in parentheses is US$ in lakh
3. 1 US$ = Tk. 40.00

Appendix-A/1

Detail Cost Estimates of Expatriate consultants (34)

May 1996 - June 2000

Sl. No.	Designations	No.	Person months	Monthly rate US $	Total US $
1	Land and Water Use Engineer	1	50	16000	800000
2	Quality Control Engineer	1	2	20000	40000
3	Institution cum Training Specialist	1	4	20000	80000
4	Sociologist	1	4	20000	80000
5	Environmental Specialist	1	4	20000	80000
6	Economist / M&E Specialist	1	6	20000	120000
7	Unspecified / Miscellaneous	4	6	20000	120000
	Sub-Total:	10	76		1320000
	30 Round trips @ US $ 4000				120000
	DSA, Lodging, Reporting etc.				200000
				US $	1640000
				Taka:	656.00 Lakh

Appendix-A/2

Detail Cost Estimates of National consultants (36)

May 1996 - June 2000

Sl. No.	Designation	No.	Manmonths	Monthly rate Tk.	Total Taka (Lakh)
1	Institution cum Training Specialist/	1	50	40,000	20.00
	Deputy Team Leader	1	50	40,000	20.00
2	Water Resources/ Drainage Engineer	1	24	40,000	9.60
	Sociologist	1	24	40,000	9.60
3	Agronomist	1	18	40,000	7.20
4	Environmental Specialist	1	15	40,000	6.00
5	Fisheries Specialist	1	16	40,000	6.40
6	Economist/M&E Specialist	1	15	40,000	6.00
7	Women in Development Specialist	1	24	40,000	9.60
8	Quality Control Engineer	6	15	40,000	6.00
9	Unspecified				
	A. Sub-Total:				100.40
11	Social Charge @ 30% of (A)				30.12
12	Overhead @ 60% of (A)				60.24
	B. Sub-Total:				190.76
13	Fixed fee @ 15% of (B)				28.61
14	TA/DA etc. @ 15% of (A)				15.06
	C. Total Salary (A+B)	15	251		234.43
15	Supporting Staffs:				
	i) Agri/Fisheries/Engineer	7	120	10,000	12.00
	ii) Office Manager	1	50	7,000	3.50
	iii) Chief Accountant.	1	50	9,000	4.50
	iv) Draftsman	1	36	6,000	2.46
	v) Computer Operator	2	100	6,000	6.00
	vi) Driver	5	250	5,000	12.50
	vii) Peons, Guards	5	250	3,000	7.50
	D. Sub-Total:	22	856		48.46
	Total: (C+D)	37	1107		282.89

Appendix-A/2.1

Cost Estimates of Augmentation Project Team

May 1996 - June 2000

Sl. No.	Description	No.	Man Month	Monthly Rate	Total (Lakh Tk)	Remarks
1.	Agronomist	1	50	25,000	12.50	
2.	Sociologist	1	50	25,000	12.50	
	Sub Total:				25.00	
	Partial Social charge, partial overhead and 10% fixed fee (70%)				17.50	
	TA/DA etc. 15%				3.75	
A	Sub-Total:				46.25	
3.	Supporting staff					
	- Public Relation Officer	1	50	10,000	5.00	
	- Agronomist	2	100	10,000	10.00	
	- Sociologist	1	50	10,000	5.00	
	- Institutionalist	1	50	10,000	5.00	
	- Fisheries	1	50	10,000	5.00	
	Sub-Total:				30.00	
	TA/DA etc. 15%				4.50	
B.	Sub-Total:				34.50	
	Total: (A+B)				80.75	

Total = 80.75 lakh taka = 2.02 lakh US$
[1 US$ = 40.00 Tk.]

Appendix-A/3

Cost estimate for GOB personnel (38)

May 1996 - June 2000

Sl. No.	Description of Project Team	Nos.	Man Month	Monthly Rate	Cost Tk.(lakh)	Remarks
1.	Project Director	1	50	11,000	5.50	
2.	Executive Engineer	2	100	9,000	9.00	
3.	DAE	1	12	9,000	1.08	
4.	Dept. of Forests	1	12	9,000	1.08	
5.	LGEB	1	12	9,000	1.08	
6.	BRDB	1	12	9,000	1.08	
7.	Fisheries	1	12	9,000	1.08	
8.	Dept. of Environment	1	12	9,000	1.08	
9.	Deputy Director	1	50	9,000	4.50	
10.	SDE/AE	6	300	7,500	22.50	
11.	Asstt. Director:	1	50	7,000	3.50	
12.	Accountant	1	50	6,000	3.00	
13.	SAE/Estimator/S.O	8	400	6,000	24.00	
14.	S.A.A	4	200	4,000	8.00	
15.	Head Clerk(U.D.A)	3	150	4,000	6.00	
16.	Stenographer	1	50	3,500	1.75	
17.	Steno-typist	1	50	3,500	1.75	
18.	Typist	6	300	3,000	9.00	
19.	LDA-cum-A/C.clerk	6	300	3,000	9.00	
20.	Surveyor	2	100	3,500	3.50	
21.	Draftsman	1	50	3,000	1.50	
22.	Work Assistant *	15	750	3,000	22.50	
23.	Computer, Gestetner & Photocopier Operator	2	100	3,000	3.00	
24.	Driver/Speed boat driver	6	300	3,000	9.00	
25.	M. L. S. S	18	900	2,000	18.00	
26.	Sluice/Embankt Khalashi *	10	500	2,000	10.00	
Sub-Total:		95	4750		175.00	
27.	CPF. GPF & Income Tax.25%				43.75	
28.	TA/DA.etc. for local Movement 15%				26.25	
	Total:				245.00	GOB

Part time GOB officials of other departments will work with the project for one week per month. Beyond the above GOB personnel, BWDB Design office will work in the preparation of the design and the cost of which has not been included in the above salaries.

* Temporary staff (when reqired) will be recruited by the project.

Appendix-A/3.1

Set-up of Project Team Sirajganj Compartmentalization Pilot Project

Description	Circle office	XEN (Imptmn) nos.	XEN (Plngg) nos.	SDE-I nos.	SDE-II nos.	Total
Project Director	1	-	-	-	-	1
Executive Engineer	-	1	1	-	-	2
Deputy Director	1	-	-	-	-	1
SDE/AE	1	1	2	1	1	6
Asstt. Director	-	1	-	-	-	1
Accountant	-	1	-	-	-	1
SAE/Estimator	1	1	-	-	-	2
SAE/S.O	-	-	-	3	3	6
S.A.A	1	3	-	-	-	4
Head Clark (U.D.A)	1	1	1	-	-	3
Surveyor	-	-	-	1	1	2
Stenographer	1	-	-	-	-	1
Steno-typist	-	1	-	-	-	1
L.D.A Cum-A/C Clerk	-	3	1	1	1	6
Typist	1	2	1	1	1	6
Draftsman	-	1	-	-	-	1
Work Asstt. *	-	-	-	7	8	15
Computer, Gestetner & Photocopier Operator	-	2	-	-	-	2
Driver	1	2	1	1	1	6
M.L.S.S	2	5	3	3	5	18
Sluice/Embnkt. Khalashi. *	-	-	-	5	5	10
Total	11	25	10	23	26	95.

* Temporary staff (when required) will be recruited by the Project.

Appendix-A/4

Detail Cost Estimate of Project Input Equipment (45)

Sl. No.	Description of items	Unit price	Cost (in lakh Tk.)	Remarks
1.	4 Computer & necessary Software	2.64	10.56	FEC (TA)
2.	Vehicle 4 Nos. Jeep	L.S	42.00	FEC (TA)
3.	Office furnitures	L.S	4.50	FEC (TA)
4.	Air Cooler 5 Nos.	0.60	3.00	FEC (TA)
5.	Photocopier 2 Nos.	L.S	4.20	FEC (TA)
6.	Telefax 1 Nos.	L.S	1.00	FEC (TA)
7.	Motorcycle 6 Nos.	0.80	4.80	FEC (TA)
8.	Bycyle 10 Nos.	0.05	0.50	FEC (TA)
9.	Cassette recorder 1 Nos.	0.05	0.05	FEC (TA)
10.	Photo Camera 1 No.	0.10	0.10	FEC (TA)
11.	Video recorder camera 1 No.	L.S	0.80	FEC (TA)
12.	Mapping	L.S	1.28	FEC (TA)
13.	Measuring tape 4 Nos.	0.02	0.08	FEC (TA)
14.	Soil Sampler 2 Nos.	0.03	0.06	FEC (TA)
15.	Soil water analyser 2 Nos.	L.S	2.09	FEC (TA)
16.	Discharge mesurement equipment 1 Nos.	L.S	2.00	FEC (TA)
17.	Telephone 2 Nos.	0.04	0.08	FEC (TA)
18.	Television 1 No.	0.30	0.30	FEC (TA)
19.	Vedeo Cassettee Player 1 No.	0.15	0.15	FEC (TA)
20.	Speed Boat 1 no.	-	-	To receive from Tangail
	Sub-Total: (FEC - TA)		77.55	
21.	2 Computer, Printer, Calculator & Diskettees	-	2.00	FEC (FA)
22.	Jeep 3 Nos.	L.S	29.00	FEC (FA)
23.	Concrete testing hamer (for concrete test) 1 No.	0.60	0.60	FEC (FA)
24.	O & M of Vehicles (GOB)	L.S	13.00	GOB
25.	Levelling Instrument + Staff 2 Nos.	0.96	1.92	FEC (FA)
26.	Telefax 1 No.	L.S	1.00	FEC (FA)
27.	Motor Cycle 4 Nos.	1.00	4.00	FEC (FA)
28.	Bicycle 10 Nos.	0.04	0.40	GOB
29.	CDST/Local Tax.	6.50	19.50	GOB
30.	CDST (Consultant's equipment vehicles etc.)	-	30.00	GOB
31.	Type writers 2 Nos.	0.25	0.50	FEC (FA)
32.	Ammonia Printer 1 No.	1.20	1.20	FEC (FA)
33.	Pocket Penetrometer (for soil test) 1 No.	0.50	0.50	FEC (FA)
	Sub-Total: (FEC - FA)		40.72	
	Sub-Total: (GOB)		62.90	
	Total :		181.17	

Appendix-A/5

Detail Cost Estimate of Project Input Equipment others

May 1996 - June 2000

Sl. No.	Description of items	Unit price	Cost (in lakh Tk.)	Remarks
1.	Office accommodation and	L.S running cost	30.00	FEC (TA)
2.	Packing/Shipping/Insurance	L.S	9.00	FEC (TA)
3.	Telephone charges	L.S	10.00	FEC (TA)
4.	O & M			
	a) Vehicles	L.S	42.10	FEC (TA)
	b) Speed boat	L.S	8.90	FEC (TA)
5.	Test for Quality Control	L.S	20.00	FEC (TA)
6.	Report printing	L.S	8.00	FEC (TA)
	Total :		128.00	FEC (TA)
	Total : 128.00 Lakh Taka = 3.20 Lakh US$			
1.	Office accommodation	L.S	5.00	
2.	Gas, Electricity water etc.	L.S	3.00	
3.	Office furniture	L.S	2.00	
4.	Telephone	L.S	10.00	GOB
5.	Office stationery, including book and journals	L.S	6.00	
6.	Report printing	L.S	1.00	
	Total :		27.00	GOB
	Total = 27.00 Lakh Taka = 0.68 Lakh US$			
Grant Total :			155.00	
	[1 US$ = 40.00]			

Appendix-A/6

Field Survey and Investigation

Sl. No.	Description	Cost (lakh Taka)	Remarks
1.	Geo-technical field investigation	30.00	
2.	Data collection (Hydrological/ Fisheries/Agriculture)	10.00	
3.	Engineering Survey	20.00	
4.	River cross section survey	1.00	
5.	Mappings, Drawing & documents printing	1.00	
6.	Post project Household Survey	37.12	
7.	Environmental Management Activities	34.00	
	Sub-Total :	133.12	
7.	Contingencies (5%)	6.66	
	Total :	139.78	FEC (FA)

Total = 139.78 lakh Tk. = 3.50 lakh US$
1 US$ = Tk. 40.00

Note : A number of this works will be executed by sub contract or by temporary staff.

Appendix-A/7

Project input training (47)

Type	No.	Duration (days)	Cost		Remarks
			Tk.(Lakh)	US $	
A. ABROAD					
Training in the Netherlands (Project Management)	2	2x60 = 120	15.00	37,500	
Training elsewhere (study tours, fellowships, hydraulic engineering, hydrology), integrated water and rural development	12	12x21 = 252	44.00	110,000	
B. IN BANGLADESH					
Training in Bangladesh (Study tour, Thana level and field staff, courses)			12.00	30,000	
Course, seminars, workshops (training/video)			3.00	7,500	FEC(TA)
Establishment and support institutional setting (ICWMC, SCWC, WUG's EMG's ETC.)			35.00	87,500	
Information dissemination center			10.00	25,000	
Miscellaneous			6.00	15,000	
Total :			125.00		FEC(TA)

Total : 125 Lakh = 3.13 Lakh US$
1 US$ = Tk. 40.00

Note: The project provides training (2 nos) in the Netherlands in the field project management to the PD CPP, FAP-20 & SE, Design Concern. 12 nos study tour etc. elsewhere (3 weeks) to the GOB personne (BWDB, FPCO, ICWMC (CPP) and one each from MIWDFC, IMED end Planning Commission).

Appendix-A/8

Summary of Cost Estimate

Tk.in Lakh

Sl No	Description of Item	FEC(TA)	RPA	GOB	Tk.cost	Project Aid	Total	Remarks
1	Expatriate Consultant	656.00	-	-	-	656.00	656.00	App. A/1
2	National Consultant	234.43	-	-	-	234.43	234.43	A/2
3	Supporting Staff	48.46	-	-	-	48.46	48.46	A/2
4	Project Input Equipment	77.55	40.72	62.90	103.62	118.27	181.17	A/4
5	Project Input Others	128.00	-	27.00	27.00	128.00	155.00	A/5
6	Project Input Training	125.00	-	-	-	125.00	125.00	A/7
7	Augmentation Project Team	-	80.75	-	80.75	80.75	80.75	A/2.1
8	GOB Personnel	-	-	245.00	245.00	-	245.00	A/3
9	Field Survey Investigation	-	139.78	-	139.78	139.78	139.78	A/6
10	Land Acquisition	-	-	637.50	637.50	-	637.50	A/10
11	Implementation	-	2435.00	-	2435.00	2435.00	2435.00	A/11
12	O&M during implementation	-	279.00	-	279.00	279.00	279.00	A/11
13	Cost Escalation	-	-	106.78	106.78	-	106.78	A/9
14	Total	1269.44 (31.74)	2975.25 (74.38)	1079.18 (26.98)	4054.43 (101.36)	4244.69 (106.12)	5323.87 (133.10)	
15	Contingencies	63.47	-	-	-	63.47	63.47	
16	Grand Total	1332.91 (33.32)	2975.25 (74.38)	1079.18 (26.98)	4054.43 (101.36)	4308.16 (107.70)	5387.34 (134.68)	

1. Figures indicate Tk. in lakh
2. Figure in parenthesis is US $ in lakh
3. 1 US $ = Tk. 40.00

Appendix-A/9

Study (Yearwise Breakup)

YEARWISE BREAKUP	FEC		GOB	TK.COST	PROJECT AID	TOTAL	REMARKS
	TA	FA					
May'96-96	43.95	5.35	11.80	17.15	49.30	61.10	
96-97	381.40	99.65	118.20	217.85	481.05	599.25	
97-98	315.67	76.58	68.30	144.88	392.25	460.55	
98-99	294.80	49.29	68.30	117.59	344.09	412.39	
99-2000	297.09	30.38	68.30	98.68	327.47	395.77	
Sub-Total :	1332.91 (33.32)	261.25 (6.53)	334.90 (8.37)	596.15 (14.90)	1594.16 (39.85)	1929.06 (48.23)	
Escalation							
May'96-96	-	-	1.18	1.18	-	1.18	
96-97	-	-	23.64	23.64	-	23.64	
97-98	-	-	20.49	20.49	-	20.49	
98-99	-	-	27.32	27.32	-	27.32	
99-2000	-	-	34.15	34.15	-	34.15	
Sub-Total:	-	-	106.78 (2.67)	106.78 (2.67)	-	106.78 (2.67)	
Total:	1332.91 (33.32)	261.25 (6.53)	441.68 (11.04)	702.93 (17.57)	1594.16 (39.85)	2035.84 (50.90)	

1.Figures inddicate Tk. in lakh
2.Figure in parenthesis is US $ in lakh
3.1 US $ = Tk. 40.00

Appendix-A/10

Land Acquisition

Sl No	Description	(96-97)		(97-98)		Total (lakh Tk)	Remarks
		Area(ha)	Cost	Area(ha)	Cost		
1.	Land+Compensation	45	225.00	65	325.00	550.00	
	Escalation cost		22.50		65.00	87.50	
	Total:	45	247.50	65	390.00	637.50	

Appendix-A/11

Financial Assistance Component (Implementation):

Sl No	Description of Civil Works	Quantity	Total cost (lakh)	Total cost (US$ lakh)	Cost in Lakh Tk.				
					May'96-96	96-97	97-98	98-99	99-2000
A. 1.	Implementation Compt. embankment	35.5km	382.00	9.55	-	110.00	190.00	82.00	-
2.	Sub-Compartmental Embankment	18 km	58.00	1.45	-	15.00	30.00	13.00	-
3.	Construction of Regulators/Sluice	22Nos.	1190.00	29.75	-	305.00	590.00	295.00	-
4.	Modification of Culvert/Bridge/ Structure	21Nos.	25.00	0.625	-	10.00	10.00	5.00	-
5.	Construction of minor regulator/pipe regulator	11Nos.	125.00	3.125	-	48.00	64.00	13.00	-
6.	Sub-compartmental infra-structure e.g. bridge culvert etc.	58Nos.	127.00	3.175	-	49.00	68.00	10.00	-
7.	Closure of Breach	59Nos.	4.00	0.10	-	1.34	1.00	1.66	-
8.	Bank protection & river training works	2 places	10.00	0.25	-	4.00	4.00	2.00	-
9.	Field level water management i) Micro level chawk improvement	L.S.	40.00	1.00	-	10.00	16.00	14.00	-
10.	Excavation of channels	124km	334.00	8.35	-	130.00	198.00	6.00	-
11.	Improving access	5 km	50.00	1.25	-	24.50	20.00	5.50	-
12.	Institution development physical facilities (construction of building field office, meeting places etc.)	L.S.	30.00	0.75	-	30.00	-	-	-
13.	Mitigation Measures	L.S.	50.00	1.25	-	23.00	24.00	3.00	-
14.	Resettlement	L.S.	10.00	0.25	-	4.00	4.00	2.00	-
A.	Sub-Total (Implementation):		2435.00	60.88	-	763.84	1219.00	452.16	-
B.	Operation & Maintenance during Implementation								
1.	Construction of Regulator/Sluice	-	119.00	2.975	-	-	17.00	56.00	46.00
2.	Modification i) Closure of culvert ii) Modification of Sluice	-	2.00	0.05	-	-	0.37	1.00	0.63

Contd. to next page
Continuation of Appendix-A/11

Sl No	Description of Civil Works	Quantity	Total cost (lakh)	Total cost (US$ lakh)	Cost in lakh Tk.				
					May' 96-96	96-97	97-98	98-99	99-2000
3.	Construction of minor regulators/ pipe regulator	-	12.00	0.30	-	-	2.00	5.60	4.40
4.	Sub-Compartmental infra-structure e.g. bridge culvert etc.	-	13.00	0.325	-	-	2.00	6.00	5.00
5.	Closure of Breach	-	1.00	0.03	-	-	0.15	0.50	0.35
6.	Bank protection and river training works	-	2.00	0.05	-	-	0.30	1.00	0.70
7.	Field level water management i)Micro level chawk improvement	-	4.00	0.10	-	-	0.60	2.00	1.40
8.	Main embankment	-	57.00	1.425	-	-	9.00	25.79	22.21
9.	Sub-Compartmental embankment	-	9.00	0.225	-	-	1.50	4.20	3.30
10.	Excavation of channels	-	50.00	1.25	-	-	7.00	23.00	20.00
11.	Improving access	-	8.00	0.20	-	-	1.00	4.00	3.00
12.	Resettlement	-	1.00	0.03			0.15	0.45	0.40
13.	Institution development physical facilities (construction of building (field office, meeting places etc.)	-	1.00	0.03	-	-	0.15	0.45	0.40
B.	Sub-Total (O&M) :	-	279.00	6.98	-	-	41.22	130.04	107.74
A+B	Total :	-	2714.00	67.85	-	763.48	1260.22	582.20	107.74

Appendix-A/12

Implementation (Yearwise breakup)

Yearwise breakup	TA	RPA (FA)	GOB	TK. COST	PROJECT AID	TOTAL
May'96-96	-	-	-	-	-	-
96-97	-	763.84	247.50	1011.34	763.84	1011.34
97-98	-	1260.22	390.00	1650.22	1260.22	1650.22
98-99	-	582.20	-	582.20	582.20	582.20
99-2000	-	107.74	-	107.74	107.74	107.74
Total		2714.00	637.50	3351.50	2714.00	3351.50

1. Figures indicates Tk. in lakh
2. 1 US $ = Tk. 40.00

Appendix-A/13

Cost Estimate of Project Aid (yearwise breakup):

YEAR	95-96	96-97	97-98	98-99	99-2000	Total
Study	49.30	481.05	392.25	344.09	327.47	1594.16
Implementation	-	763.84	1260.22	582.20	107.74	2714.00
Total:	49.30 (1.23)	1244.89 (31.12)	1652.47 (41.31)	926.29 (23.16)	435.21 (10.88)	4308.16 (107.70)

1. Figures indicate Tk. in lakh
2. Figure in parenthesis is US $ in lakh
3. 1 US $ = Tk. 40.00

Appendix-A/14

Cost Estimates of GOB Contribution (yearwise breakup)

YEAR	95-96	96-97	97-98	98-99	99-2000	Total
Study	12.98	141.84	88.79	95.62	102.45	441.68
Implementation	-	247.50	390.00	-	-	637.50
Total:	12.98 (0.33)	389.34 (9.73)	478.79 (11.97)	95.62 (2.39)	102.45 (2.56)	1079.18 (26.98)

1. Figures indicate Tk. in lakh
2. Figure in parenthesis is US $ in lakh
3. 1 US $ = Tk. 40.00

Appendix-A/1

Task and responsibilities of the Project Team

Tasks and responsibilities of the Project Team are described in section 5.2. The following includes the detailed job descriptions.

1.Project Director
GOB, Part-time

The Project Director (PD) has the final and overall responsibility of the achievements and performance of the project and its corresponding outputs. He responds to FPCO and BWDB. He is assisted by: BWDB staff; consultant team; augmentation team; NGO; and other Ministries.

Job Responsibilities:
- Overall responsibility of all planning/implementation/evaluationaspects of the project, including:

-surveys and data collection
-planning and design
-tendering
-land acquisition
-supervision of construction, including quality control
-operation and maintenance during construction
-monitoring and evaluation
-dissemination of information to the public
-establishment and training of ICWMC; WUG; SCWMC; CWMC
-additional programs on resource management and mitigating measures
-final reporting and production of guidelines and manuals on:
≈physical works and their operation
≈bio-resources management
≈institutional arrangements
≈social aspects
≈environmental provisions
-final evaluation of FAP 20 coordination with PD of Tangail project.

- Coordination with consultant team
- Coordination with other departments
- Coordination with district officials
- Coordination with NGOs
- Coordination with other (FAP) projects in the regions.

2.XEN (Planning)/Deputy Project Director
Long-term

Job description:
- Deputy to the Project Director
- To keep day to day liaison with the Teamleader and the Drainage Engineer of the Consultant Team.
- To organize and co-ordinate in co-operation with the Drainage Engineer of the consultant team all technical aspects of planning, design, testing and operation of water control structures.
- Additional programs of resource management and mitigation measures.
- Reportings and production of guidelines and manuals.
- Co-ordinate with other staff of project team and consultants staff.
- Monitoring, evaluation and assessment.
- Social and institutional arrangements.

3.XEN (Execution)
GOB, Long-term

Job description:
- Responsible for all the works related to implementation e.g.:

-Survey and data collection
-Tendering
-Land Acquisition
-Supervision of Construction

- O & M of Construction
- Co-ordinate with Consultant Team for implementation and O&M
- Co-ordinate with district officials, NGOs
- Support XEN (Planning) in social and institutional arrangement.

4.Agronomist
Augmented consultant, Long term

Job descriptions:
- he will be responsible to the PD
- co-ordinate with the XEN planning and XEN execution
- co-ordination with the Consultant Team: TL, Agronomist, Drainage Engineer, Sociologist, Environmental Specialists in preparation of reports, manuals and implementation programmes related to agricultural development.
- training programmes of WUG, SCWMC, CWMC.

Qualifications:
Master degree in agriculture having 15 years experiences in the related fields.

5. **Socio-Economist**
Augmented consultant, Long term

Job descriptions:
- he will be responsible to the PD
- co-ordination with the XEN planning, XEN implementation
- co-ordination with the consultant team for the need assessment and consultation process.
- to support the PR officer in dissemination of project approaches and monitor the effect of the PR activities
- co-ordinate with the Sociologist of the consultants team for his works assignments
- liason with FAP socio-economic studies
- review of reports and manuals.

Qualifications:
Masters degree in sociology/economics with 15 years experience in the relevant fields.

6. **Deputy Director, DAE**
GOB, Part time

Roles:
- Membership of Initial Compartmental Water Management Committee (ICWMC)
- Provision of information on agricultural issues
- Sanction and support for involvement of district, thana and block levels, DAE staff
- Participation in CPP training
- Review of CPP reports and recommendations
- Acting as resource people (trainers) in CPP training
- Involvement in monitoring impacts of compartmentalization
- Involvement in formation of farmer's WUGs
- Involvement in developing guidelines for O&M of the compartment
- Involvement of SMSs in setting up trials and demonstrations, production planning, input facilitation, IPM
- Support to and involvement in CPP's liaison towards national headquarters DAE and District Technical Committee (DTC).

7. **Deputy Director, BRDB**
GOB, Part time

Roles:
- Membership of the ICWMC
- Provision of information
- Sanction and support for involvement of district and thana level BRDB staff
- Participation in CPP training
- Review of CPP reports and recommendations
- Acting as resource people (trainers) in CPP training
- Involvement in monitoring impacts of compartmentalization
- Support to and involvement in CPP's liaison towards national headquarters BRDB
- Provide feedback to CPP reports and review CPP information
- Registration of LCS and EMGs for work under CPP
- Identification of landless and women's groups.

8. **Executive Engineer, LGED**
GOB, Part time

Roles:
- Membership of the ICWMC
- Provision of information of infrastructural issues
- Sanction and support for involvement of lower level LGED staff
- Review of CPP reports and recommendations
- Participation in CPP training as trainees
  Actingasresource people(trainers) in CPP training
- Involvement in monitoring impacts of compartmentalization
- Involvement in developing guidelines for O&M compartment
- Support to and involvement in CPP's liaison towards national headquarters BRDB
- Advice on long term arrangements for O&M of minor works
- Information sharing on planning and budgeting infrastructural works

9. **District Fisheries Officer, DOF**
GOB, Part time

Roles:
- Membership of the ICWMC
- Provision of information of fisheries issues
- Sanction and support for involvement of lower level DOF staff
- Review of CPP reports and recommendations
- Participation in CPP training as trainees
- Acting as resource people (trainers) in CPP training
- Involvement in monitoring effects of compartmentalization
- Involvement in developing guidelines for O&M compartment
- Involvement of specialists in setting up of trials and demonstrations
- Support to and involvement in CPP's liaison towards national headquarters DOF
- Support to CPP mitigation measures related to fisheries
- Assistance in identification of fishermen group
- Assistance in liaison with fishermen association(s).

10. **Deputy Director, Dept. of Environment**
GOB, Part time (if available)

Roles:
- Membership of ICWMC
- Provision of information of environmental issues related to water
- Review of CPP reports and recommendations
- Participation in CPP training
- Acting as resource people (trainers) in CPP training
- Incorporation compartmental guidelines in environment management planning
- Support to and involvement in CPP's liaison towards national headquarters DOE

11. **Forest Conservator, Dept. of Forest**
GOB, Part time

Roles:
- Membership ICWMC
- Review of CPP reports and recommendations
- Provision of information of forestry issues
- Sanction and support for involvement of lower level staff
- Participation in CPP training as trainees
- Acting as resource people (trainers) in CPP training
- Involvement in monitoring effects of compartmentalization
- Involvement of specialists in developing and planning social forestry
- Support to and involvement in CPP's liaison towards national headquarters.

Tasks and qualifications consultant team

Tasks and responsibilities of the consultant team are described in section 5.3. The following gives detailed job descriptions of the expatriate and national consultants.

1. **Expatriate team**

Land and Water Management Expert (Teamleader)
Expatriate, long term

Job description:

- Overall responsibility for the achievements and performance of the consultant's team and their input into the project.
- To ensure an effective and timely implementation of the Technical Assistance
- Final responsibility of all reporting of consultant team, including the progress reports, the technical reports and the final reporting on CPP-Sirajganj
- Reports to the Project Director
- Final quality control and control of financial procedures of the constructed works and control of the involvement of LCS in construction, on behalf of donor's reimbursement procedures
- To assist the Project Director on the overall execution of the project according to the objectives and the programme, presented in the ToR, taking into account adjustments agreed upon in a later stage, e.g., in the inception report
- To maintain liason with the Royal Netherlands Embassy, the FPCO and the Teamleaders of relevant (FAP) projects
- Contracting NGO and sub-consultants on behalf of the donors
- Close interaction and coordination with CPP-Tangail to ensure an effective and efficient realization of the project (e.g., monthly meetings, joint work sessions for exchange of experience).

Qualifications:
Post graduate degree in engineering, having at least 20 yrs of experience in land and water management and out of which at least 5 years in leading multidiciplinary teams in water management and rural development. Experience in Bangladesh and knowledge of Bengali would be an advantage.

Other expatriate consultants are short term:

Quality Control Engineer
Institutional Specialist
Sociologist
Environment Specialist
Economist/M&E Specialist
Expatriate, short term

He/She will have similar job description and qualifications like national counterparts. He/She will organize the work programme and guide the activities. He/She should be conversant with report writing. Experience in Bangladesh would be an advantage.

2. National consultants

Institution cum training specialist (deputy team leader)
National long term, supported by short term national (legal adviser) and expatriate.

Job description:

- To organize and coordinate the establishment of the LWMGs, in close coordination with related government agencies, BRDB, DAE and NGOs.
- To organize and coordinate the training of the LWMGs, in close coordination with NGOs and related government agencies.
- To develop and implement "institutional and legal models" for the mechanisms between the LWMGs and the relevant government agencies on a national and regional (district) level.
- To coordinate on the above issues with the responsible project team and relevant government agencies.
- To coordinate with NGOs in the establishment and training of LCS for the execution of earthwork and embankment maintenance.
- To develop models for cost recovery, including interacting with and assisting the sociologist in studies on ability and willingness to pay.
- Development and implementation of a monitoring and evaluation programme on the institutional aspects. This implies the development of indicators in coordination with the overall monitoring and evaluation expert, the collection of data (surveys) and the interpretation and the final assessment.
- Final reporting and production of guideline and manuals on institutional arrangements CPP-Sirajganj.
- Advise and assist PR officer in development information and dissemination of watermanagement approach.
- To develop, organize and coordinate training programmes in support of project and consultant team, on, e.g.:
  - NGOs on the LWMG
  - NGOs on LCS
  - farmers on crop diversification
  - farmers on integrated pest management
  - farmers and fishermen on aquaculture and pond culture development
  - households on environmental issues
  - women on upgrading skills

Qualifications:
Masters degree in public administration and/or social sciences; at least 10 years experience with government and the water sector is required.

Drainage Engineer(s)
National, long term

Job description:

- To organize and coordinate, in close coordination with the responsible project team, all technical aspects of planning, design, construction, testing and operation and maintenance of water control structures; this includes:
  - hydrologic surveys
  - mathematical modelling
  - planning and design criteria
  - development and implementation of monitoring program
  - final evaluation of performance of water control schemes
- Develop operation rules (management programs) for water management structures, in close cooperation with the institutional expert and the agronomist.
- Close coordination and exchange of experience with expatriate drainage engineer CPP-Tangail.
- To advise and assist the institutional experts on the training of local water management groups (LWMG; including water user groups and (sub-)compartment water management committees).
- To advise and assist the agronomist on all water management aspects for the development of crop diversification and irrigation programs.
- Development and implementation of a monitoring and evaluation programme on physical works and their operation. This implies the development of indicators in coordination with the overall monitoring and evaluation expert, the collection of data (surveys), the use of mathematical models for data analysis and interpretation and the final assessment.
- Final reporting and production of guideline and manuals on hydrological aspects and the design and operation of physical works for the Sirajganj compartment.

Qualifications:
Relevant engineering degree and at least 10 years field experience in hydrology, irrigation, flood control and water management systems. Knowledge and understanding of mathematical modelling is considered an advantage.

Sociologist/women in development
National, long term, supported by and in combination with short term national (women in development) and expatriate

Job description:
- To review the existing need assessment and consultation processes.
- To organize the consultation process in the remaining subcompartments and for the mitigating measures.
- To support the PR officer in dissemination of the project approach and to monitor the effect of the PR activities.
- To organize and coordinate socio-economic surveys (household surveys and other socio-economic impact surveys, e.g., on land use) and studies (cost recovery - ability and willingness to pay).
- To advise and assist the agronomist and fisheries experts in their "resource management interventions", including: demo programs on crop diversification, integrated pest management and pond culture.
- To advise and assist the institutional expert in the development and implementation of the institutional framework, including the training component.
- Liaison with Flood Action Plan socio-economic studies (FAP 12, 13, 14 and 15).
- Development and execution of a monitoring and evaluation programme on socio-economic aspects. This implies the development of indicators in coordination with the overall monitoring and evaluation expert, the collection of data (surveys) and interpretation and final assessment.
- Final reporting and the production of guideline and manuals on social issues (including: needs assessment and consultation) for the Sirajganj compartment.
- Special focus on women in development (in cooperation between sociologist and expert in women in development):
  - identify issues related to women, based -- among other things -- on the results of the need assessment survey;
  - formulate proposals for the active participation of women in the planning, implementation and O&M activities of the project;
  - formulate any mitigating measures related to affected women;
  - identify and make operational possible activities in the scope of the 5 point action plan for the autonomy of women in the Bangladesh-Netherlands Development programme:
  - enhance women's participation on a regular basis;
  - promote female staff members;
  - execute turfing and routine maintenance of embankments by women;
  - provide skill and on-the-job training for female workers;
  - create income-generating and employment possibilities for women.

Qualifications:
For the national long term and expatriate sociologist: Post-graduate degree in rural sociology and at least 10 years experience in rural development and socio-economic surveys.

For the women in development: Post-graduate degree in human development; preferably 10 years experience in women in development issues in a multidiciplinary context. Preference will be given to a female candidate.

Agronomist
National, long term

Job description:
- To develop cropping and crop diversification programmes in close coordination with farmer user groups, government agencies (in particular DAE) and the drainage engineer.
- To organize and coordinate crop-demonstration programmes.
- To organize and coordinate integrated pest management programmes.
- To organize and coordinate extension of the findings of these trials and demonstration projects.
- To advise and assist the drainage engineer in developing operation rules for the water management infrastructure.
- To advise and assist the institutional expert in establishing and training the farmer water user groups.
- Development and execution of a monitoring and evaluation programme. This implies the development of indicators in coordination with the overall monitoring and evaluation expert, the collection of data (surveys) and the interpretation and final assessment of agricultural changes and benefits.
- Final reporting on all agricultural aspect for the Sirajganj compartment.

Qualifications:
Graduate degree in agriculture, having 10 years of experience, preferably in feasibility studies.

Environment specialist
National, long term

Job description:
- Setting up an environmental assessment and impact monitoring system, for physical interventions.
- Formulation of environmental management plan and interventions.
- Develope, organize and coordinate plantation programmes on embankments and homesteads.
- To organize and coordinate extension of the findings of these trials and demonstration projects.
- Liason with FAP environmental study (FAP 16), the Ministry of Environment and other relevant government agencies.

- To assist the agronomist in the Integrated Pest Management programme.
- To coordinate with the PR official on the dissemination and awareness building on environmental considerations.
- Development and implementation of a monitoring and evaluation programme on the environmental aspects (includes surveys). This implies the development of indicators in coordination with the overall monitoring and evaluation expert, the collection of data (surveys), and the interpretation and final assessment.
- Final reporting and the production of guidelines and manuals on all environmental aspects for the Sirajganj compartment.

Qualifications:
Post-graduate degree in environmental science and at least 10 years experience in environmental planning and impact assessments.

Fishery specialist
National, short term

Job description:
- To organize and coordinate studies and trials on aquaculture and pond culture developments.
- To organize and coordinate extension of the findings of these trials and demonstration projects.
- Development and execution of a monitoring and evaluation programme on fisheries. This implies the development of indicators in coordination with the overall monitoring and evaluation expert, the collection of data (surveys) and interpretation and final assessment.
- Final reporting on fisheries issues for the Sirajganj compartment.
- Liason with the Ministry of Fisheries and other relevant government agencies.

Qualifications:
Post-graduate degree in fish biology/aquaculture with at least 5 year post-graduate experience in survey and/or management of natural fisheries in a tropical environment.

Economist/monitoring and evaluation specialist
National, short term

Job description:
- Develop a multi-criteria monitoring and impact evaluation framework based on the FPCO's guideline for project assessment and based on the specific objectives of the project. This should be done in close coordination with all disciplines involved, in particular:
  - the drainage engineer for the physical aspects;
  - the agronomist for the impacts on agriculture;
  - the sociologist for the socio-economic conditions;
  - the environmental expert for the environmental aspects;
  - the institutional expert on the aspects of water management; and
  - the fisheries expert on the impacts on fishery.

  Such a framework includes the specification of indicators for monitoring the impacts in all the relevant disciplines.
- Development and execution of a monitoring and evaluation programme on economic impacts. This implies the development of indicators, the collection of data (surveys) and the interpretation and final assessment.
- Overall assessment of all impacts of the water system interventions (infrastructure and institutional) following the multi-criteria framework for assessment and based on the contributions of the different disciplines as mentioned.
- Final reporting on economic aspects and on the overall assessment of impacts of the water system interventions in the Sirajganj compartment.

Qualifications:
Post-graduate degree in economics; at least 10 years of experience with project economics and monitoring and evaluation in a multi-disciplinary context.

Quality Control Engineer(s)
National, short term, supported by short visits of expatriate expert (one visit to establish procedures; one visit a year to review results).

Job description:
- Site supervision and quality control of all aspects of construction of physical interventions on behalf of donor's reimbursement procedures.
- Development and application of uniform procedures for site supervision and quality control procedures and criteria for CPP-Tangail and CPP-Sirajganj.
- Close interaction with monitoring procedures BWDB and coordination with corresponding officials.
- Reports to the Teamleader, copies to Project Director.
- Final reporting on the Sirajganj compartment.

Qualifications:
Civil Engineering degree and 15 years of experience in design and construction of hydraulic structures. Knowledge and understanding of different testing equipments and testing procedures.