

63

Government of the People's Republic of Bangladesh  
Bangladesh Water Development Board  
Water Resources Planning Organization

**FLOOD ACTION PLAN**  
**NORTHEAST REGIONAL WATER MANAGEMENT PROJECT**  
**(FAP 6)**

**KALNI-KUSHIYARA RIVER**  
**MANAGEMENT PROJECT**  
**FEASIBILITY STUDY**

**ANNEX L**  
**PROJECT MANAGEMENT PLAN**

Final Report  
March 1998

A-913  
A-1124  
BIN-279  
A-332(2)

FAP-6  
BIN-279  
AEL-332(2)  
E-2  
S.N-4

**SNC ♦ Lavalin International**  
**Northwest Hydraulic Consultants**

in association with

**Engineering and Planning Consultants Ltd.**  
**Bangladesh Engineering and Technological Services**

**Canadian International Development Agency**

2

**COVER PHOTO:** A typical village in the deeply flooded area of the Northeast Region. The earthen village platform is created to keep the houses above water during the flood season which lasts for five to seven months of the year. The platform is threatened by erosion from wave action; bamboo fencing is used as bank protection but often proves ineffective. The single *hijal* tree in front of the village is all that remains of the past lowland forest. The houses on the platform are squeezed together leaving no space for courtyards, gardens or livestock. Water surrounding the platform is used as a source of drinking water and for waste disposal by the hanging latrines. Life in these crowded villages can become very stressful especially for the women, because of the isolation during the flood season. The only form of transport from the village is by small country boats seen in the picture. The Northeast Regional Water Management Plan aims to improve the quality of life for these people.



## **FLOOD ACTION PLAN**

### **NORTHEAST REGIONAL WATER MANAGEMENT PROJECT (FAP 6)**



#### **KALNI-KUSHIYARA RIVER MANAGEMENT PROJECT FEASIBILITY STUDY**

#### **ANNEX L PROJECT MANAGEMENT PLAN**

Final Report  
March 1998

A-147A

**SNC ♦ Lavalin International  
Northwest Hydraulic Consultants**

in association with

**Engineering and Planning Consultants Ltd.  
Bangladesh Engineering and Technological Services**

---

**Canadian International Development Agency**

(i)

**ACRONYMS AND ABBREVIATIONS**

ADB	Asian Development Bank
BAU	Bangladesh Agricultural University
BBS	Bangladesh Bureau of Statistics
BIWTA	Bangladesh Inland Water Transport Authority
BIWTC	Bangladesh Inland Water Transport Corporation
BRDB	Bangladesh Rural Development Board
BWDB	Bangladesh Water Development Board
CDN	Canadian
CHC	Canadian High Commission (Dhaka)
CIDA	Canadian International Development Agency
DAE	Department of Agricultural Extension
DC	Deputy Commissioner
DOE	Department of Environment
DOF	Department of Fisheries
DPC	District Project Committee
DPHE	Department of Public Health Engineering
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ERD	Economic Relations Division
FMT	Field Management Team
FPCO	Flood Plan Coordination Organization
FW	Future With Project
FWO	Future Without Project
HH	Household
HYV	High Yielding Variety
HTW	Hand Tube Well
IMED	Implementation, Monitoring and Evaluation Division
KKCDMP	Kalni-Kushiyara Community Development and Monitoring Project
KKRMP	Kalni-Kushiyara River Management Project
LCS	Landless Contracting Society
LFA	Logical Framework Analysis
LGED	Local Government Engineering Department
m	metre
MLGRD&C	Ministry of Local Government Rural Development and Co-operatives
MOA	Ministry of Agriculture
MOE&F	Ministry of Environment and Forestry
MOF	Ministry of Finance
MOF&L	Ministry of Fisheries and Livestock
MOL	Ministry of Land
MOS	Ministry of Shipping
MOU	Memorandum of Understanding
MOSW&WA	Ministry of Social Welfare and Women Affairs
MOWR	Ministry of Water Resources



(ii)

NERP	Northeast Regional Water Management Project
NGO	Non-Governmental Organization
PED	Project Executive Director
PIO	Project Implementation Office
PMP	Project Management Plan
PP	Project Pro-Forma
PPRF	Project Performance Reporting Framework
PPTA	Project Preparation Technical Assistance
RBM	Result Based Management
SDE	Sub-Divisional Engineer
SE	Superintending Engineer
TA	Technical Assistance
TAPP	Technical Assistance Project Pro-Forma
Tk	Taka (Bangladesh currency. \$1 CDN=approx. Tk 30)
TNO	<i>Thana Nirbahi</i> Officer
TPC	Thana Project Committee
WARPO	Water Resources Planning Organization
WBS	Work Breakdown Structure
WR	Water Resources
XEN	Executive Engineer

## GLOSSARY

<i>beel</i>	floodplain lake that may hold water perennially or dry up during the winter season
<i>boro</i>	rice grown during the winter season
<i>dhala</i>	breaches across river banks
dry season	5 months: December-April inclusive
<i>haor</i>	depression on floodplain located between two or more rivers
<i>khal</i>	channel
<i>khas</i>	government owned land or water bodies
taka (Tk)	unit of currency, 1 US \$ = 40 taka (approx.)
wet season	7 months: May-November inclusive

## TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS	i
GLOSSARY	iii
TABLE OF CONTENTS	v
LIST OF TABLES	vii
LIST OF FIGURES	viii
 1. INTRODUCTION	 1
2. PROJECT DESCRIPTION	3
2.1 Background	3
2.2 Project Goal and Purpose	5
2.3 Logical Framework Analysis	6
3. SCOPE OF WORK	9
3.1 Work Breakdown Structure	9
3.2 Expected Results	10
3.3 Key Results and Indicators	10
3.4 Gender Strategy	11
4. PROJECT ORGANIZATION, ROLES AND RESPONSIBILITIES	13
4.1 Proposed Organization	13
4.2 Organization Chart	13
4.3 Roles and Responsibilities	14
4.3.1 Role of ADB	14
4.3.2 Role of CIDA	14
4.3.3 Role of Government of Bangladesh	15
4.3.4 Role of Consultants	22
4.3.5 Stakeholders Committees	23
4.3.6 International Contractor	24
4.3.7 Non Governmental Organizations	24
4.4 Project Implementation Schedule	24
5. RESULTS BASED PROJECT MANAGEMENT	25
5.1 The Strategy for Result Based Management	25
5.2 The Approach to Continuous Performance Monitoring	26
5.3 The Framework for Project Performance Reporting	26
5.4 Sustainability Plan	27
5.5 Operational Review or Impact Assessment	31



<b>6.</b>	<b>PROJECT BUDGET</b>	<b>33</b>
6.1	Personnel Requirements	33
6.2	Project Development and O&M	33
6.2.1	Capital Costs	33
6.2.2	Management, Engineering, Supervision and Capacity Development	38
6.2.3	Operation and Maintenance Costs	38
6.3	Monitoring Costs	41
6.4	Budget Assumptions	41
6.4.1	Capital Costs	41
6.4.2	Costs of Personnel	42
6.4.3	O&M Costs	42
	<b>REFERENCES</b>	<b>43</b>

## LIST OF TABLES

Table L.1	KKRMP Logical Framework Analysis
Table L.2	Project Performance Reporting Framework
Table L.3	Capital Costs Summary
Table L.4	Personnel Requirements
Table L.5	Costs of Non-Construction Components
Table L.6	Costs of Personnel and Expenses ('000 Tk)
Table L.7	Costs of Personnel and Expenses ('000 CDN\$)
Table L.8	Annual O&M Costs
Table L.9	Monitoring Costs



## LIST OF FIGURES

Figure L.1	Project Area
Figure L.2	District and <i>Thana</i> Boundaries
Figure L.3	Loop Cuts, Dredging and Channel Realignment Requirement - Location Map
Figure L.4	River Training, Levees and Navigation Dredging - Location Map
Figure L.5	KKRMP - Work Breakdown
Figure L.6	KKRMP - Project Organization Chart
Figure L.7	KKRMP - Implementation Schedule



## 1. INTRODUCTION

This Annex presents a brief description of the proposed Kalni-Kushiyara River Management Project (KKRMP) and describes the proposed Project Management Plan (PMP), as per CIDA's requirements, to provide the information required by GOB and funding agencies in order to proceed with the implementation phase.

This Annex is divided in 6 chapters. Chapter 2 presents a description of the project, including the Logical Framework Analysis (LFA). Chapter 3 describes the scope of work, including a Work Breakdown Structure (WBS), results, indicators and a gender strategy. Chapter 4 defines the project organization including roles and responsibilities and implementation schedule. Chapter 5 describes the Result Based Management (RBM) approach to managing the project. Chapter 6 presents the project implementation budget.

22

2

## 2. PROJECT DESCRIPTION

### 2.1 Background

The Kalni-Kushiyara River Management Project (KKRMP) covers a gross area of 335,600 ha and extends over the districts of Sylhet, Sunamganj, Moulvibazar, Habiganj and Kishoreganj in the Northeast region of Bangladesh. The Project area is shown in Figure L.1. Administrative boundaries are shown in Figure L.2.

Due to a major avulsion of the Bibiyana River, partly caused by man-made interventions, some 30 years ago, the river has experienced on-going sedimentation and instability which have led to bank and homestead erosion, pre-monsoon floods with resulting damages to rice crops, and deteriorating navigation during the dry season.

With the financial assistance of the Canadian International Development Agency (CIDA), the pre-feasibility study of this project was completed in 1994. After review, CIDA together with the Flood Plan Coordination Organization (FPCO) and the Bangladesh Water Development Board (BWDB) decided to proceed with the feasibility study.

Given the nature of the problems facing the study area, the project was formulated to meet multiple objectives, including:

- improving the river's stability and providing a more stable environment for development;
- reducing damages to agriculture by reducing pre-monsoon flood damage and improving post-monsoon drainage;
- improving living conditions along the river by reducing erosion damage to villages, and by creating flood-free village platforms, and
- improving navigation and river transportation during the dry season.

In order to meet the above objectives, the feasibility study analyzed two alternatives, including the following interventions:

- loop cuts, one at Issapur (Alternative 1 only), the second at Katkhal;
- dredging of the Dhaleswari River at two locations (Alternative 1), or in the whole reach (Alternative 2);
- dredging the Kalni River reach between Issapur and Ajmiriganj;
- constructing flood-resistant village platforms from the dredged spoil;
- constructing bank protection works at various sites;
- constructing levees along low banks to reduce spills, and
- maintenance dredging for improved navigation up to Fenchuganj.

The location of these works is summarized in Figures L.3 and L.4.



26

After the study team's investigation of the physical, social and economic impacts of the two alternatives, several conclusions became apparent:

1. Alternative 2 can not achieve the same benefits as Alternative 1. Alternative 2 results in higher upstream, pre-monsoon water levels and less flood-free land, primarily in the Ratna River floodplain area north of Madna. This results in a decrease in the net flood-free land, and hence a reduction in agricultural production which is the main economic benefit of this project.
2. Alternative 2 requires increased capital dredging, but more importantly, it requires a commitment to increased maintenance dredging over the life of the project and beyond. Further, project benefits will be lost quicker and perhaps permanently if maintenance dredging is not done properly. Given that maintenance is key to the sustainability of this project, this is believed to be a serious constraint.
3. As a result of the increased maintenance dredging, there will be a need for more disposal sites in a localized area between Issapur and Madna. Although at this time, 11 additional village platform sites have been identified, obtaining sufficient platform disposal sites could become problematic in the future.
4. Field investigations concluded that the negative impacts of Alternative 1 to two villages, Chowdanta and Bhatura can be satisfactorily compensated and mitigated in an environmental management program.

Considering the above, a decision was taken to conclude the study by focussing only on Alternative 1. Hence, the Project Management plan focuses on only Alternative 1.

The interventions proposed in Alternative 1 will significantly increase agricultural production, provide living space for the local population, protect the infrastructure against erosion and enhance economic activities through improved river transportation. However, the project will cause the displacement of families whose agricultural lands will be acquired for the loop cuts. Some negative impacts are expected for some families who will lose agriculture land for loop cut construction.

To mitigate negative impacts and enhance the positive ones, the feasibility study includes an Environmental Impact Assessment (EIA) and an Environmental Management Plan (EMP).

The EMP includes a compensation plan for land acquired for the loop cuts, crop loss during construction, and losses to fishers.

The EMP also includes an environmental protection plan which specifically includes a mitigation plan for negative impacts either during construction (local employment, labour camps), or long term (households relocation, loss of facilities), once the project is completed.

The EMP proposes enhancement measures for the protection and the enhancement of the new platforms, relocation of landless people, and fisheries.

A training plan related to environmental issues and enhancement measures and addressed to platform beneficiaries and local officials is also proposed in the EMP.

22

Finally, a monitoring program is proposed to monitor the effects of the intervention on the environment.

In order to ensure sustainability of the project during its operation and maintenance phase, a capacity development component is proposed for the institutions, agencies, organizations and groups that continue to generate benefits from the project when outside funding is expended. The product of capacity development will be functions, organizations, systems, group and people whose performance is observably improved in relation to KKRMP objectives.

The study also proposes a community development component which will assist the beneficiaries to develop platform committees and take charge of the protection, maintenance and development of their platforms.

An economic analysis of the project has been carried out in accordance with the methodology recommend by the FPCO *Guidelines for Project Assessment* (FPCO, 1992). The Economic Internal Rate of Return for Alternative 1, the base case is 17.2%. A sensitivity analysis was carried out on the main costs and benefits. A multi-criteria analysis was also performed to account for non-quantifiable benefits and disbenefits in the assessment of the project.

The project assessment concludes that the project is especially attractive because it is designed to be a multi-purpose project, which will impact on a very large and diverse number of beneficiaries in terms of source of income, increased employment opportunities, relative incomes, and women's benefits. Consequently the feasibility study recommends project implementation as soon as possible.

The total expected duration of the project is 9 years, including 2 years for the pre-construction period which includes detail design, tendering and land acquisition, and 5 years for the construction period. Another 2 years will be required to complete project performance monitoring under outside funding.

## 2.2 Project Goal and Purpose

The project goal is to enhance economic activities and the quality of life in the Kalni-Kushiyara River basin.

The purpose of the project is four-fold:

- to improve river stability;
- to improve the conditions for dry-season *boro* rice production on the Kalni-Kushiyara floodplain;
- to improve river transportation on the Kalni-Kushiyara River, and
- to create or expand village platforms.



## 2.3 Logical Framework Analysis

The Logical Framework Analysis is presented in Table L.1. It shows the path from the project inputs through the project goal and objectives to its outputs and specifies objectively verifiable indicators of achievement.

### *Inputs from ADB, Canada and Bangladesh*

It is expected that the Asian Development Bank will provide a loan to Bangladesh to implement structural measures, including preparation of tenders, construction supervision and environmental protection measures (estimated cost Tk 2,688 million or US\$ 65.5 million).

Canada will provide:

- (i) Technical Assistance (TA) for field investigations, detailed design and capacity development (estimated cost Tk 247.7 million or CDN\$ 8.0 million).
- (ii) TA for monitoring and evaluation (estimated cost Tk 56.9 million or CDN\$ 1.8 million).

Bangladesh will provide:

- (i) BWDB and other departments' counterpart personnel, their offices and residential accommodation with support and service facilities;
- (ii) local currency of Tk 121.9 million including contingencies for land acquisition required for project implementation and salaries and allowances of counterpart personnel.
- (iii) payment of taxes and duties on any imported goods provided to GOB by the project.

The above breakdown for funding is tentative only and subject to discussion between GOB and the funding agencies.

### *Outputs*

The major project outputs are:

- an improved Kalni River channel which has conveyance capacity sufficient to carry the 1:5 year pre-monsoon flood without overtopping the banks;
- a year-round class II inland water way on the Kalni-Kushiyara River between the junction with the Meghna River and Fenchuganj;
- an effective institutional setup to manage the Kalni-Kushiyara River;
- forty four erosion-protected village platforms (with another 40 platforms expected to be built during the remaining life of the project), and
- village organizations capable of protecting and maintaining the platforms.



Table L.1: KKRMP Logical Framework Analysis

NARRATIVE SUMMARY	EXPECTED RESULTS	PERFORMANCE INDICATORS	SOURCE OF VERIFICATION	KEY CRITICAL ASSUMPTIONS
<b>GOAL</b> To enhance economic activity and the quality of life on the Kalni-Kushiyara flood plain	<b>IMPACTS</b> 1. Increased employment & income 2. Improved access to food 3. Reduced transportation costs 4. Pauperization process reduced; less out-migration from the area 5. Enhanced food security for Bangladesh 6. More children attending school 7. Increased potable water & sanitation	1. No. of agricultural labour & wages 2. HHs annual income 3. Cost of trading good import 4. Distress or mortgaged land sales 5. Crop production & HHs income 6. Number of children going to school 7. Number of HTW & sanitary latrines	1. Sample area survey & <i>thana</i> statistics 2. Sample area survey 3. Market study 4. Sample survey 5. Sample survey	<b>Assumptions to be monitored</b> 1. Concentration of land in fewer hands is reduced or stopped altogether 2. Social equity of benefits <b>Risks to be addressed</b> 1. Benefits do not materialize because of no or weak O&M
<b>PURPOSE</b> To improve the conditions for: 1. River stability 2. Dry-season paddy production on the Kalni-Kushiyara flood plain 3. River transportation on the Kalni-Kushiyara River 4. To create or expand village platforms	<b>OUTCOME</b> 1. Production of <i>boro</i> paddy increased 2. Fish catch in <i>beels</i> and <i>khafts</i> increased 3. Boat traffic and transported volume of goods and number of passengers increased 4. Village safe living space increased 5. Vegetable/crop diversification occurred 6. Livestock & poultry production increased	1. Inundated area <i>Boro</i> paddy production 2. Fish catch, sales & export 3. No. & size of boat, no. passengers and volume of cargo 4. Total platform area. Effective platform protection Relocation of landless 5. Kitchen garden area 6. No. cattle, goats & chicken/ducks	1. RADARSAT imagery Sample area & market survey 2. Sample survey, DOF catch assessment survey & monitoring of fishpass 3. Survey of landings & BIWTA statistics + market survey 4. Confinement chamber survey Platform survey Relocation survey	<b>Assumptions to be monitored</b> 1. Capacity of beneficiaries to protect platforms from increased income 2. Proper monitoring of river maintenance <b>Risks to be addressed</b> 1. Paddy production below estimate 2. Major flood event requiring rehabilitation 3. Platform erosion
<b>INPUTS</b> ADB Tk 2,688 million CIDA Tk 305 million GOB Tk 122 million Work by GOB agency personnel (BWDB, BIWTA, MOL, LGED, DOF, BRDB, MOE&F, MOWA, local authorities, etc.) Work by beneficiaries of new or enlarged platforms	<b>OUTPUTS</b> 1. Kalni River channel has conveyance capacity of 1.5 year pre-monsoon flood 2. Class II inland water way on Kalni-Kushiyara River between Meghna River and Fenchuganj 3. Effective institutional setup to manage the Kalni-Kushiyara River 4. 44 erosion-protected village platforms 5. Village organizations capable of protecting and maintaining the platforms	1. Flows remain in channel for 1.5 yr flood 2. X-sections of navigation channel 3. GOB organize process for effective O&M 4. Progress of construction 5. Formation of effective village committees	1. 1:5 yr discharge @ Sherpur gauging station does not exceed bankfull 2. Periodic river surveys 3. Consultants reports & GOB record of meetings 4. Construction supervision progress reports 5. Field reports from social team	<b>Assumptions to be monitored</b> 1. Willingness of beneficiaries to dedicate land <b>Risks to be addressed</b> 1. Avulsion in Cherapur <i>khal</i> or at Shantipur before intervention 2. Major flood during construction 3. Social conflicts during construction

28

### 3. SCOPE OF WORK

#### 3.1 Work Breakdown Structure

The Work Breakdown Structure (WBS) whose schematic diagram is presented in Figure L.5 breaks the project into four major work packages, or project components, as follows:

- Management (100);
- Engineering (200);
- Environmental Management Plan (300);
- Capacity Development (400), and
- Construction (500).

Each component is further broken down into manageable second order work packages or project elements. In addition, the elements of the Management component and the O&M element under the Capacity Development component are further broken down into project activities.

The contents of each component is summarized in the following paragraphs.

##### ***Management (100)***

The goal of the Management component is to ensure best value for resources applied; by monitoring, coordinating, and controlling inputs to and outputs from the project, in accordance with the Terms of Reference.

##### ***Engineering (200)***

This component includes all the preparatory work for construction, field investigations, land acquisition process, detailed engineering, tendering, supervision of construction proper, and supervision of engineering works related to the EMP.

##### ***Environmental Management Plan (300)***

This component includes the elements of the EMP (Annex I-EIA):

- Compensation Plan;
- Environmental Protection Plan;
- Enhancement Plan;
- Contingency Plan;
- Monitoring Plan, and
- Training Plan.

An EMP will be required for this maintenance work to ensure that all work is environmentally sound. A monitoring program is proposed during the intervention and this program is to be carried out throughout the O&M period. The purpose of this monitoring program is to obtain a better understanding of the long term impacts of the project interventions on agriculture, fisheries, river transportation and economic development in the project area, and provide information on any non-anticipated changes resulting from the intervention. This activity includes the selection of variables to be monitored, identification and execution of baseline surveys, field data collection, evaluation and recommendations for adjustments of the O&M element.



### ***Capacity Development (400)***

This component includes the elements which will ensure sustainability of the project, once the intervention is completed. It includes Institutional Development which will permit the Bangladeshi governmental, non-governmental and local groups to take charge of the project once outside financing is expended. Community Development will ensure that the beneficiaries will be in a position to protect and maintain the new or extended platforms from their own resources. A certain amount of operation and maintenance will be required over a number of years, including maintenance dredging and protection and maintenance of the new or extended platforms.

### ***Construction (500)***

This component includes land acquisition for the loop cuts, implementation of the various components of the intervention and the EMP.

## **3.2 Expected Results**

It is expected that the project will increase rice production by 82,400 tonnes per year, the net economic output of which will be Tk 374.0 million per year.

The project will also re-establish navigation year-round in the Kalni-Kushiyara River. Goods transportation is estimated to increase to 671,000 tonnes per year from a future without Project (FWO) of 461,000 tonnes per year, for a net economic output of Tk 39.4 million.

The project will also create 13 new platforms and expand 31 existing platforms during the implementation phase. The total rural living space during the monsoon season will increase by 185 ha and the space available for kitchen gardens by 62 ha. About 1,250 landless families are to be relocated on the new platforms. In addition, about 40 platforms (200 ha) will be developed during the O&M period, adding some 150 ha of living space and 50 ha for kitchen gardens.

Landless employment will also increase. An estimated 1.82 million person-day/year will be generated for the employment of landless people.

## **3.3 Key Results and Indicators**

The key results are increased income for farmer and farm labourers. An average farmer will have an incremental income in cash and/or in food for family consumption of more than Tk 3,500 per year.

A second key result is better living conditions during the pre-monsoon and monsoon seasons as the homestead area of a beneficiary family will increase by some 100%. This increase in living space also has economic importance since some of the added area will be used for kitchen gardens, thus greatly improving the diet of beneficiaries during the monsoon season. They will also keep their livestock rather than selling them at the beginning of the monsoon and buying them again at the end of the monsoon for lack of adequate homestead space.

A third key result will be to provide more job opportunities to the poorest sector of the population by providing more labour opportunities in the farming sector.

Overall the key results are better living standards for farmers, platform beneficiaries and farm labourers.

22

In order to assess whether or not these key results are achieved, two indicators have been identified and will have to be monitored. They are:

- stopping altogether or at least reducing significantly the current practice of subsistence farmers making distress sales of their land to wealthy landowners as a result of crop failure, and
- reduction in out-migration of farmers.

### 3.4 Gender Strategy

In the remote project area, traditional conservative attitudes towards women have been reinforced by isolation and lack of communication. The majority of women marry between 12 and 16 years; 92% of women are non-literate. River de-stabilization, loss of the annual *boro* rice crop and homestead erosion has accelerated the process of impoverishment for women of farm families. Women of landless and destitute households are vulnerable to food insecurity. Unlike other areas of rural Bangladesh, women in most of the project area have not been exposed to targeted development programs. They have no form of gender-specific groups, and no access to education, technical knowledge or credit. Women do not participate in community organizations and in the pilot project, women have had no effective membership on the platform committees.

The KKRMP provides an excellent opportunity to introduce targeted programs to women of the project area.

#### *Women in Construction*

During project implementation, the construction contractor(s) will be mandated to engage a minimum quota of 25% women for earthwork, subject to their availability, as construction labour. Unlike the pilot project, women's labour groups will be mobilized at an early stage and encouraged to establish a savings component. During the construction finishing works, women's labour groups will be supported to negotiate direct contracts as Landless Contracting Societies (LCSs).

#### *Women on the Homestead Platforms*

Following construction, a gender component will constitute an essential element of the community development program to be provided for platform villages. Over a three year period, women will be strengthened to contribute to protection and enhancement of the new platforms, through their improved economic resources and organizational capacity. On the newly created land of the platforms, women's role in homestead production and improved living conditions will be enhanced through training in horticulture, livestock rearing, nutrition, hygiene and sanitation. On selected village platforms, poor women will be provided with credit and technical training in high-value crops, tree nurseries and latrine construction. Through their group activities and improved incomes, it is expected that women's role in household decision-making and community participation will be strengthened.

These gender-specific activities are proposed in the Kalni Kushiya Community Development and Monitoring Project (KKCDMP), an extension of the Pilot Dredging Project to be executed in the communities of Gazaria and Kakailseo. The KKCDMP will provide the experience required to design the sustainable community development and gender components of the



KKRMP. It is anticipated that during the course of the KKCDMP, suitable, gender-oriented organizations will be attracted to the larger project area for participation in the KKRMP.

*Women as Project Staff*

Affirmative action in women's employment will be implemented for all levels of project staff engaged for the KKRMP. Based on the quotas established by the GOB (Ministry of Establishment, published order No. MER/R-1/5-13/84-149 (250), dated 28/7/1985), 10% of professional staff and 15% of support staff will be women. The terms of women's employment will include maternity leave for directly hired staff. In the remote field areas of the project, female staff will be particularly supported with appropriate housing and communication facilities. Basic gender training will be provided for all levels of project staff.

## 4. PROJECT ORGANIZATION, ROLES AND RESPONSIBILITIES



### 4.1 Proposed Organization

One of two types of organization can be setup to manage the KKRMP. The first considers the deputation of staff from GOB ministries and agencies under the umbrella of a National Steering Committee (NSC). The second type consists in a semi-autonomous organization, for example an Authority, with its own budget and staff. In order to define an appropriate organization as well as identify sources of and *modus operandi* for cost recovery during the O&M phase, a seminar took place on December 1997. There was no clear consensus and in general GOB participants favoured the first approach whereas representatives of financing agencies, ADB and CIDA favoured the second one.

It is proposed to finalize this issue through a Project Preparation Technical Assistance (PPTA) whose Terms of Reference are drafted in Annex K - The O&M Phase: Institutional Arrangements and Cost Recovery. In the interim, the present document describes an organization developed along the NSC concept, as has been agreed with GOB.

### 4.2 Organization Chart

The project Organization Chart is presented in Figure L.6. According to the existing institutional arrangement, Bangladesh Water Development Board (BWDB) will be the lead implementing agency for the KKRMP. However the BWDB is mainly a civil engineering organization. The successful implementation of the KKRMP will require coordination with other GOB departments and agencies working in the area. They include the Bangladesh Inland Water Transportation Authority (BIWTA), the Ministry of Land (MOL), the Local Government Engineering Department (LGED), the Department of Public Health Engineering (DPHE), the Department of Fisheries (DOF), the Department of Environment (DOE), the Department of Agricultural Extension (DAE) and the Bangladesh Bureau of Statistics (BBS), each of which will be involved in their own area of expertise. There is also a need for full village stakeholders participation. It is also important to include in this organization, elected officials, the Members of Parliament of the constituencies benefiting from or affected by the KKRMP.

The management of the project will include the following core organizations:

- a National Steering Committee (NSC);
- a Project Implementation Office (PIO);
- three Field Offices;
- two or more Sub-Divisions per Field Office;
- advisors/consultants to the PIO and Field Offices;
- District Project Committees;
- Thana Project Committees;
- Stakeholders Committees (platform committees), and
- Non Governmental Organization(s).

The roles and responsibilities of each of these organizations as well as those of funding agencies and GOB ministries and agencies are defined in the following section.

## 4.3 Roles and Responsibilities

### 4.3.1 Role of ADB

#### *ADB Headquarters*

ADB's input to the project will be managed by a Project Officer at ADB Headquarters in Manila. ADB in Manila is responsible for:

- project appraisal;
- signing a loan agreement with GOB for the intervention;
- funds disbursement;
- liaising with GOB and CIDA;
- monitoring technical and financial project progress, and
- conducting interim and final project evaluations.

#### *ADB Resident Mission*

The ADB Resident Mission in Dhaka will:

- provide a representative to the NSC, and
- liaise with GOB and the Canadian High Commission (CHC) in Dhaka.

### 4.3.2 Role of CIDA

#### *CIDA Headquarters*

Canada's inputs to the Project will be managed by a Project Officer at CIDA Headquarters in Hull. CIDA in Hull is responsible for:

- preparing a Memorandum of Understanding which outlines the objectives of the technical assistance and the two governments' responsibilities; while preparing MOU, CIDA in HULL will consult ERD, BWDB, MOWR and other relevant ministries and organizations;
- approving invoices and controlling the disbursement of TA funds to BWDB and consultants;
- liaison with the consultants, BWDB and CHC in Dhaka on project related matters;
- monitoring the technical acceptability of TA activities and outputs, and efficiency of project administration by reviewing project reports and fielding review and supervisory missions, and
- conducting interim and final project evaluations.

#### *Canadian High Commission*

The Canadian High Commission (CHC) in Dhaka, is responsible for:

- negotiating and signing the Memorandum of Understanding with GOB for the TA;



- 24
- providing information and liaison between CIDA, BWDB and consultants as needed;
  - providing a representative to the NSC;
  - assisting the TA consultants generally, and in particular with mobilization/ demobilization of personnel, and the storage or transfer to another project, of equipment and material at the conclusion of this Project;
  - disbursements for local implementation contracts directly funded by CIDA;
  - monitoring the progress of the Project and ensuring that activities and outputs contribute to the Project's stated goals and objectives, and
  - reviewing terms of reference, arranging meetings and field trips, and reviewing reports of CIDA evaluation missions.

#### 4.3.3 Role of Government of Bangladesh

##### *Ministry of Water Resources*

The Ministry of Water Resources will be responsible for:

- liaison with the Planning Commission and the Economic Relations Division (ERD) for project approval and preparation of the Project Proforma (PP) and Technical Assistance Project Pro-Forma (TAPP);
- assigning the Secretary of MOWR to head the NSC, and
- liaison with Ministry of Land (MOL), Ministry of Shipping (MOS), Ministry of Local Government Rural Development and Cooperatives (MLGRD&C), Ministry of Fisheries and Livestock (MOF&L), Ministry of Environment and Forestry (MOE&F), Ministry of Social Welfare and Women Affairs (MOSW&WA), Ministry of Agriculture (MOA) and Ministry of Planning to provide NSC members and deputed staff from MOL, BIWTA, LGED, DPHE, DOF, DOE, DAE and Bangladesh Bureau of Statistics (BBS).

##### *National Steering Committee*

The National Steering Committee (NSC) is the highest level formation for overall policy planning, coordination and management of the KKRMP where concerned ministries and funding agencies should be represented. The Secretary of the Ministry of Water Resources (MOWR) is the NSC Chairman and the Project Executive Director of the Project Implementation Office its Member-Secretary. In addition, ADB and CIDA will be represented on the NSC, the ADB by an officer from the Dhaka Resident Mission and CIDA by an officer from the Canada High Commission in Dhaka.

Following is the proposed composition of the NSC:

- Secretary, Ministry of Water Resources (MOWR);
- Joint Secretary, Ministry of Finance (MOF)
- Joint Secretary, Ministry of Planning;
- Joint Secretary, Ministry of Land (MOL);

- 29
- Joint Secretary, Ministry of Shipping (MOS);
  - Joint Secretary, Ministry of Local Government, Rural Development and Cooperatives (MLGRD&C);
  - Joint Secretary, Ministry of Fisheries and Livestock (MOF&L);
  - Joint Secretary, Ministry of Environment and Forests (MOE&F);
  - Joint Secretary, Ministry of Agriculture (MOA);
  - Joint Secretary, Economic Relations Division (ERD)
  - Joint Secretary, Implementation, Monitoring and Evaluation Division (IMED)
  - Joint Secretary, Ministry of Social Welfare and Women Affairs (MOSW&WA)
  - Chairman, Bangladesh Water Development Board (BWDB);
  - Chief Engineer, Local Government Engineering Department (LGED);
  - Chief Engineer, Department of Public Health Engineering (DPHE);
  - Director General, Department of Fisheries (DOF);
  - Director General, Department of Agricultural Extension (DAE);
  - Director General, Department of Environment (DOE);
  - Representative of Asian Development Bank;
  - Representative of Canadian High Commission in Dhaka (CHC), and
  - Project Executive Director of Project Implementation Office (PIO).

The NSC will be based in Dhaka. Meetings will be convened by the Secretary, MOWR. The NSC will meet as and when necessary, but at least twice a year. The NSC will be responsible for:

- assessing the number and type of GOB officials to be deputed to the project and making proper arrangements accordingly;
- all policy decisions;
- approval of the Implementation Plan;
- periodic review of project progress and quality;
- approval of the land acquisition plan, and
- approval of the landless settlement plan on *khas* land.

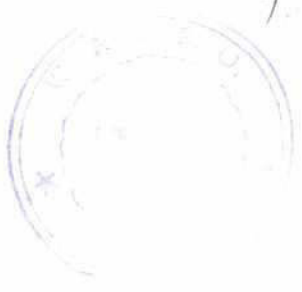
#### *Project Implementation Office*

The Project Implementation Office (PIO) will be based in Dhaka and will be the focal point for day to day implementation. The PIO will be headed by a Project Executive Director (PED) with the rank of Chief Engineer (CE) of the BWDB.

The PIO will undertake field operations of the project, through a Director who will be a Superintending Engineer (SE) of the BWDB, and will be based in the PIO office. The office of the Project Executive Director will also be the headquarters for project staff deputed from GOB partner agencies. These officials will be deputed from the following Ministries/agencies for optimal coordinated performance of the project:

- Ministry of Land (MOL);
- Bangladesh Inland Water Transport Authority (BIWTA);
- Local Government Engineering Department (LGED);



- 29
- 
- Department of Public Health Engineering (DPHE);
  - Bangladesh Rural Development Board (BRDB);
  - Department of Fisheries (DOF);
  - Department of Women Affairs (DOWA);
  - Department of Agricultural Extension (DAE);
  - Department of Environment (DOE), and
  - Bangladesh Bureau of Statistics (BBS).

Responsibilities of the PIO will include:

- direct liaison with the NSC;
- assistance to MOWR in approval of expatriate personnel to the project, issuance of project passbook, preparation of project documents;
- implementation of:
  - planning;
  - land acquisition;
  - design;
  - development of tender documents, tendering, bid review and contract award;
  - preparation of Implementation Plan, and
  - construction supervision.
- approval of contractors invoices;
- disseminating information on planning, implementation, operation and maintenance of the Project;
- seeking people's active participation;
- supervising land acquisition process and recommendation of approval of land acquisition plan by NSC;
- approval of land dedication plan;
- solving constraints and impediments to the implementation of the project;
- ensuring that the local landless people, including women, are benefitted from the project through employment opportunities, as this stage represents a period of capital inflow into the project area;
- integrating consultants' activities and reviewing consultants reports;
- reporting to the NSC, and
- liaison with the BWDB and the District Project Committees.

### *Field Offices*

Actual implementation of activities will be done through three Field Offices responsible respectively for the Kalni-Kushiyara River Lower Reach, Middle Reach and Upper Reach. Each Field Office will be headed by an Executive Engineer (XEN) of the BWDB. He will directly report to the Director. The Field Office will also include deputed personnel from MOL, LGED, DPHE, DAE, BRDB, DOF, DOE and members of the consulting groups. Together they will form the Field Management Team (FMT).

Each Field Office will have one or more Sub-Divisions depending on the number of construction sites and the volume of work. Each Sub-Division will be headed by a Sub-Divisional Engineer (SDE) of the BWDB.

The field offices will be responsible for all field work, including:

- cadastral survey for the intervention;
- staking land for construction sites;
- liaison with stakeholder committees to involve local residents in project activities;
- preparation of the land acquisition plan;
- preparation of land dedication plan and recommendation for approval by the PIO;
- supervision of construction;
- preparation of progress reports for PIO information and review;
- verification of contractors invoices and recommendation to the PIO for payment;
- reporting to the PIO, and
- liaison with the District Project Committees at the level of the Project Office and with Thana Project Committees at the level of the sub-division.

### *Project Committees*

In order to ensure the smooth implementation of the project, participation and assistance of the field level GOB officials and the people's representatives is imperative. This is also necessary in the context of social acceptance of the project and conflict resolution. Project Committees are recommended in this context in accordance with the *Guidelines for People's Participation in Water Development Projects* (MOWR, 1994). Two levels of Project Committees are recommended, at the district level and at the *thana* level. District Project Committees will assist the project in resolving those issues which cannot be settled by Thana Project Committees.

### *District Project Committees*

For each district located in the project area, there will be a District Project Committee (DPC). The DPC will in the future be headed by the elected chief of the District Council. Until such a Local Government system is formalised, the Deputy Commissioner (DC) will be the head of the DPC. All district level officials of the GOB partner agencies will be members of the DPC, while the XEN will function as the Member-Secretary of the DPC.

২৩

Responsibilities of the DPC will include:

- facilitating land acquisition, both private and *khas* land;
- facilitating settlement of landless people;
- assisting in resolving social conflicts, and
- assisting the village beneficiaries (stakeholders) in the maintenance of the village platforms.

#### ***Thana Project Committee***

At the *thana* level, the *Thana Nirbahi* Officer (TNO) will be the Chairperson of the Thana Project Committee (TPC) until the *thana* level Local Government structure is formalised. *Thana* level officials of the partner GOB agencies will be members of the TPC, while the SDE will be its Member-Secretary. Representatives of the stakeholder community at the grass roots level, such as, the Platform Committees, will also be members of the TPC.

Responsibilities of the TPC will include:

- facilitating the land dedication program with platform beneficiaries;
- identifying problems and issues related to the acquisition of *khas* land;
- assisting the project team in the preparation of the plan to resettle landless people;
- assisting the project team to disseminate information to the local population and for public participation, and
- assisting the stakeholders in the maintenance of the village platforms.

#### ***Ministry of Water Resources***

The Ministry of Water Resources will be responsible for:

- nominating the Chairman of the NSC, and
- nominating the Chairman of the BWDB as a member of the NSC.

#### ***Bangladesh Water Development Board***

Although the project is managed by the NSC and the PIO, the BWDB, as the implementation agency, has the leading role in the project.

BWDB's specific responsibilities include:

- providing a Project Executive Director (Chief Engineer), a Director (Superintending Engineer), Field Offices Officers (Executive Engineers and Sub-Divisional Engineers), staff from the Land and Water Use Directorate, professional technical staff, whose salaries are to be paid by GOB;



- 60
- clearing materials imported for BWDB through customs (including tax and duty payment);
  - monitoring consultants' activities and reviewing consultants reports;
  - assisting the PIO in preparing the land acquisition plan;
  - making payment to MOL for land acquisition;
  - approving design, tender documents and, through the PIO, award tenders;
  - procuring and delivering construction materials and equipment to construction sites, and
  - reviewing and approving contractors invoices and making payments;

#### ***Ministry of Shipping***

The Ministry of Shipping will be responsible for:

- nominating a member to the NSC;
- clearance from BIWTA and BIWTC (Bangladesh Inland Water Transport Corporation) for dredging, and
- deputing staff to the PIO and Project Offices for planning, design and supervision of the channel improvement component.

#### ***Ministry of Land***

The Ministry of Land will be responsible for:

- nominating a member to the NSC;
- deputing staff to the PIO and Project Offices, who will:
  - assist in the preparation of the land acquisition plan;
  - assist in identifying *khas* land, and
  - assist in the settlement of landless people.
- clearance of the land acquisition plan, and
- payment of land acquired from their owners.

#### ***Ministry of Local Government Rural Development and Cooperatives***

The Ministry of local Government Rural Development and Cooperatives will be responsible for:

- nominating a member to the NSC as well as nominating the Chief Engineers of LGED and DPHE as members;
- deputing staff from LGED, BRDB and DPHE to the PIO and project offices, who will:
  - acquire knowledge on raised platforms from the experience of the Kalni-Kushiyara Pilot Dredging Project, in a first phase;

- assist in the formation of village committees in a second phase, and
- liaise with these villages committees in the frame of LGED, BRDB and DPHE programs in a third phase.

#### ***Ministry of Fisheries and Livestock***

The Ministry of Fisheries and livestock will be responsible for:

- nominating a member to the NSC as well as the Director General of DOF as member, and
- deputing DOF personnel to PIO and Project Offices, who will:
  - participate in the planning, design, operation and monitoring of the Koyer Dhala fishpass structure, and
  - assist in the development of fisheries enhancement measures (eg. culture ponds in the ox-bow lakes of the Kalni channel).

#### ***Ministry of Environment and Forestry***

The Ministry of Environment and Forestry will be responsible for:

- nominating a member to the NSC as well as nominating the Director General of the Department of Environment as a member, and
- deputing personnel to PIO and Project Offices, who will ensure that the construction activities are executed in accordance with the Project's Environmental Management Plan.

#### ***Ministry of Agriculture***

The Ministry of Agriculture will be responsible for:

- nominating a member to the NSC as well as nominating the Director General of the Department of Agricultural Extension as a member, and
- deputing DAE personnel to PIO and Project Offices, who will be trained by the Monitoring Consultant in assessing Project's long-term impacts on agriculture production in order to take over long-term monitoring once the implementation phase is complete.

#### ***Ministry of Planning***

The Ministry of Planning will be responsible for:

- nominating a member to the NSC from the Planning Commission, from IMED and BBS, and
- deputing BBS personnel to PIO and Project Offices, who will be trained by the Monitoring Consultant in assessing Project's long-term impacts on river transportation, employment and income in order to take over long-term monitoring once the implementation phase is complete.



02

### *Ministry of Finance*

The Ministry of Finance will be responsible for:

- nominating a member to the NSC from the Economic Relations Division (ERD);
- signing through ERD the MOU on behalf of GOB, and
- timely allocation of funds for the successful implementation of the KKRMP.

### *Ministry of Social Welfare and Women Affairs*

The Ministry of Social Welfare and Women Affairs will be responsible for:

- nominating a member to the NSC, and
- deputing MOSW&WA personnel to PIO and Project Offices to monitor the application of GOB's gender policy.

#### **4.3.4 Role of Consultants**

##### *Main Consultancy*

The main consultancy will in part be funded from the ADB loan, in part from the CIDA TA budget. The consultancy will consist of Canadian/International Consultants assisted by Bangladeshi Consultants. The main Consultancy is responsible for:

- Maintaining a full complement of BWDB-approved foreign and local staff;
- assisting and advising the PIO on:
  - a review of pre-project baseline data and collection of missing data as required;
  - land acquisition and land dedication, formation of villages committees;
  - People's participation;
  - field investigations and river surveys;
  - detailed design;
  - preparation of tenders, evaluation of contractors' bids and preparation of contract documents;
  - construction supervision and quality control of all components of the intervention, dredging, loop cuts, construction of platform confinement chambers, levees, revetments and structures, and
  - Environmental Management Plan (EMP), with the exception of the monitoring components, which are under the responsibility of the Monitoring Consultant. The monitoring components under the responsibility of the Main Consultant are: water quality of effluent during dredging, river processes, social and gender, and people's participation;
- dissemination of information;
- On-the-Job training;
- participation in the Result Based Management (RBM) reporting to the NSC and funding agencies;

- preparation of monthly and quarterly progress reports, annual work plans, technical reports, and project completion report, and
- preparation and implementation of a capacity development program including both institutional development and community development components to ensure sustainable management and development of the Kalni-Kushiyara River.

#### ***Monitoring Consultant***

The monitoring consultant will be a Bangladeshi firm which will execute its mandate with Foreign Advisors, until it acquires all information and skills to eventually carry out the work independently. The Monitoring Consultant will be responsible for measuring the project's bio-physical and socio-economic outcome of the intervention in the benefited area. In order to achieve this objective, the Monitoring Consultant will:

- be responsible for the monitoring of agricultural, fisheries and navigation long- term benefits;
- design a monitoring framework;
- verify existing baseline data and collect supplementary as required;
- for agriculture, select one or more sample area, carry out annual surveys;
- for navigation, carry out annual surveys of major landings, obtain BIWTA statistics and information from boat owners associations;
- for fisheries, select one or more sample areas, carry out annual surveys of fish catch, market studies and survey of fish export from processing plant. Obtain annual fish catch assessment from DOF and annual *thana* statistics on fisheries. Monitor fish migration during pre-monsoon and monsoon season in the Koyer Dhala fishpass and develop fisheries enhancement program;
- train BBS staff deputed to the project in the monitoring of the project's long-term impacts, and
- compile and issue annual reports documenting the results of the surveys.

#### **4.3.5 Stakeholders Committees**

The stakeholder community will have their own committees at the grass roots level. This will assume the form of a platform society at the village level of a disposal site, or a beneficiary committee formed around a water management structure (e.g. Koyer Dhala). They will directly liaise with the TPC as well as the SDE.

The stakeholders committees will assist the project in:

- land dedication from future platform beneficiaries;
- defining the exact location of platforms and the alignment of confinement chamber dykes;

- handing over of platforms to beneficiaries, and
- maintenance and protection of platforms and other structures by beneficiaries.

#### **4.3.6 International Contractor**

The international Contractor will execute the dredging work and construction of platform as per the Contract.

#### **4.3.7 Non Governmental Organizations**

Although the presence of NGOs in the project area is at present minimal, NGOs will be approached to participate in the community development aspects of the project as sub-contractors to the Consultant under the TA.

The role of the NGO(s) will be:

- to motivate the platform beneficiaries to protect their platforms;
- to train the beneficiaries, particularly women, in income generation activities so that they can protect and maintain their platform from their own resources once project support is phased out for platform protection and maintenance, ie. after 3 years, and
- to assist platform beneficiaries in the development of credit schemes, horticulture, livestock and other vocational incomes.

#### **4.4 Project Implementation Schedule**

The project implementation schedule is presented in Figure L.7. The project is assumed to run for a period of seven years. The first 2 years are allocated to land acquisition for the loop cuts, detailed engineering and tendering. This period is followed by 5 years for the construction proper. Monitoring of project's impacts is carried out under external funding for another 2 years.



## 5. RESULTS BASED PROJECT MANAGEMENT

### 5.1 The Strategy for Result Based Management

It is proposed that the KKRMP adopt the Result Based Management (RBM) approach. This approach emphasize results and products rather than activities and inputs in the management of the project and reporting to GOB and funding agencies. "Results" are objectively verifiable events that occur at different stages along a cause-and-effect chain of events initiated by particular project activities. At initial stages of the KKRMP, management and reporting may focus only on project activities, inputs and outputs. But as the Project progresses, data collection, analysis and reporting must shift attention from project outputs to results towards Bangladesh sustained benefits, short-term effects and longer term impacts beyond the life of the Project. The following represents a results chain :

Activities/Inputs → Outputs/Products → Outcomes → Benefits → Effects → Impacts
--

Results at any level, ie. outputs (immediate results from the project), outcomes (results once the project is completed) and impact (long term results) can be identified by performance indicators. These indicators, in turn may be direct measures or estimates of results, such as river level for a given river flow to measure the effectiveness of river training (an output), *thana* estimates of rice production to measure an increase in rice production (an outcome) or amount of distress sales of land to measure the reduction in the pauperization process (an impact). Or they may be indirect measures or estimates, such as estimates of persons per square metre of shelter space as an indicator of improved human settlements (an outcome). Indicators should be quantified and qualified in terms of location, people involved and date of planned achievement.

For the KKRMP, the inputs, outputs, outcomes and impact have been identified as well as performance indicators and the source(s) of verification of each indicators. These are presented in Table L.1. Table L.1 also presents the assumptions which are to be monitored at each level as well as the risks to be addressed.

The first activity in developing the RBM for the KKRMP will be to establish a framework for results including the review and revision as required of performance indicators and the collection and/or maintenance of baseline information to track performance.

The KKRMP, in its initial phase will set detail targets for the production and monitoring of results (eg. number of platforms built, agricultural area protected from pre-monsoon flood, etc. over a period) and evaluate the status of the indicators on the target date.

With respect to baseline data and information, NERP has already collected and processed, in the context of the KKRMP feasibility study, a wealth of data and information. In the early phase of the project, it is proposed to evaluate the existing pre-project baseline data to determine its completeness and adopt for a particular indicator, an alternate data collection approach if the associated existing data is deemed insufficient or deficient. A description of the baseline data and information readily available and supplementary data required in the early stage of the implementation is provided in Annex I - Environmental Impact Assessment.



## 5.2 The Approach to Continuous Performance Monitoring

The approach to continuous performance monitoring will be to identify constraints to the performance of the project, the state of the critical assumptions which are to be monitored, changes in strategies or in indicators, and uncertainties and risks. Whenever necessary, appropriate action will be taken to redirect the project to its planned performance.

Formation of the NSC in the project organization has been designed to avoid inter-ministerial conflicts (Figure L.6). The NSC is also designed to deal with constraints such as non-performance of contractors, delays in delivery and the participation of platform beneficiaries and the affected local population. In this later instance any social conflict is to be dealt with by the Platform Committees, then if required, by the Thana Project Committee and eventually by the District Project Committee.

At the early stage of the project, the framework for performance monitoring will be designed and the performance indicators presented in Table L.1 will be reviewed and revised as required. This is a critical step, as the baseline data has to correspond to the indicator which is to be measured. Any change in indicator at a later stage will have to ensure that the corresponding baseline data has been collected.

Iteration points which allow for changes in the results and the indicators will be specified. For each indicator, the timing of iteration point will be immediately after the review of the report on this particular indicator (Section 5.3).

The critical assumptions listed in Table L.1 will be assessed to determine if they are all under project control. Deviations from these assumptions indicate that the project is not performing as intended. Necessary action will be taken to ensure intended performance.

There are two types of risks in this project, those which can be controlled by the Project, such as social conflicts, and those which are not under its control, such as major flood during construction or in the post construction period. The first type of risks will be handled as critical assumptions. For the second type of risks, damages and/or disbenefits will be estimated and rehabilitation recommended.

The risk of a major avulsion in the Cherapur *khal* or at Shantipur is a pre-project risk. It is also critical because a major avulsion may compromise the project and also affect very seriously the lower Kalni and the Baulai River, the current major transportation route. Early implementation of the KKRMP will avert this risk.

## 5.3 The Framework for Project Performance Reporting

The framework for KKRMP Performance Reporting is presented in Table L.2. Project Performance Reporting Framework (PPRF). This Table carries over some of the information presented in the LFA, ie. expected results, results or performance indicators, data sources. The Table also defines reporting responsibilities and the reporting means and schedules.

9

Each report will:

- present the current results of the performance indicator reported on;
- identify constraints;
- describe any lesson learned regarding project management or issues external to the project, and
- provide a disbursement schedule.

The time of the completion of the report review will be the time of the iteration point which will allow for change in result statements and the indicator.

#### 5.4 Sustainability Plan

According to the project schedule (Figure L.7), the intervention is to last 7 years, 2 for the pre-construction phase, 5 for the construction phase. At the end of this period, the support of the ADB and the assistance from the Main Consultant will be phased out and GOB agencies and beneficiaries will take charge. The monitoring phase will last another 2 years, at which time CIDA support and assistance from the Monitoring Consultant will be phased out and BBS will take charge of long-term monitoring.

Annual O&M will basically include, at a smaller scale, the same type of work that will be carried out under the project intervention, ie. maintenance dredging, land dedication, construction of new or extension of existing platforms, repair and maintenance of platforms, levees, revetments, structures. In order to manage this annual O&M, which will require the same institutions whose participation has been identified to carry out the Project, it is tentatively proposed to keep the organizational structure presented in Figure L.6, with reduced staffing. In particular, a single Field Office may be sufficient to carry out all the work.

In order to ensure sustainability, a Capacity Development (CD) component is included in the Project (Figure L.5). This components include three elements:

- Institutional Development, addressed to institutions which form the structure of the project organization;
- Community Development, addressed to the new or extended platform beneficiaries, and
- O&M process.

Table L.2: Project Performance Reporting Framework

<b>Project Goal:</b>	To enhance economic activity and quality of life on the Kalni-Kushiyara flood plain.			
<b>Project Purpose:</b>	To improve the conditions for river stability, dry season paddy production, river transportation and to create or expand village platforms.			
Expected results	Results indicators	Data sources	Reporting Responsibility	Reporting means & schedule
<u>Impact-Level</u>				
Increased employment and income	Number of agricultural labour and rates	Sample area survey of agricultural labour and income <i>Thana</i> statistics on employment & income	Monitoring Consultant/BBS	Annual report
Improved access to food	Household annual income	Sample area survey	Monitoring Consultant/BBS	Annual report
Reduced transportation costs	Cost of trading goods import	Market study for trading goods	Monitoring Consultant/BBS	Annual report
Pauperization process reduced	Distress land sales + longitudinal studies of selected poor HHs	Sample area survey	Monitoring Consultant/BBS	Annual report
Enhanced food security	<i>Boro</i> crop production & household income	Sample area survey	Monitoring Consultant/BBS	Annual report



Table L.2: Project Performance Reporting Framework (Cont'd..)

Expected results	Results indicators	Data sources	Reporting Responsibility	Reporting means & schedule
<u>Outcome-Level</u>				
Production of <i>boro</i> paddy increased	<i>Boro</i> paddy inundated area <i>Boro</i> paddy production	Pre-monsoon RADARSAT imagery Sample area survey, local market study, annual <i>thana</i> statistics	Monitoring Consultant	Annual report
Fish catch in <i>beels</i> and <i>khals</i> increased	fish catch, sales and export	Sample surveys of fishers' catch, Market survey and volume of export of fish processing plants DOF annual catch assessment surveys and annual <i>thana</i> fisheries survey Monitoring of Koyer Dhala fishpass	Monitoring Consultant	Annual report
Boat traffic and transported volume of goods and number of passengers increased	Fish migration  Number and size of boats Number of passengers and volume of cargo	Survey of major landings BIWTA annual statistics Interview with boat owners associations	Monitoring Consultant	Annual report
Village living space increased	Total platform area Effective platform protection Relocation of landless	Confinement chamber survey Field survey from PIO social team Field survey from PIO social team	PIO Construction Supervisor PIO social team Supervisor PIO social team Supervisor	Bi-yearly report

Table L.2: Project Performance Reporting Framework (Cont'd..)

Expected results	Results indicators	Data sources	Reporting Responsibility	Reporting means & schedule
<u>Output-Level</u>				
Kalni River has conveyance capacity of 1:5 year pre-monsoon flood	Pre-monsoon Flows remain in channel for 1:5 yr flood	BWDB Sherpur gauging station discharge record Extent of flooded area from Radarsat imagery	BWDB Moulvibazar Circle PIO WR team Supervisor	Annual report Annual report
Class II inland water way on K-K River between Meghna River and Fenchuganj	X-section of navigation channel: Width = 50 m, LAD = 2.4 m	Pre-monsoon & post-monsoon river surveys	PIO during construction period	Bi-yearly reports and bathymetric charts
Effective institutional setup to manage K-K River	GOB organize process for effective O&M	Consultant's reports and GOB minutes of meeting	Main consultant	Bi-yearly report
44 erosion-protected village platforms	Progress of construction	Construction progress reports Contractors invoices	Construction Supervisor Dredging contractors	Quarterly Report As per contract
Village organization capable of protecting maintaining platforms	Formation of effective village committees	Field reports	Supervisor of social team within PIO	Quarterly

82

Capacity development will begin with initial assessments of the priorities for capacity development. Once these priorities have been ranked, an iterative model for capacity development will be adopted which is described in Annex K - Capacity Development.

It should also be noted, that during the course of the implementation some of the agencies participating directly to the KKRMP are likely to receive external support for capacity development and institutional strengthening. As an example, the World Bank is currently developing a project with GOB to strengthen the capabilities of BIWTA for navigation dredging. The program includes Operation Improvement, Institutional Development, Financial Recovery and Strategic Plan Components.

One important issue that will be addressed during the implementation phase will be the performance of the organization put in place for the management of the project. Modification will be recommended as required for the structure of the organization which will manage the O&M phase.

### 5.5 Operational Review or Impact Assessment

Impact assessment of the KKRMP will be the responsibility of the Monitoring Consultant up to 2 years after the end of the implementation phase. One of the functions of this Consultant will be to train counterpart BBS personnel who will take charge of this assessment thereafter. In particular, data collection will be the responsibility of BBS *thana* officers. The frequency of data collection, processing and reporting will have to be finalized during project implementation but it is tentatively expected to be every 3 to 5 years. The assessment will cover agriculture, fisheries, navigation, income and employment benefits.



CP

## 6. PROJECT BUDGET

### 6.1 Personnel Requirements

The personnel assigned to the project will consist of GOB deputed professional and support staff, foreign long-and short-term advisors, local consultants and consultants' support staff. Table L.4 presents the person-months allocation of GOB personnel, foreign consultants, local consultants and support staff by position. For each position, the allocation is broken down by element of components 200 (Engineering) and 400 (Capacity Development) of the WBS.

### 6.2 Project Development and O&M

#### 6.2.1 Capital Costs

The capital cost estimates for Alternative 1, excluding Study Costs (Section 6.2.2), are Tk 2,496 million, 80.5 Canadian dollars or 60.9 million US dollars. These costs are presented by intervention component in Table L.3. 1997 exchange rates used in this table and other cost tables presented in this Annex are Tk 31 per Canadian (CDN) dollar and Tk 41 per U.S. dollar.

Table L.3: Capital Costs Summary

Component	(million Tk)	(million CDN \$)	(million (US\$))
Channel Dredging	603.36	19.463	14.716
Issapur Loop Cut	455.32	14.688	11.105
Katkhal loop Cut	513.40	16.561	12.522
Channel Realignment	35.38	1.141	0.863
Homestead Platforms	298.45	9.627	7.279
River Training Works	110.67	3.570	2.699
Levees	10.86	0.350	0.265
Regulators	23.17	0.747	0.565
Madna Closures	1.45	0.047	0.035
EMP	57.60	1.858	1.405
<b>BASE COST</b>	<b>2,109.66</b>	<b>68.053</b>	<b>51.455</b>
Physical Contingencies	316.45	10.208	7.718
<b>SUB-TOTAL</b>	<b>2,426.11</b>	<b>78.261</b>	<b>59.173</b>
Land Acquisition	70.02	2.259	1.708
<b>TOTAL</b>	<b>2,496.13</b>	<b>80.520</b>	<b>60.881</b>

Table L.4: Personnel Requirements

Position	No	Total Const.	Mangement	Field Invest.	Land Acqstn	Detail Design	Tendering	Const. Supv.	EMP	Inst Dev	Comm. Dev	Monitoring	Total
(person-months)													
<b>BWDB OFFICIALS-Dhaka</b>													
Chief Engineer	1	84	30		6	2	6	24	8	8		1	85
Executive Engineer	1	84	30		6	2	6	24	8	8		1	85
Sub-divisional Engineer	1	84	24	5	6	2	6	25	8	8		1	85
Design Engineer	2	48				48							48
Geo-technical Engineer	1	24				24							24
Dredging Engineer	1	18					6	12					18
Morphological Engineer	1	84		12		12			30	30			84
Accountant	1	84	84										84
Support Staff	8	192	192										192
<b>DEPUTED PERSONAL-Dhaka</b>													
(person-months)													
Fisheries Expert	1	24							12	12		63	87
Navigation Expert	1	24								24		30	54
LGED	2	48							24	24			48
LAND	3	72			72								72
Environment	1	60							30	30			60
Women Affairs	1	48							24	24			48
Statistical Officer	1	0										30	30



Position	No	Total Const.	Mangement	Field Invest.	Land Acqstn	Detail Design	Tendering	Const. Supv.	EMP	Inst Dev	Comm. Dev	Monitoring	Total
(person-months)													
<b>BWDB FIELD OFFICE (3)</b>													
Superintending Engineer	1	84	17	12	2		2	43		8		1	85
Executive Engineer	3	203	16	16	16			114		41		3	206
Sub-divisional Engineer	6	385	31	31	31			215		77		6	391
Section Officers	12	720		115	58			403		144		12	732
Surveyor	6	360		108	72			180					360
Dredging Engineer	2	12						12	0				12
Jr. Morphological Engineer	2	168						134		34			168
Senior Agronomist	1	60							15	15	30	30	90
Senior Soil Scientist	1	60							15	15	30	30	90
Junior Agronomist	4	240							60	60	120	32	272
Land and Water Persons	6	360							90	90	180		360
Int. Fisheries Biologist	1	0										42	42
Jr. Fisheries Biologist	1	0										8	8
Jr. Navigation Officers	2	0										16	16
Int. Statistical officer	2	0										60	60
Jr. Statistical Officer	2	0										48	48
<b>TOTAL GOB</b>	<b>80</b>	<b>3,631</b>	<b>424</b>	<b>299</b>	<b>269</b>	<b>91</b>	<b>26</b>	<b>1,184</b>	<b>325</b>	<b>653</b>	<b>360</b>	<b>414</b>	<b>4,045</b>

84

Position	No	Total Const.	Mang- ement	Field Invest.	Land Acqstn	Detail Design	Tend- ering	Const. Supv.	EMP	Inst Dev	Comm. Dev	Monit- oring	Total
(person-months)													
<b>FOREIGN CONSULTANTS</b>													
Team Leader	1	84	24			10			18	12	20		84
Construction Engineer	1	60						60					60
Geotechnical Engineer	1	12				2		10					12
River/Sediment Engineer	1	14				5			9				14
Design Engineer	1	24				24							24
Specifications Writer	1	6					6						6
Dredging Specialist	1	3					3						3
Navigation Specialist	1											2	2
Fisheries Specialist	1	6							6			2	8
Environment Specialist	1	14							14			2	16
Agriculture Adviser	1											3	3
Development Economist	1											3	3
Community Dev/Gender Spec.	1	84			3						81		84
Institutional Specialist	1	48								48			48
<b>TOTAL FOREIGN</b>	<b>14</b>	<b>355</b>	<b>24</b>	<b>0</b>	<b>3</b>	<b>41</b>	<b>9</b>	<b>70</b>	<b>47</b>	<b>60</b>	<b>101</b>	<b>12</b>	<b>367</b>

Position	No	Total Const.	Mang- ement	Field Invest.	Land Acqstn	Detail Design	Tend- ering	Const. Supv.	EMP	Inst Dev	Comm. Dev	Monit- oring	Total
(person-months)													
<b>LOCAL CONSULTANTS</b>													
Water Resources Planner	1	84		3		19	6		28	14	14		84
Sediment Engineer	1	24		4		4			16				24
Jr. Sediment Engineer	2	168		56					112				168
Sr. Design Engineer	1	60				60							60
Mid. Design Engineer	1	60				60							60
Environment Expert	1	36							18		18		36
Jr. Environment	2	168							84		84		168
Fisheries Expert	1	12							6		6	60	72
Jr. Fisheries Biologist	6											132	132
BAU/Dhaka Experts	1	8							4		4	4	12
Agronomist	1	12							6		6	30	42
Navigation Expert	1	12							12		12	30	42
Land Survey Monitor	1	24							12		12		24
Socio-economist	1											30	30
Training Specialist	1	24								24			24
Institutional Specialist	1	24								24			24
Sr. Anthropologist	1	84									84		84
Gender Specialist	1	60									60		60
Community Organizers	15	1260			332						928	80	1,340
<b>TOTAL LOCAL CONSULT.</b>	<b>40</b>	<b>2,119</b>	<b>0</b>	<b>63</b>	<b>332</b>	<b>143</b>	<b>6</b>	<b>0</b>	<b>298</b>	<b>62</b>	<b>1,216</b>	<b>366</b>	<b>2,485</b>
(person-months)													
<b>SUPPORT STAFF</b>													
Technical Support	21	192		32	32				64		64	308	500
Logistics & Administration	32	2,640	572	204	204			768	357	178	357	444	3,084
<b>TOTAL SUPPORT STAFF</b>	<b>53</b>	<b>2,832</b>	<b>572</b>	<b>236</b>	<b>236</b>	<b>0</b>	<b>0</b>	<b>768</b>	<b>421</b>	<b>178</b>	<b>421</b>	<b>752</b>	<b>3,584</b>



### 6.2.2 Management, Engineering, Supervision and Capacity Development

As discussed in Section 6.1, the personnel required for the management, engineering, construction supervision and capacity development will be seconded from GOB and hired from the private sector. A summary of these costs is presented in Table L.5. The costs are presented in more detail in Tables L.6 (Tk) and L.7 (CDN\$).

**Table L.5: Costs of Non-Construction Components**

Item	Government of Bangladesh			Consultants		
	('000 Tk)	('000 CDN\$)	('000 US\$)	('000 Tk)	('000 CDN \$)	('000 US\$)
Management	4,532	146	111	28,039	904	684
Field Investigations	2,396	77	58	7,631	246	186
Land Acquisition Process	3,389	109	83	13,773	444	336
Detailed Design	1,240	40	30	56,952	1,837	1,389
Tendering	364	12	9	8,707	281	212
Construction Supervision	13,162	425	321	74,873	2,415	1,826
EMP Process	3,768	122	92	73,185	2,361	1,785
<b>Sub-Total: Study Costs</b>	<b>28,851</b>	<b>931</b>	<b>704</b>	<b>263,160</b>	<b>8,488</b>	<b>6,418</b>
Institutional Development	7,431	240	181	62,465	2,015	1,524
Capacity Development	3,648	118	89	120,654	3,892	2,943
<b>Total Non-Construction Costs</b>	<b>39,960</b>	<b>1,289</b>	<b>974</b>	<b>446,279</b>	<b>14,395</b>	<b>10,885</b>

### 6.2.3 Operation and Maintenance Costs

The O&M costs are divided into 3 broad categories:

- annual maintenance dredging;
- physical components, and
- village platforms.

The O&M costs were estimated on the basis of *FPCO Guidelines* (1992) and pilot project experience. These costs cover technical staff, departmental overheads, maintenance of physical components and replacement of items subject to normal wear and tear. A summary of the O&M cost is presented in Table L.8. A contingency of 15% has been added to the costs presented in this table for the economic analysis.

**Table L.8: Annual O&M Costs**

Year	(million Tk)	(million CDN \$)	(million US\$)
8-10	116.89	3.771	2.851
11-13	107.47	3.467	2.621
14-17	98.05	3.163	2.391
18-30	90.48	2.919	2.207

Table L.6: Cost of Personnel and Expenses ('000Tk)

Position	Total Cost	Management	Field Invest.	Land Acq.	Detailed Design	Tendering	Constr. Supv.	EMP	Inst. Dev.	Commun. Dev.	Monitoring
<b>GOB Staff</b>											
Fee	24,812	2,609	1,274	1,897	730	212	6,997	2,104	4,064	1,920	3,005
Pers. Allowances	20,583	1,923	1,122	1,492	511	152	6,165	1,665	3,367	1,728	2,458
<b>Sub Total</b>	<b>45,395</b>	<b>4,532</b>	<b>2,396</b>	<b>3,389</b>	<b>1,241</b>	<b>364</b>	<b>13,162</b>	<b>3,769</b>	<b>7,431</b>	<b>3,648</b>	<b>5,463</b>
<b>Foreign Consultants</b>											
Fee	183,203	11,160	0	1,395	19,034	5,580	43,400	22,010	28,079	46,965	5,580
Pers. Allowances	71,594	4,340	0	543	7,244	2,211	15,166	8,338	10,919	18,264	4,569
<b>Sub Total</b>	<b>254,797</b>	<b>15,500</b>	<b>0</b>	<b>1,938</b>	<b>26,278</b>	<b>7,791</b>	<b>58,566</b>	<b>30,348</b>	<b>38,998</b>	<b>65,229</b>	<b>10,149</b>
<b>Local Consultants</b>											
Fee	112,488	0	3,000	5,722	18,300	900	0	20,431	6,930	31,950	25,255
Pers. Allowances	9,958	0	176	1,659	400	17	0	859	274	5,372	1,201
<b>Sub Total</b>	<b>122,446</b>	<b>0</b>	<b>3,176</b>	<b>7,381</b>	<b>18,700</b>	<b>917</b>	<b>0</b>	<b>21,290</b>	<b>7,204</b>	<b>37,322</b>	<b>26,456</b>
<b>Support Staff</b>											
Fee	44,391	6,576	1,956	1,956	0	0	4,352	7,450	2,625	7,450	12,026
Pers. Allowances	3,087	190	160	160	0	0	0	472	76	472	1,557
<b>Sub Total</b>	<b>47,478</b>	<b>6,766</b>	<b>2,116</b>	<b>2,116</b>	<b>0</b>	<b>0</b>	<b>4,352</b>	<b>7,922</b>	<b>2,701</b>	<b>7,922</b>	<b>13,583</b>
<b>General Expenses</b>	<b>78,505</b>	<b>5,773</b>	<b>2,339</b>	<b>2,338</b>	<b>11,974</b>	<b>0</b>	<b>11,955</b>	<b>13,625</b>	<b>13,562</b>	<b>10,181</b>	<b>6,758</b>
<b>Sub-total Non-GOB</b>	<b>503,226</b>	<b>28,039</b>	<b>7,631</b>	<b>13,773</b>	<b>56,952</b>	<b>8,708</b>	<b>74,873</b>	<b>73,185</b>	<b>62,465</b>	<b>120,654</b>	<b>56,946</b>
<b>Grand Total</b>	<b>548,621</b>	<b>32,571</b>	<b>10,027</b>	<b>17,162</b>	<b>58,193</b>	<b>9,072</b>	<b>88,035</b>	<b>76,954</b>	<b>69,896</b>	<b>124,302</b>	<b>62,409</b>

Revised 11 November 1998

Table L.7: Cost of Personnel and Expenses ('000 CDN \$)

Position	Total Cost	Mang- ement	Field Invest.	Land Acq.	Detailed Design	Tender- ing	Const. Supv.	EMP	Inst. Dev.	Comm. Dev.	Monit- oring
<b>GOB Staff</b>											
Fee	800	84	41	61	24	7	226	68	131	62	97
Personnel Allowances	664	62	36	48	16	5	199	54	109	56	79
Sub-total	1,464	146	77	109	40	12	425	122	240	118	176
<b>Foreign Consultants</b>											
Fee	5,910	360	0	45	614	180	1,400	710	906	1,515	180
Personnel Allowances	2,309	140	0	18	234	71	489	269	352	589	147
Sub-total	8,219	500	0	63	848	251	1,889	979	1,258	2,104	327
<b>Local Consultants</b>											
Fee	3,629	0	97	185	590	29	0	659	224	1,031	815
Personnel Allowances	322	0	6	54	13	1	0	28	9	173	39
Sub-total	3,950	0	102	238	603	30	0	687	232	1,204	853
<b>Support Staff</b>											
Fee	1,432	212	63	63	0	0	140	240	85	240	388
Personnel Allowances	99	6	5	5	0	0	0	15	2	15	50
Sub-total	1,531	218	68	68	0	0	140	256	87	256	438
General Expenses	2,532	186	75	75	386	0	386	440	437	328	218
Sub-Total Non-GOB	16,233	904	246	444	1,837	281	2,415	2,361	2,015	3,892	1,837
<b>Grand Total</b>	17,697	1,051	323	554	1,877	293	2,840	2,482	2,255	4,010	2,013



### 6.3 Monitoring Costs

A monitoring program to measure the project's outcomes in the benefitted area has been scheduled over the civil works period and for two years thereafter. This program is described in Annex I - EIA. The cost estimates of this program assume that this monitoring program will be carried out by a Bangladeshi firm with the assistance of a qualified international consulting firm until such time the local firm acquires the skill to carry out the monitoring independently. The monitoring program will also be assisted by GOB personnel deputed to the project. The personnel requirement for benefits monitoring program are shown in Table L.3 and summarized in Table L.9.

Table L.9: Monitoring Costs

	('000 Taka)	('000 CDN)	('000 US\$)
Government of Bangladesh	5,463	176	133
Bangladeshi Consultant	26,456	853	645
Foreign Advisors	10,149	327	248
Support Staff	13,583	438	331
Consultants General Expenses	6,758	218	165
<b>Total Monitoring Costs</b>	<b>62,409</b>	<b>2,013</b>	<b>1,522</b>

### 6.4 Budget Assumptions

#### 6.4.1 Capital Costs

The capital costs were estimated in accordance with the FPCO *Guidelines for Project Assessment* (FPCO, 1992).

Detailed capital costs have been estimated from the following sources:

- BWDB schedule of rates (1995) published for the Moulvibazar Circle. Cost of embankments, structure, levees, revetments were calculated from this schedule of rates;
- Actual expenditures of the Pilot Dredging Project. The costs experience in this pilot project were applied to the EMP, topsoil, and platform soft protection cost estimates;
- Land acquisition costs reflect current cost collected by NERP in 1995 along the Kalni-Kushiyara River, and
- Dredging cost were taken as current (1996) international dredging costs, ie. \$US 2/m<sup>3</sup>, including mobilization and demobilization.

112

#### 6.4.2 Costs of Personnel

The costs of deputed personnel from GOB was estimated, based on current (1997) staff salaries and allowances including field allowances. The costs of local consultants, foreign advisors and consultant, technical and logistics support staff, their allowances as well general project office and field expenses were estimated from current NERP Phase 2 expenditures.

#### 6.4.3 O&M Costs

O&M costs were divided in 3 categories as specified in Section 6.2.3. Maintenance dredging costs were estimated in the same way as capital dredging costs. Platform maintenance was estimated from the Pilot Dredging Project experience and various components of the civil costs were estimated as per the FPCO *Guidelines*, as percentages of capital cost.

## REFERENCES

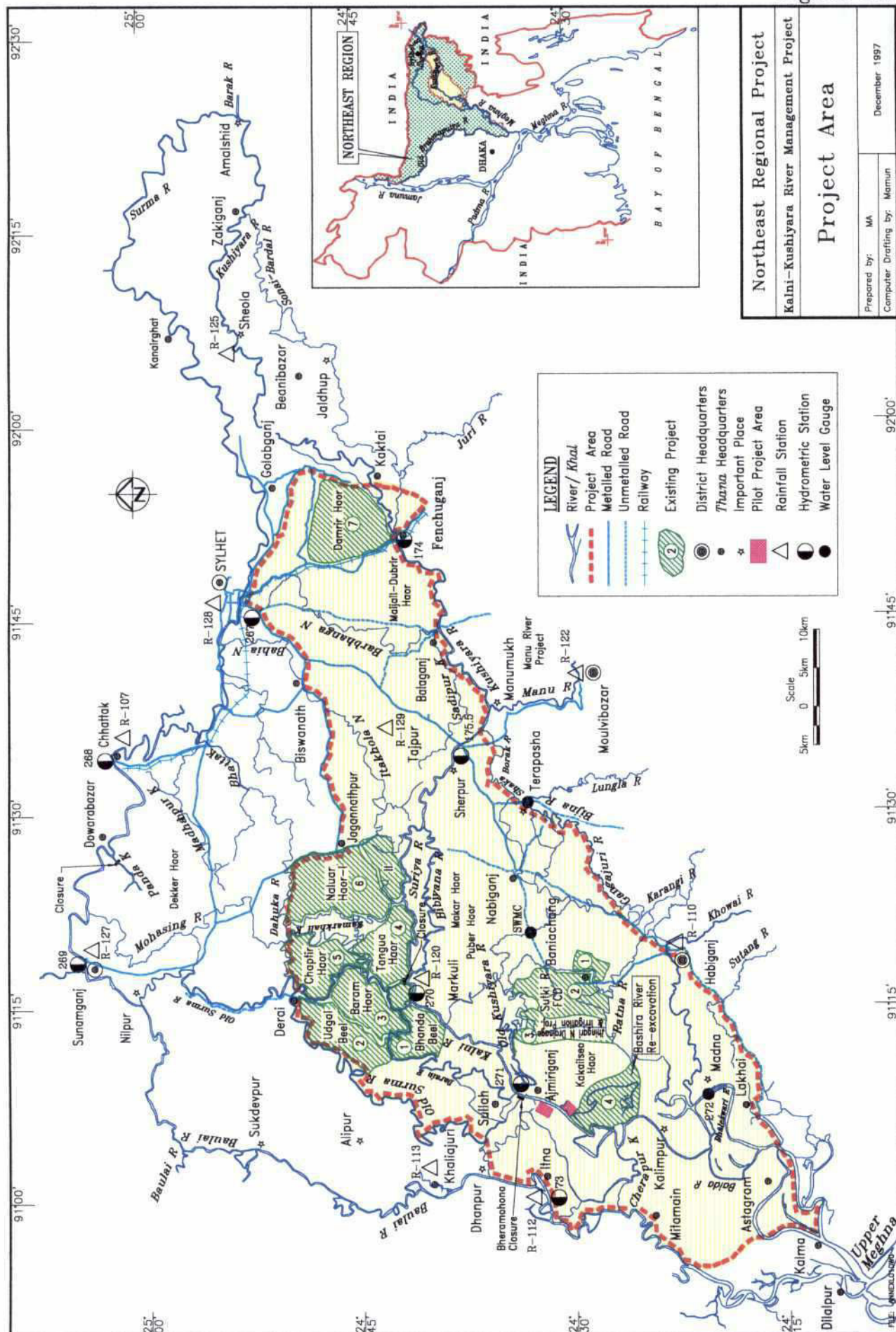
FPCO, 1992: "*Guidelines for Project Assessment*", Flood Plan Coordination Organization, Government of Bangladesh, May, 1992.

MOWR, 1994: "*Guidelines for People's Participation in Water Development Projects*", Ministry of Water Resources, Government of Bangladesh, August 22, 1994.



# FIGURES

Figure L.1





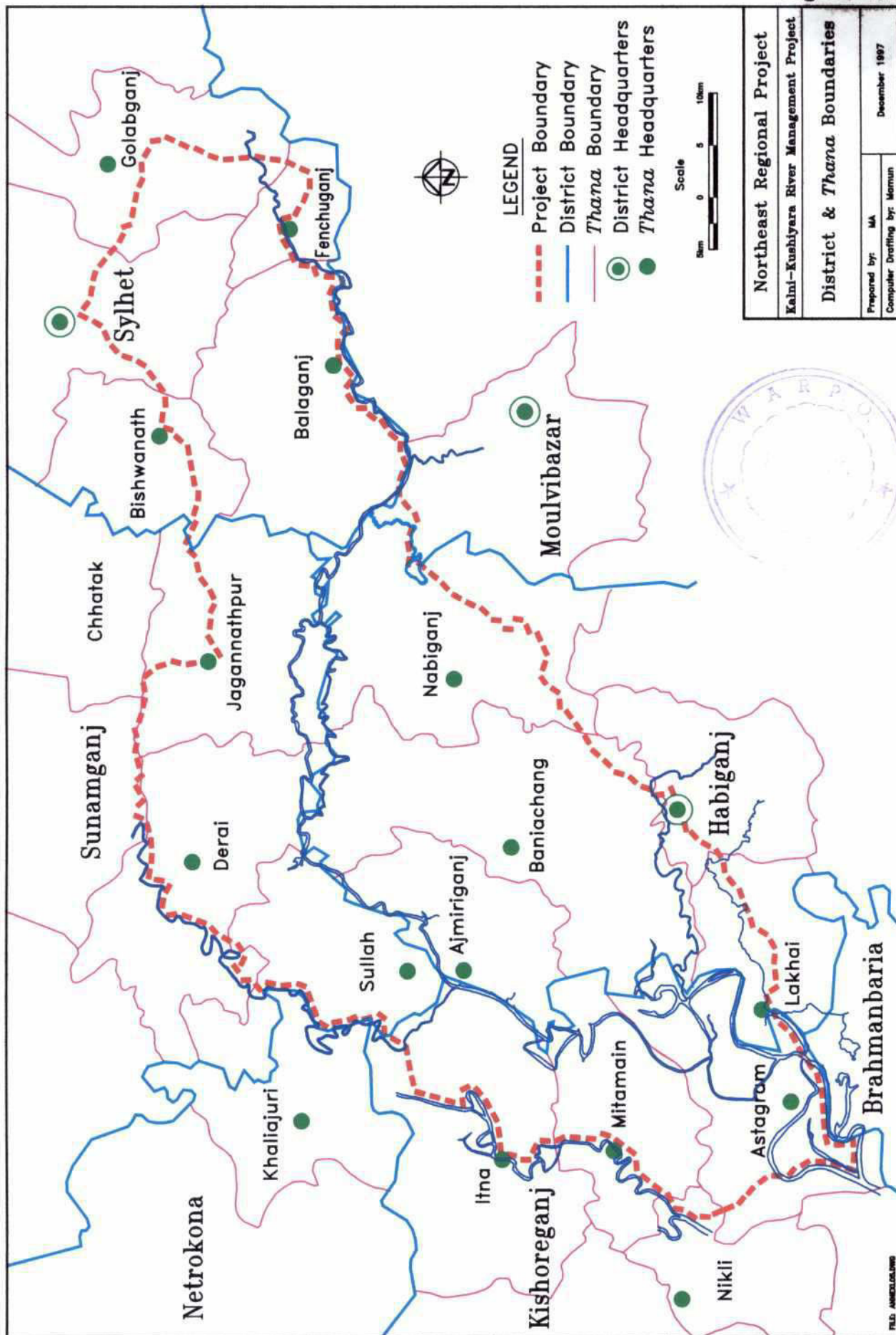




Figure L.3

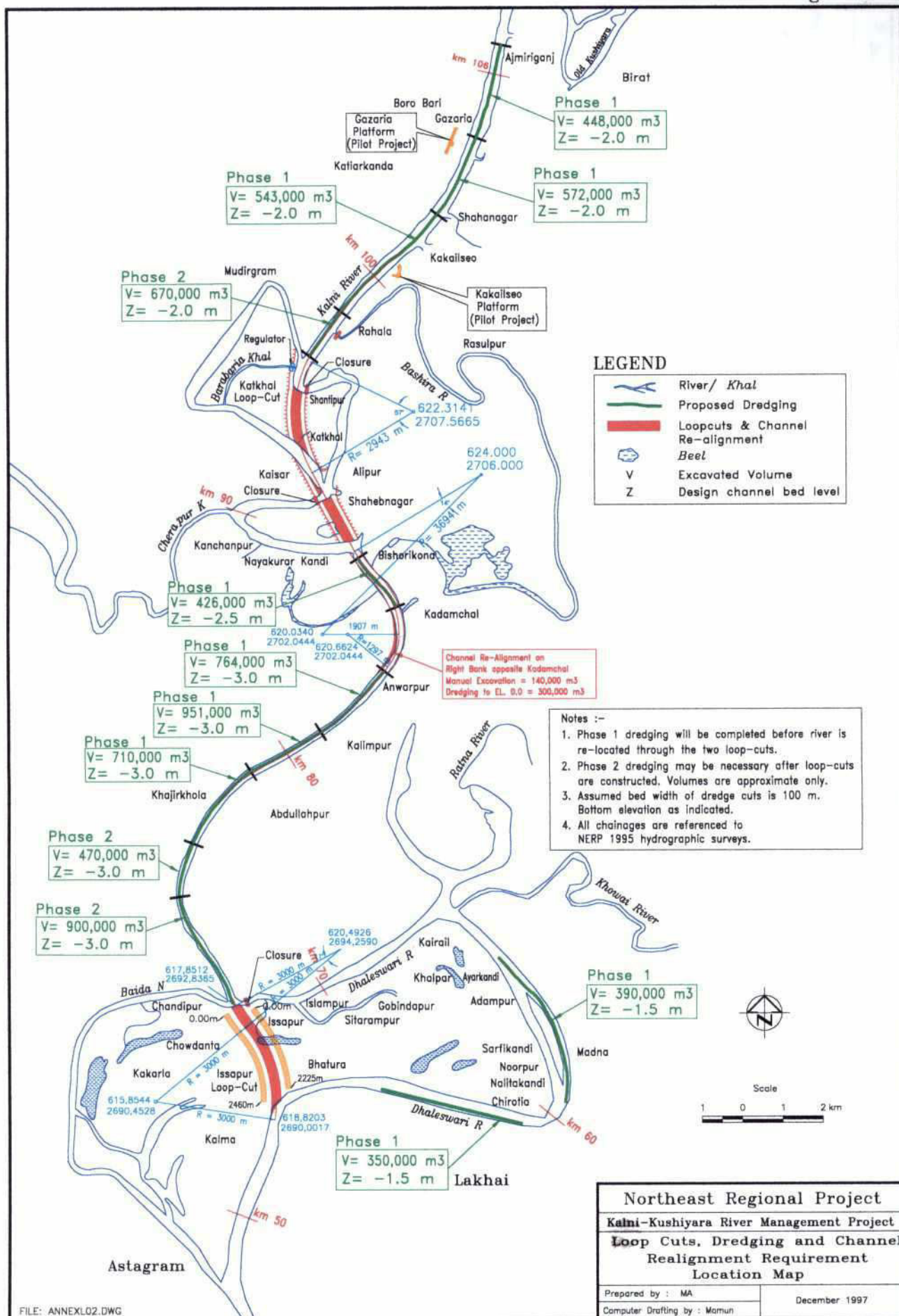
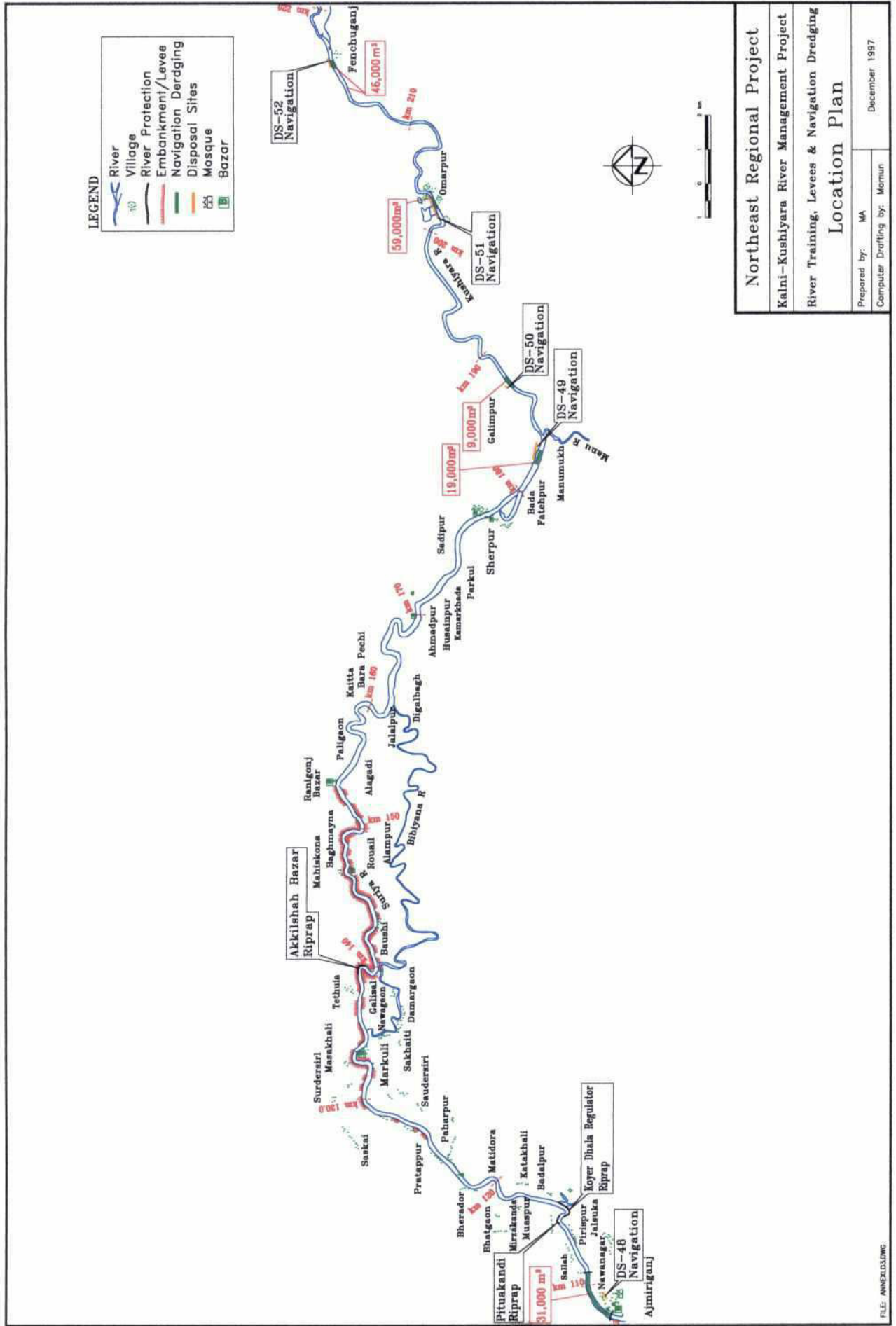


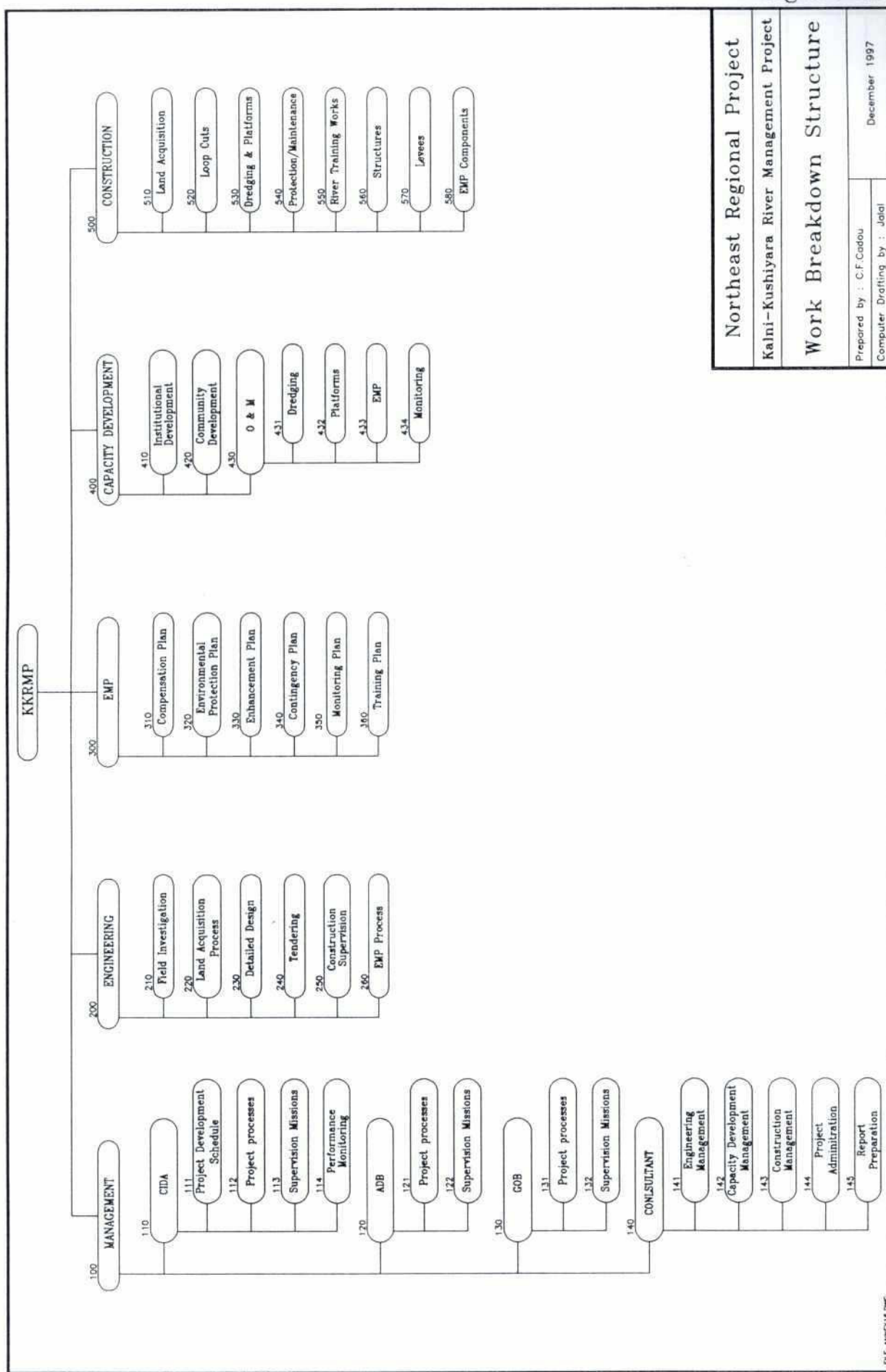
Figure L.4



Northeast Regional Project		
Kalni-Kushiya River Management Project		
River Training, Levees & Navigation Dredging		
Location Plan		
Prepared by:	NA	December 1997
Computer Drafting by:	Momun	

22

Figure L.5



Northeast Regional Project	
Kalni-Kushiyara River Management Project	
Work Breakdown Structure	
Prepared by : C.F.Cadoux	December 1997
Computer Drafting by : Jolal	



y<sup>0</sup>



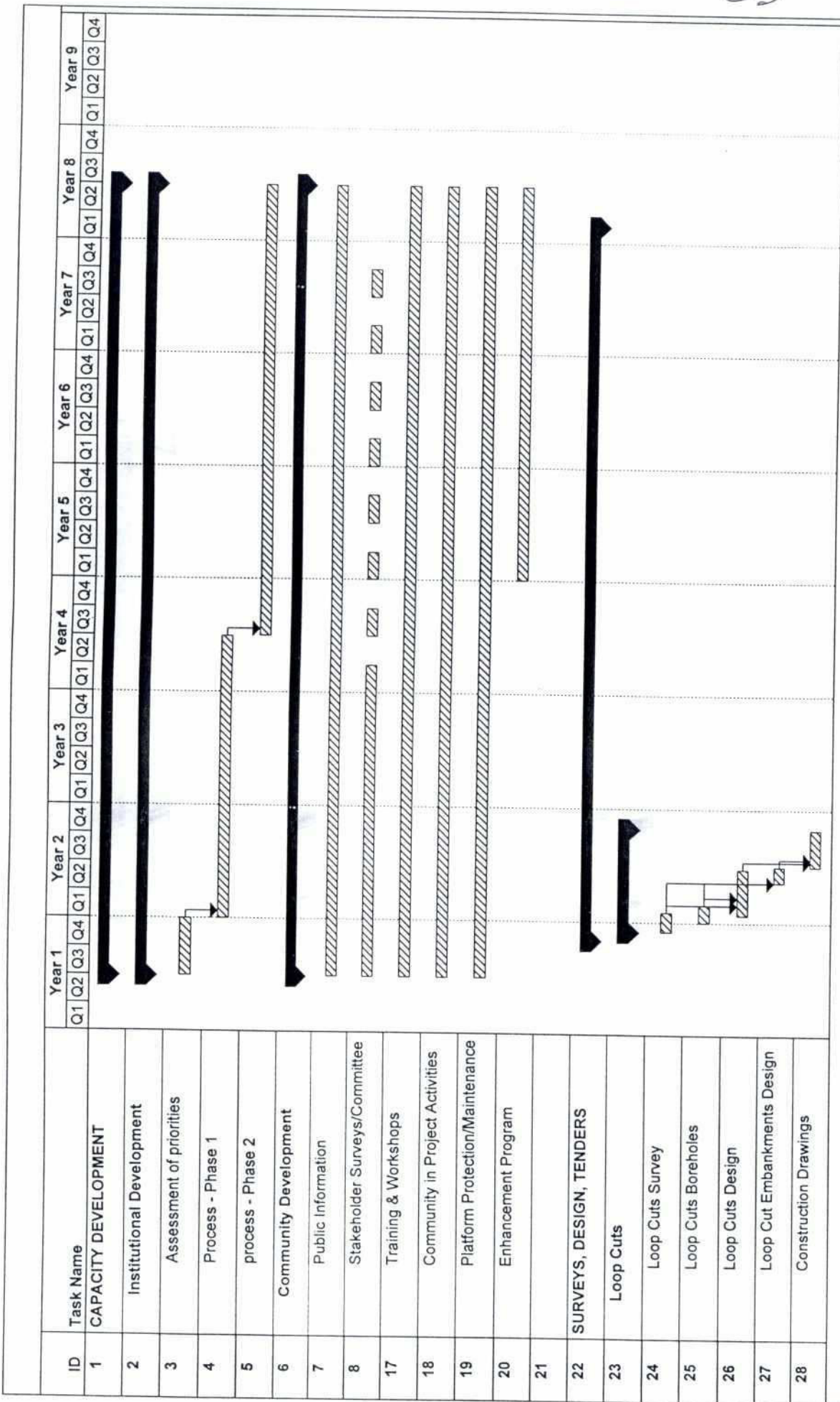
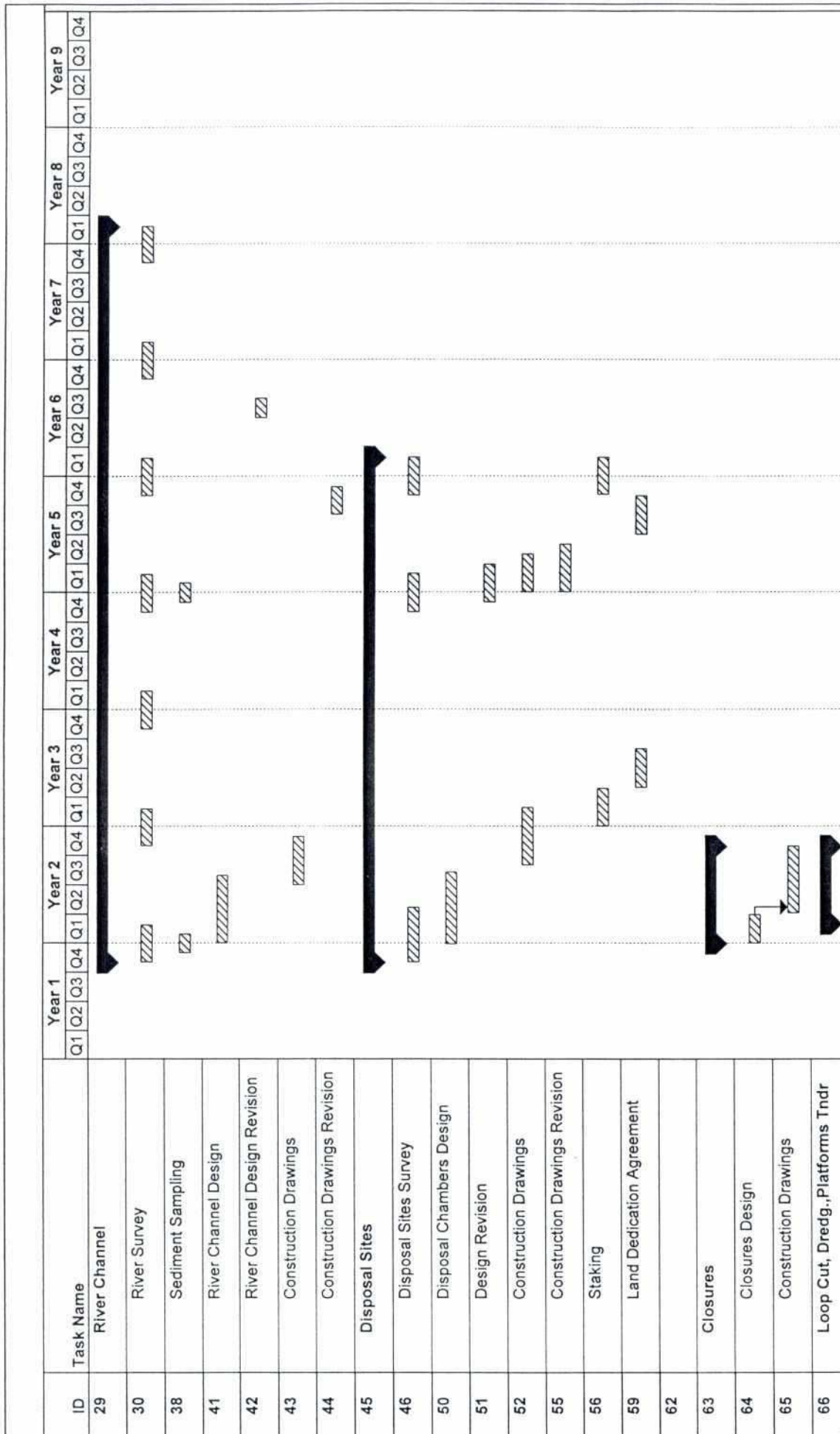


Figure L.7

KALNI-KUSHIYARA RIVER MANAGEMENT PROJECT  
IMPLEMENTATION SCHEDULE

Task Summary Rolled Up Task



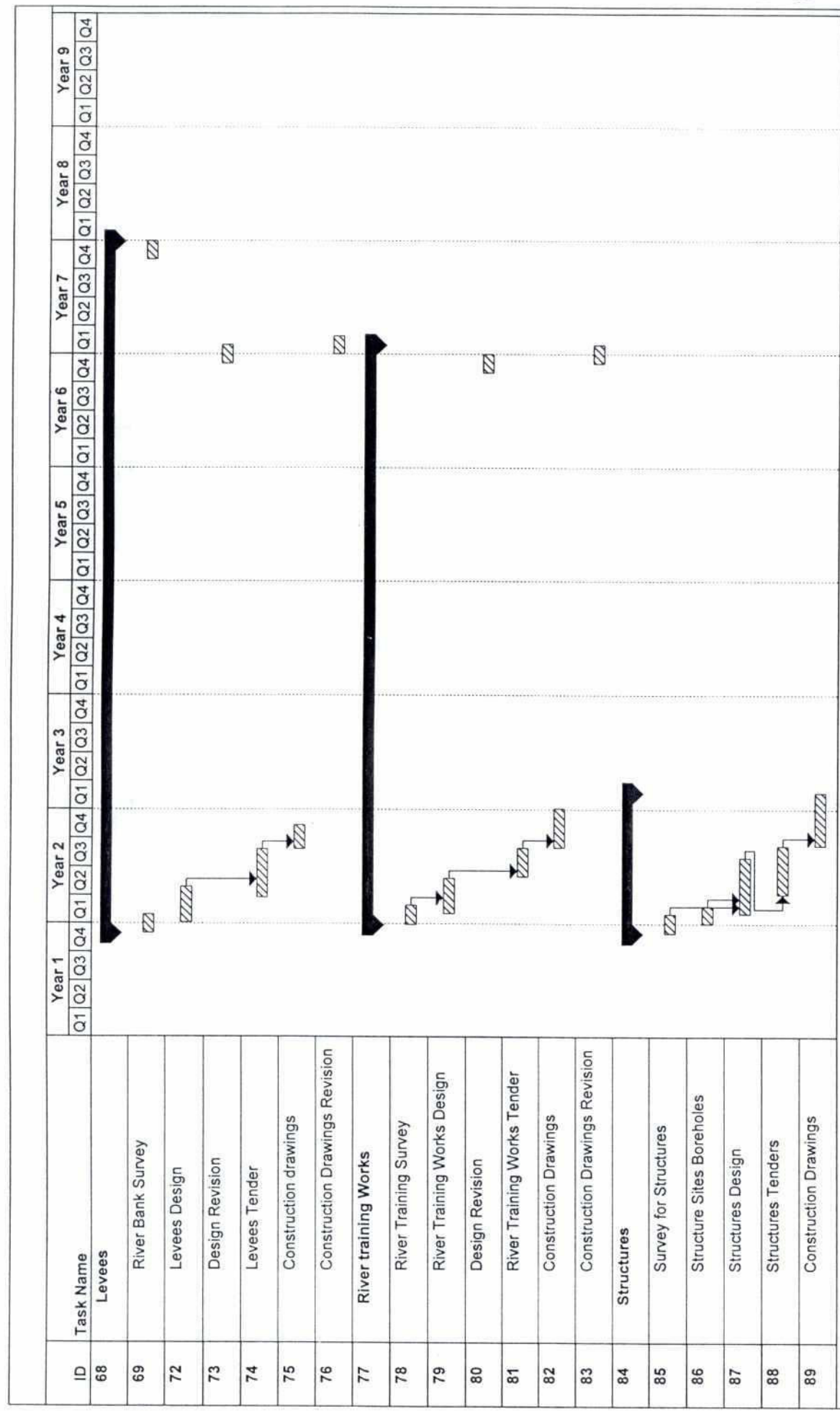
Task

Summary

Rolled Up Task

Figure L.7  
KALNI-KUSHIYARA RIVER MANAGEMENT PROJECT  
IMPLEMENTATION SCHEDULE





Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task

Task

Summary

Rolled Up Task</

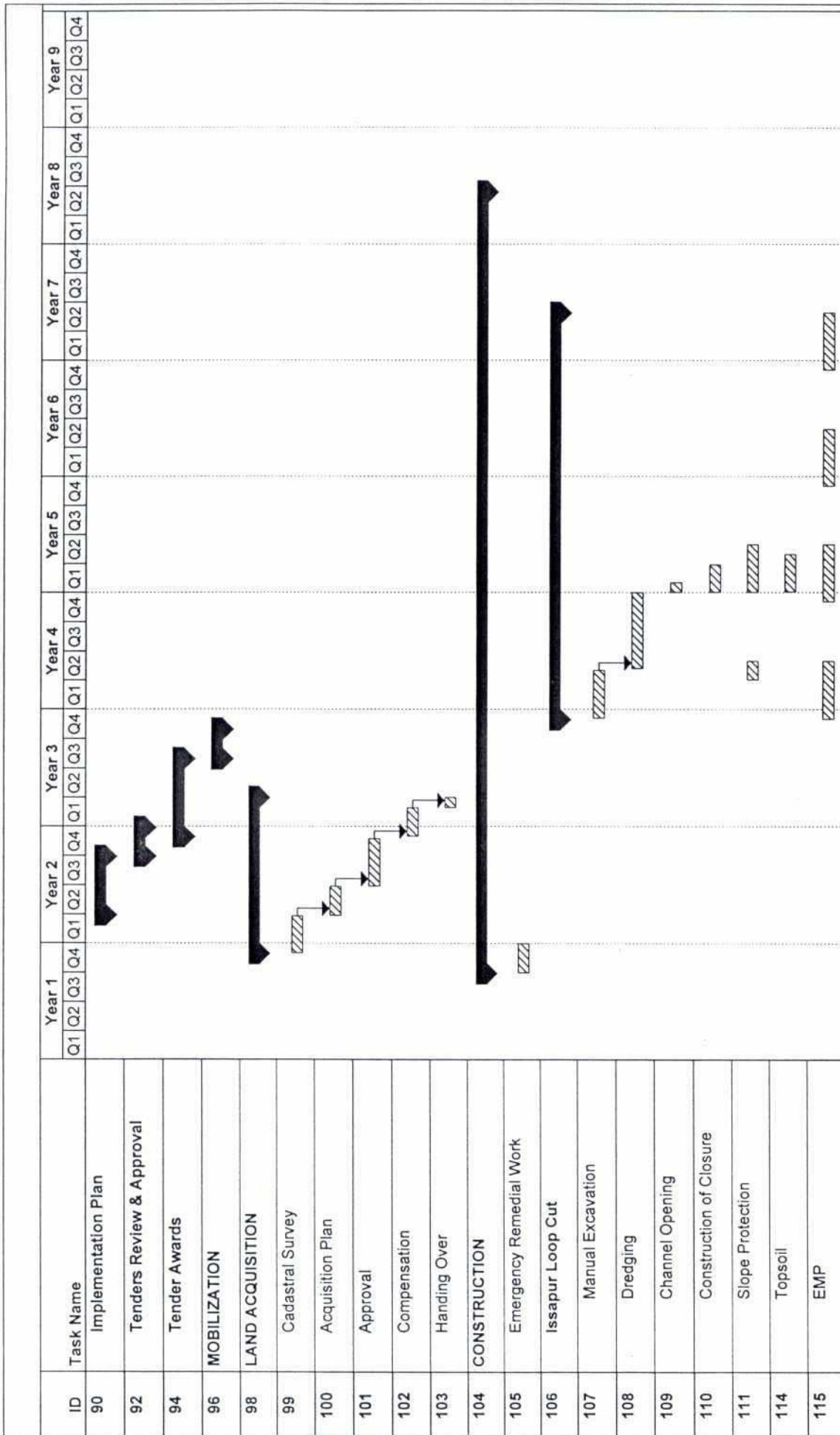


Figure L.7

KALNI-KUSHIYARA RIVER MANAGEMENT PROJECT  
IMPLEMENTATION SCHEDULE

Task Summary Rolled Up Task

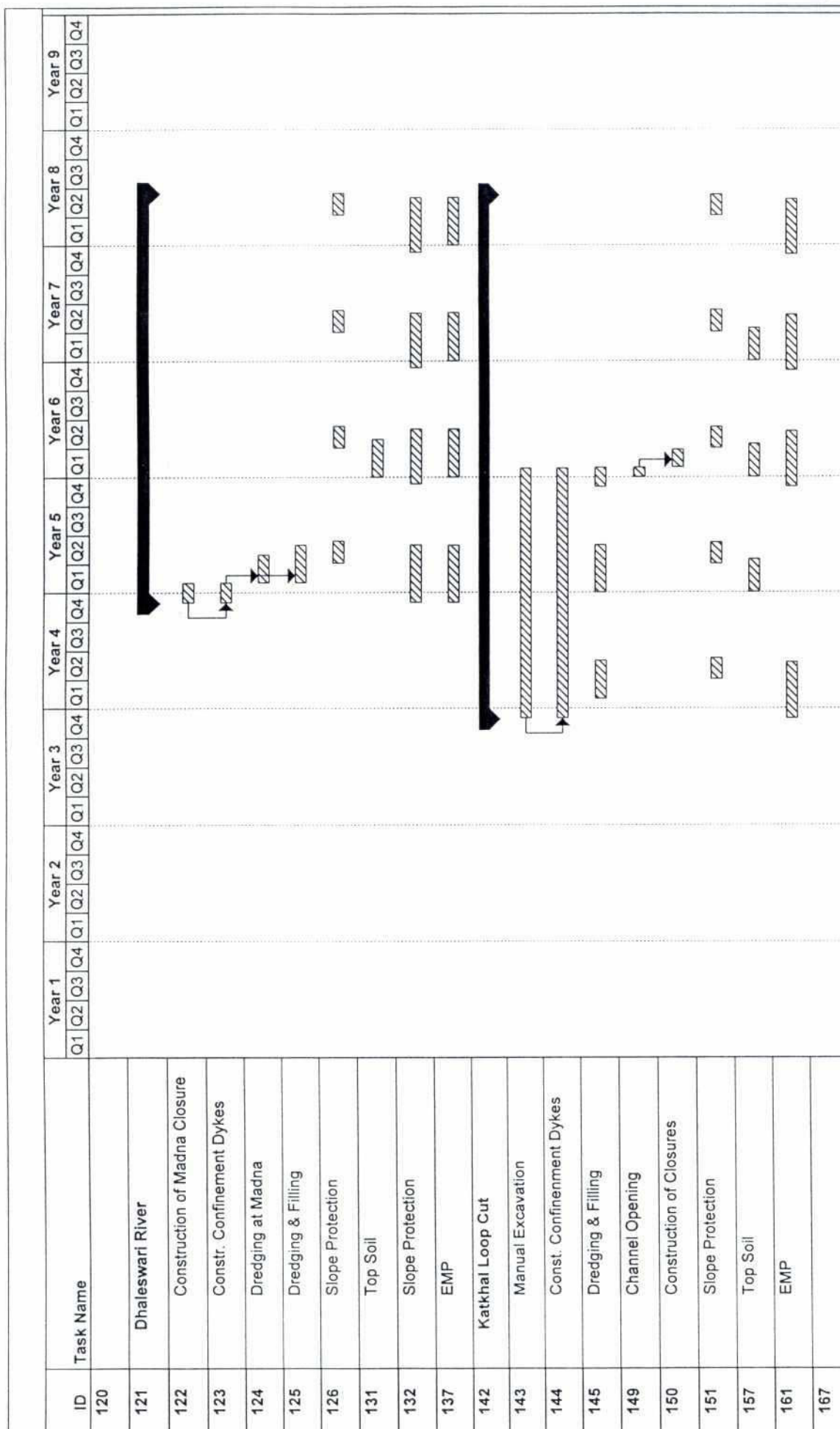


Figure L.7

### KALNI-KUSHIYARA RIVER MANAGEMENT PROJECT IMPLEMENTATION SCHEDULE

### Task

## Summary

**Rolled Up Task** 



Figure L7

## Summary

### Task



1

Rolled Up Task 

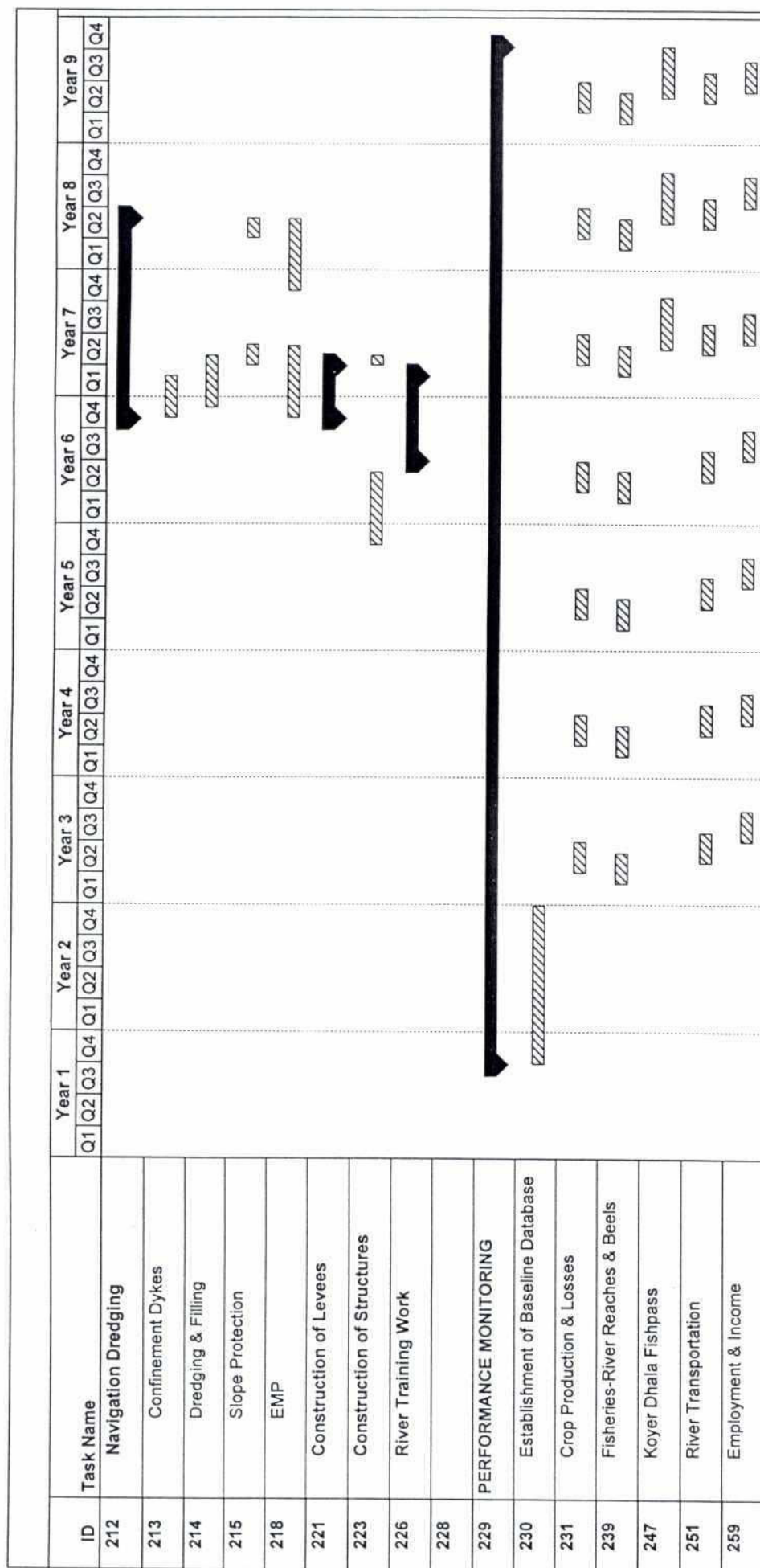


Figure L.7

KALNI-KUSHIYARA RIVER MANAGEMENT PROJECT  
IMPLEMENTATION SCHEDULE

Task

Summary

Rolled Up Task

