

## 5. ENVIRONMENTAL ACTION PLAN

### 5.1 Management Plan

In chapter three the current environmental situation of the study area has been presented and discussed along with an analysis of relevant issues in so far as they impact on environmental quality. The preceding sections of chapter four have briefly discussed development actions of the above project that can have a bearing on the environment and outlined recommendations for mitigation and/or enhancement. The majority are those that will have beneficial effects and will enhance environmental quality if implemented, while relatively few aspects require mitigation as the effects are of low to medium significance. For convenience all the recommendations are listed below.

- i) Impacts during the Construction Phase
  - a. Programming earthwork for the dry season.
  - b. Taking precautions to prevent sedimentation.
  - c. Providing good sanitation at work sites.
  - d. Having basic first aid.
  - e. Keeping machines in good working order.
- ii) Land Use
  - a. Utilising to optimum levels all unirrigable land by growing field crops, pasture, fodder grass, multipurpose trees (firewood, fruit, fodder, timber, medicine), regarding land tenure rights and based on joint forest management methods.
  - b. Leasing of state land for agroforestry and useful purposes, eg. growing industrial firewood so as to minimise and ultimately avoid using wood from the natural forest for firewood.
  - c. Converting old river courses into communal ponds for fish culture and small-time hydrologic uses such as water for vegetables. This will prevent growth of mosquitoes and water weeds.
- iii) Soil Management
  - a. Encouraging maximum use of all available farm and non-farm organic materials, including livestock dung and urine for soil improvement.
  - b. Adopting systems of livestock housing that permit collection of dung and urine.
  - c. Ensuring optimum utilisation of farm land for the production of plant biomass, food, fodder, feed and firewood.
  - d. Adopting composting and green manuring where practicable.
  - e. Experimenting with azolla culture for use as paddy field manure and livestock fertiliser.
- iv) Irrigation and Drainage
  - a. Having smooth gradients of bottom levels of canals to avoid ponding and subsequent mosquito breeding.
  - b. Controlling erosion of canal banks and embankments.
  - c. Flushing out canals periodically if necessary to remove mosquito larvae.

- d. Co-ordinating activities of irrigation and public health departments to ensure vector control.
  - e. Ensuring effective field drainage to provide good soil medium for crop growth.
  - f. Considering the establishment of river and canal reservations for stability and erosion control.
- v) Biodiversity
- a. Increasing tree cover over the area will provide a diversity of habitat and a variety of niches for certain species of fauna. It will add to aesthetics and improve livability.
- vi) Home Gardens
- a. Using the boundary fence to plant trees that are long-lived and tallest, as those that will provide timber, eg. dipterocarps. Other tree species that can be used are acacia, eucalyptus, ipil-ipil, and gliricidia.
  - b. Planting the level similar to the main canopy with species such as mango, rambutan.
  - c. Introducing shade loving species at the sub-canopy level and shrub level; suitable species are Anona and coffee.
  - d. Planting the ground layer with shade requiring ginger and turmeric.
  - e. Housing livestock separate from the living quarters for two main reasons – (a) health of humans and, (b) collection of dung and urine. To live together with animals is unhealthy.
- vii) Agrochemical Use
- a. Educating farmers on the hazards of indiscriminate pesticide use.
  - b. Implementing the findings of the national IPM programme through project extension activities.
  - c. Convincing government on the need for setting up without delay, pesticide control legislation and ensuring enforcement, to avoid human health and environmental damage.
- viii) Firewood
- a. Establishing village firewood lots on unirrigable uplands through appropriate social forestry systems to ensure a continuous supply of firewood to all households.
  - b. Making available to the people seedlings of multipurpose tree species.
  - c. Allocating land to industrialists for growing individual firewood needs.
  - d. Growing multipurpose tree species on roadsides and canal banks.
  - e. Popularising energy efficient cooking stoves.
- ix) Fishery
- a. Converting the old river courses into aquaculture ponds. This is a more rational form of land use.
  - b. Collaborating in fishery extension with specialist NGOs.

- x) Water Quality
  - a. Undertaking regular water testing at selected sites and for selected parameters to understand changes taking place.
  - b. Increasing the use of organic manures.
  - c. Using pesticides in combination with other methods of pest control which in effect is integrated pest management and is environment-friendly.
  
- xi) Health and Sanitation
  - a. Educating farm families on general sanitation.
  - b. Improving human housing.
  - c. Encouraging better housing for livestock.
  - d. Providing good drinking water.
  - e. Educating farmers on pesticide storage and use.
  - f. Flushing out canals periodically if ponding and mosquito breeding are evident.
  - g. Co-ordination of irrigation and public health institutions for vector-control.
  
- xii) Reforestation
  - a. Reforesting the Phnum Thma forest reserve which is actually outside the area of the masterplan study but can have valuable ecological advantages on the hydrology of the Tonle Bati lake.
  - b. Considering the preparation of a management plan with multiple use concepts.
  - c. Considering working through "joint forest management" concepts.
  
- xiii) Borrow Area
  - a. Preventing likely flash floods while excavating that can cause sedimentation of adjacent paddy fields.
  - b. Minimising inconvenience to people living along the road where earth will be transported to work sites.
  - c. Rehabilitating the borrow area to a reasonable degree in order to arrest continuing degradation.
  
- xiv) Cultural Area
  - a. Restoring the cultural complex buildings with expert archaeological advice.
  
- xv) Recreation Area
  - a. Arresting soil erosion and returfing bank.
  - b. Removing (and prohibiting the use of) the elevated platforms on the water's edge.
  - c. Installing randomly placed paved circles or any fancied geometric design, equipped with garden umbrellas for the use of visitors.
  - d. Prohibiting littering. Installing litter bins or enforcing "carry your litter home."
  - e. Communicating rules to the public through noticeboards.

xvi) Environmental Education

- a. Incorporating environmental components at appropriate training opportunities. Opportunities exist at water user associations, drinking water supply group, cultivation techniques study group, life improvement group and women's group.
- b. Training of the staff of the Agricultural Development Centres to undertake training.
- c. Enlisting the support of specialised NGOs to assist in field activities.

Primarily, initiatives for accomplishment of objectives set out in the recommendations, are to be taken by government institutions responsible for economic development in various sectors. Initially some of these will be carried out during the construction phase. This does not however, mean that people's participation is not sought. It is through farmer organisations that will be largely responsible for managing the resources. These organisations will be set up in different specialised fields. Subsequently, environmental components will be included in community training meetings emphasising on conservation, rational resource use and sustainable development.

## 5.2 Monitoring

Monitoring concerns gathering of information and observing changes over time and space, of selected parameters during construction and operation phases of the project. Compliance with recommended mitigating measures is no guarantee that all undesirable impacts have been totally eliminated or minimised. It may be that adverse environmental effects may appear sometime after conclusion of the project.

Therefore, monitoring provides a means of identifying deviations from the predicted path of significant impacts. It is also a means of assessing the effectiveness of mitigating measures adopted and a mechanism that enables management to be fore-warned about changing trends in environmental quality. An evaluation of data gathered during the operation phase of the project has to be made against baseline data that represents the situation before the project commenced. Evaluation will indicate the magnitude of changes that are taking place. It will then be possible to make corrective changes, if analyses so warrant.

The nature of this project is such that analyses of water at regular intervals will indicate the "health" of the project. The main source of pollution is expected from agricultural runoff that may include nutrients and pesticides. Sampling should be done at pre-determined drainage outlets representative of mini-watersheds. The Kandal Stung area drains eastward across national road no. 2 at about eight points, while the Tonle Bati area drains southward and eastward into the Cheung Loung lake. Sampling sites should be selected with great care and should not be changed. Water testing in the Prek Thnot river upstream of Kompong Toul will indicate the quality of irrigation water before it is used in the project area and this is recommended as a new sampling site. The frequency of sampling may be at the beginning and middle of each of the wet and dry seasons.

The following parameters are suggested:

- a. Temperature
- b. Conductivity
- c. pH
- d. Dissolved oxygen
- e. Suspended solids
- f. Nitrate nitrogen
- g. Nitrite nitrogen

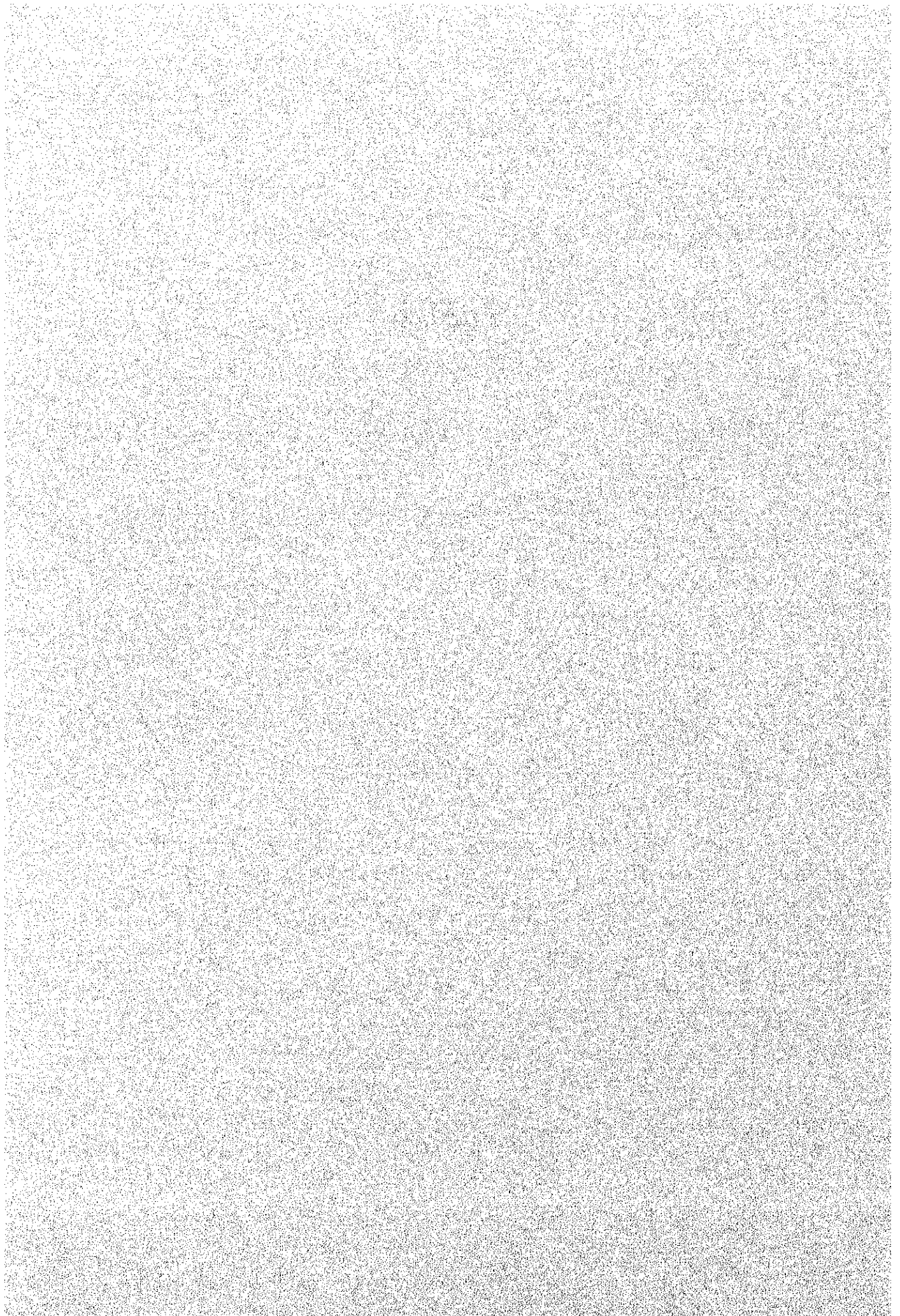
- h. Phosphate
- i. COD
- j. BOD
- k. Chloride

### **5.3 Institutional Responsibility**

As environment cuts across institutional boundaries, a number of government institutions have to be involved for project implementation and monitoring. It is not clear what role the State Secretariat for Environment will play – executing or co-ordinating – as this institution is yet in the formative stages and lines of authority are somewhat diffused. Apart from government agencies, NGOs can play key roles in achieving project objectives and they should be invited to complement project activities whenever an opportunity arises.

Being basically an irrigation project, the lead role lies with the Department of Hydrology, with supporting roles from the Departments of Agronomy, Forestry and Wildlife, Public Health, Cultural Patrimony, Fisheries, Education, State Secretariat for Rural Development and provincial offices of respective departments. Perhaps, the State Secretariat for Environment is better suited at this point of time, to play a co-ordinating role. It is suggested that a committee be appointed to monitor implementation of the recommendations of the environmental impact assessment.

## ***Tables***



**Table VIII-1 Forest Types, 1992**

Type	Extent (ha)
Evergreen	4,819,200
Deciduous	4,287,000
Mixed	916,200
Secondary	473,200
Flooded	357,000
Flooded mixed	257,200
Mangrove	83,700
Coniferous	8,300
Total	11,201,800

Source: Thung, H.L. Paper presented at the seminar on Cambodia's Forest Resources -- Utilisation in the Context of Sustainable Development. 1993.

**Table VIII-2  
Some Plants Identified around Cheung Loung and Tonle Bati Lakes**

1	Cyprus spp
2	Ipomea aquatica
3	Paspalum scobiculatum
4	Jussiaea repens
5	Barringtonia acutangula
6	Eichornia crassipes
7	Nymphaea stellata
8	Nelumbium nelumbo
9	Alternanthera sessilis
10	Polygonum barbaratum
11	Sesbania paludoxa
12	Echinochloa stagnina
13	Comelina alicifolia

Source: Specimens collected on field visit and identified at the Department of Biology, University of Phnom Penh.



**Table VIII-3 Water Quality Analysis for Selected Parameters**

Parameter	Tuk Thla			Tonle Bati Bridge						Lower Tonle Bati River			Cheung Loung Lake			+Sri Lanka Standard: Maximum permissible level for potable water
	Apr	May	July	Apr	May	June	July	July	May	July	June	July	June	July	July	
	26*	27*	28	26*	27*	28	29	29	27*	29	28	29	28	29	29	
Temp. °C	31.6	32.6	29.0	32.8	35.0	29.0	28.7	31.0	30.0	30.0	30	28.2	-	-	-	-
Cond,MS/m 25° C	-	-	6.72	-	-	4.74	4.74	-	4.55	8.09	8.82	3,500 s/cm	-	-	-	-
pH	7.4	7.1	7.6	6.7	6.7	7.6	6.8	7.1	6.9	7.4	7.0	6.5 - 9.0	-	-	-	-
DO, mg/l	-	6.1	6.6	-	6.5	7.6	4.9	5.6	5.6	6.6	3.7	Not less than 3 mg/l	-	-	-	-
SS,mg/l	54	282	204	42	98	14	85	590	300	74	28	Not more than 1,000 mg/l	-	-	-	-
NO <sub>3</sub> +NO <sub>2</sub> ,mg/l	-	-	0.160	-	-	0.144	0.308	-	0.280	0.299	0.224	NO <sub>3</sub> : 10 mg/l	-	-	-	-
NH <sub>4</sub> N, mg/l	0.183	0.043	0.04	0.050	0.095	0.107	0.40	0.090	0.27	0.465	0.03	NO <sub>2</sub> : 0.01 mg/l	-	-	-	-
PO <sub>4</sub> ,mg/l	0.045	0.075	0.101	0.040	0.079	0.145	0.206	0.291	0.119	0.132	0.043	2.0 mg/l	-	-	-	-
Tot.P,mg/l	0.071	0.084	0.113	0.190	0.268	0.203	0.352	0.606	0.356	0.468	0.077	10 mg/l	-	-	-	-
COD, mg/l	4.5	6.1	5.4	8.3	9.5	5.9	10.3	9.5	9.9	10.5	10.85	1.0 mg/l	-	-	-	-
Tot.Fe, mg/l	-	-	0.25	-	-	0.464	<0.001	-	0.15	0.238	0.20	200 mg/l	-	-	-	-
Ca,meq/l	-	-	0.221	-	-	0.058	0.103	-	0.081	0.206	0.123	140 mg/l	-	-	-	-
Mg,meq/l	-	-	0.102	-	-	0.119	0.189	-	0.116	0.189	0.419	-	-	-	-	-
Na,meq/l	-	-	0.232	-	-	0.056	0.112	-	0.201	0.243	0.212	-	-	-	-	-
K,meq/l	-	-	0.101	-	-	0.274	0.206	-	0.109	0.075	0.131	1,200 mg/l	-	-	-	-
Cl,meq/l	-	-	0.003	-	-	0.137	0.001	-	0.005	0.157	0.004	400 mg/l	-	-	-	-
SO <sub>4</sub> , meq/l	-	-	0.025	-	-	0.089	0.179	-	0.122	0.135	0.146	-	-	-	-	-

\* From the Prek Thnot Reservoir Study  
+ Maximum desirable levels are however below these limits.

**Table VIII-4 Plant Species Composition in a Home Garden**

Scientific Name	Khmer Name	English Name
<i>Cocos nucifera</i>	dong	coconut
<i>Borassus flabellifer</i>	thnaot	sugar palm
<i>Bambusa aurundinacea</i>	reussey	yellow bamboo
<i>Cymbopogon citratus</i>	sloek krey	citronella
<i>Psidium guajava</i>	trabaek	guava
<i>Feroniella lucida</i>	krasang	wood apple
<i>Anona squamosa</i>	tiep khmae	custard apple
<i>Carica papaya</i>	lahong	papaw
<i>Sesbania grandiflora</i>	ankie dey	sesbania
<i>Anacardium occidentale</i>	svay chanti	cashew
<i>Manihot esculenta</i>	damlong mi	manioc
<i>Ipomea batatas</i>	damlong chiva	sweet potato
<i>Solanum melongena</i>	trap	brirjal
<i>Amaranthus viridis</i>	phti sau	amaranthus
<i>Capsicum annum</i>	moteh hael	chilli
<i>Cucurma domestica</i>	romeat	tumeric
<i>Mangifera indica</i>	svay	mango
<i>Morus alba</i>	mon	-
<i>Ceiba pentandra</i>	koq	-

Source: Field survey during study

**Table VIII-5**  
**Some Pesticides Sold at Chba-Ampov Market and at Retail Outlets**

Pesticide	Main Use	Chemical Type	WHO Classification
Folidol (methyl parathion)	I	Organophosphate	1a
Mevinphos	I	Organophosphate	1a
DDVP /Dichlorvos	I	Organophosphate	1b
Azodrin (Monocrotophos)	I	Organophosphate	1b
Zinc phosphide	R	Inorganic	1b
2,4-D	H	Phenoxyacetic acid derivative	II
Diazinon	I	Organophosphate	II
Fenitrothion	I	Organophosphate	II
Fenvalerate	I	Pyrethroid	II
DDT	I	Organochlorine	II
Malathion	I	Organophosphate	III
Sudrin	-	-	-
Padan	-	-	-
Thiodan	-	-	-
Sumithion	-	-	-
Trebon	-	-	-
Thuricide	I	Biological	-
Many with names in Vietnamese	-	-	-
Fodetol	-	-	-

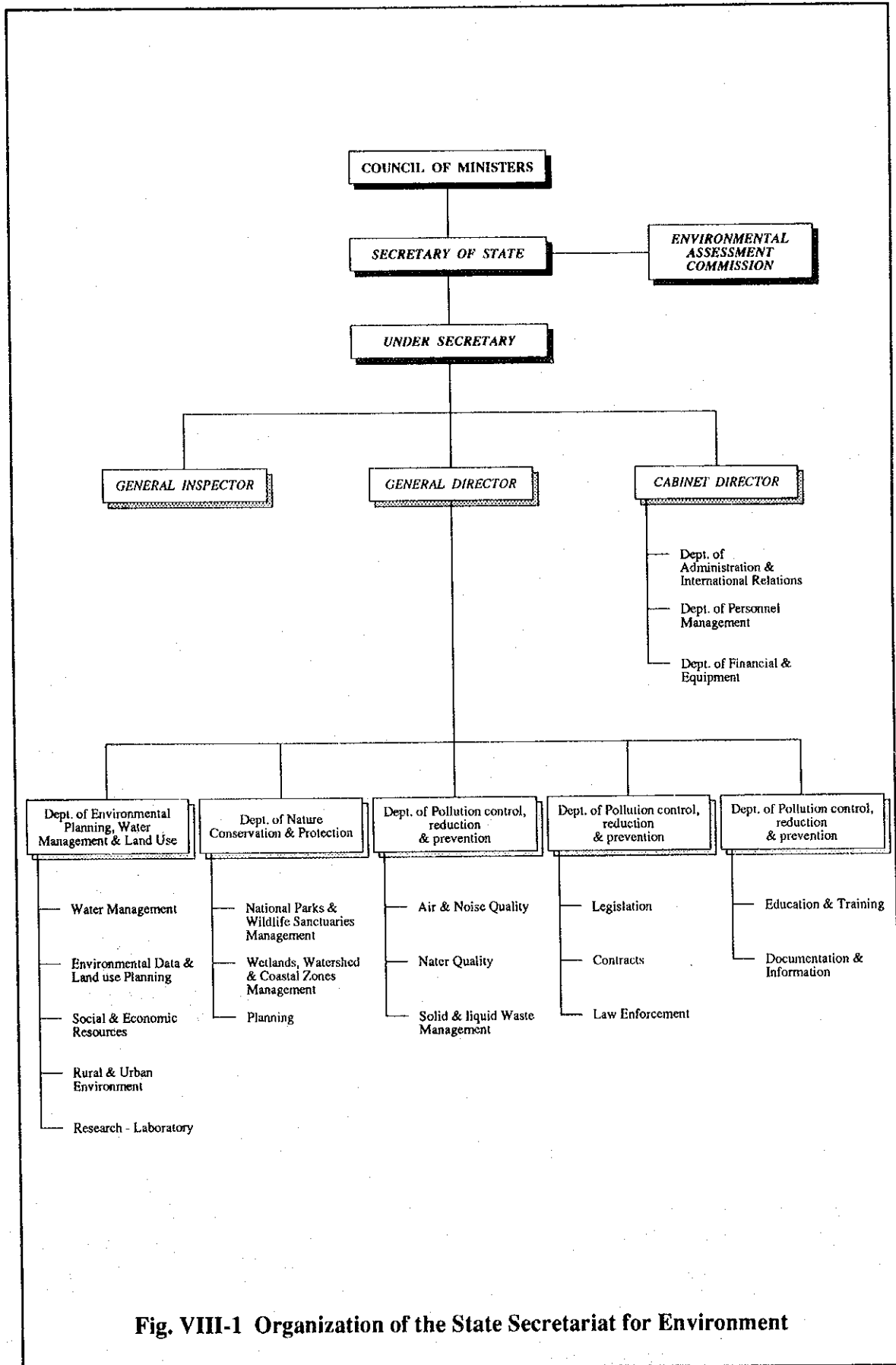
Who classification  
 1a : extremely hazardous  
 1b : highly hazardous  
 II : moderately hazardous  
 III : slightly hazardous

Main use  
 I : insecticide  
 H : herbicide  
 R : rodenticide

**Table VIII-6**  
**Assessment of Impacts on the Environment/People, Resulting**  
**from Development Actions**

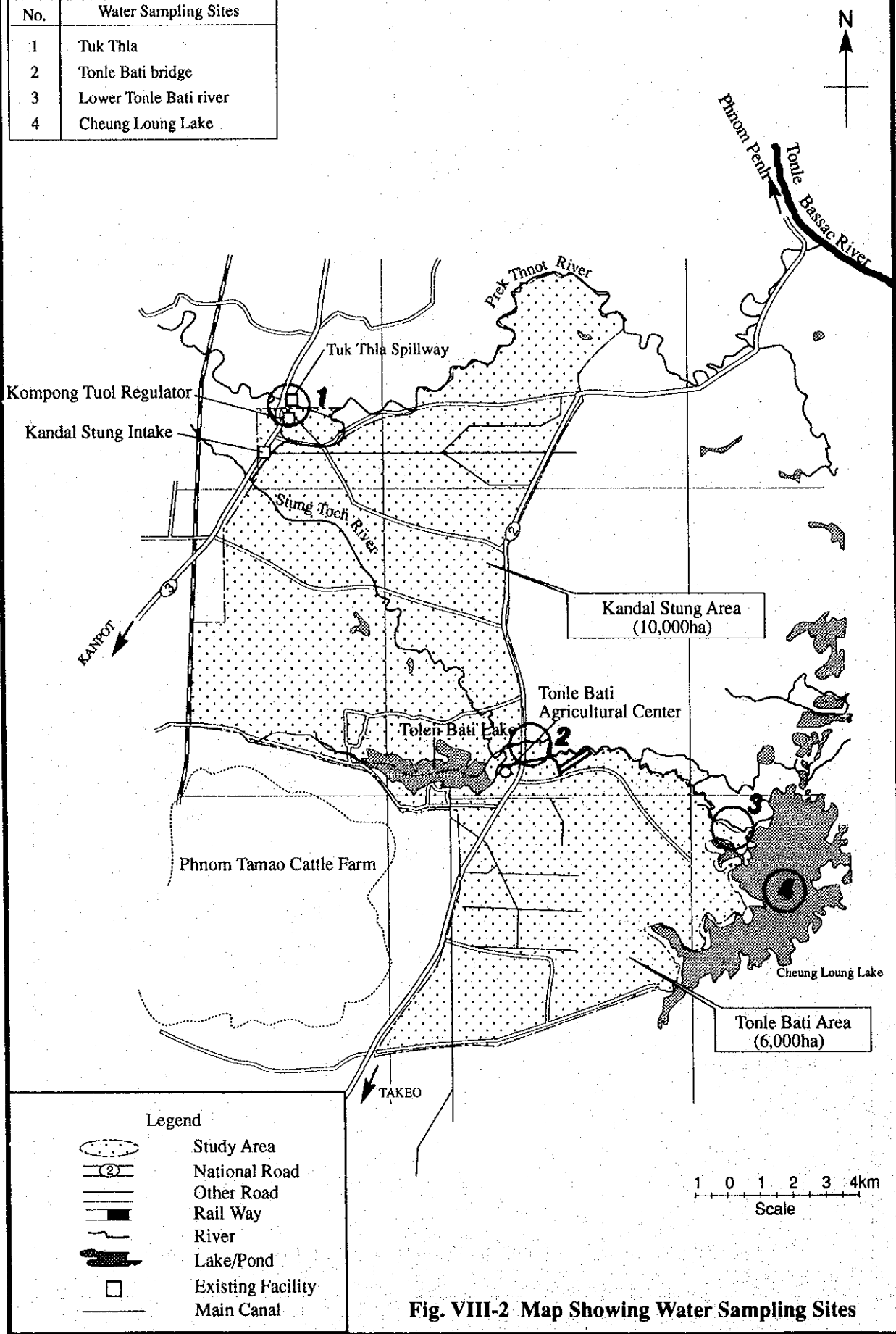
Development Actions	Locations	Kandal Stung	Tonle Bati	Downstream Prek Thnot River	Cheung Loung Lake
1. <u>Improved land use</u>					
- Irrigable land		B	B	B	B
- Unirrigable upland		B	B	B	B
- Conversion of old river courses		B	B	N	N
2. <u>Improved agronomy</u>					
- Intensive cropping/crop diversification		L	L	L	L
- Soil conservation		B	B	B	B
- Pest management		B	B	B	B
3. <u>Irrigation and drainage</u>					
- River diversion		L	N	L	N
- Canal rehabilitation		B	B	B	B
- Drainage		B	B	N	B
4. <u>Biodiversity</u>					
- Unirrigable upland		B	B	B	N
- Home garden		B	B	N	N
- Fishery		B	B	N	N
- Phnum Thma		N	B	N	N
5. <u>Firewood</u>					
- Domestic		B	B	N	N
- Industrial		B	B	N	N
6. <u>Reforestation Phnum Thma</u>					
- Watershed		N	B	N	N
- Firewood		B	B	N	N
- Recreation		B	B	N	N
- Biodiversity		B	B	N	N
7. <u>Fishery</u>					
- Conversion of old river courses		B	-	N	-
- Family fishing		B	-	N	-
8. <u>Water quality</u>					
- Drinking water		B	B	N	N
- Agricultural runoff		L	L	N	M
9. <u>Health and sanitation</u>					
- Miscellaneous aspects		B	B	N	N
10. <u>Life improvement</u>					
- Miscellaneous aspects		B	B	N	N
11. <u>Borrow pit (outside project area)</u>					
- Flash flooding		M	-	-	-
- Dust/noise		M	-	-	-
- Degradation		H	-	-	-
12. <u>Cultural area</u>					
- Inundation		N	H	-	-
13. <u>Recreation area</u>					
- inundation		N	H	-	-
14. <u>Environmental education</u>					
- Different components as applicable to locality		B	B	-	-
15. <u>Construction phase (temporary)</u>					
- Miscellaneous such as dust, noise, runoff and sanitation		M	M	-	-
<b>Key to Assessment</b>					
	B	:	beneficial impact		
	L	:	low impact		
	M	:	medium impact		
	H	:	high impact		
	N	:	not affected		

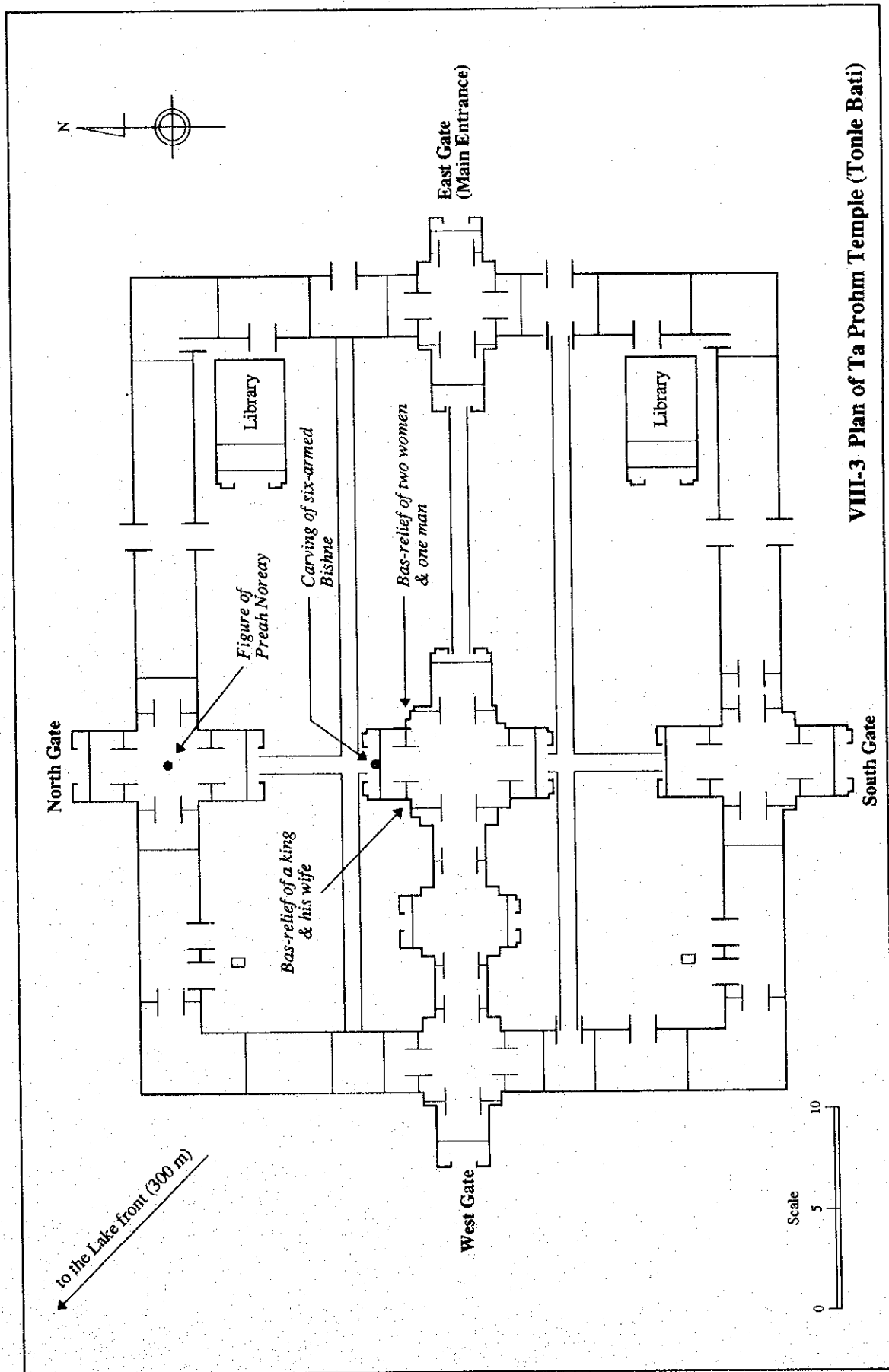
## *Figures*



**Fig. VIII-1 Organization of the State Secretariat for Environment**

No.	Water Sampling Sites
1	Tuk Thla
2	Tonle Bati bridge
3	Lower Tonle Bati river
4	Cheung Loung Lake





VIII-3 Plan of Ta Prohm Temple (Tonle Bati)



***ANNEX IX***  
***COST ESTIMATE***

**ANNEX IX**

**COST ESTIMATE**

**Contents**

	<u>Page</u>
1. GENERAL.....	IX-1
2. COST ESTIMATE.....	IX-1
2.1 Construction Cost.....	IX-1
2.2 Annual Disbursement Schedule.....	IX-2
3. OPERATION AND MAINTENANCE COST.....	IX-3
4. COST OF REPLACEMENT OF PROJECT FACILITIES.....	IX-3

### List of Tables

Table IX-1	Summary of the Project Cost .....	T-1
Table IX-2	Breakdown of Construction Cost of Kompong Tuol Irrigation Intake.....	T-2
Table IX-3	Breakdown of Construction Cost of Kandal Stung Irrigation Works ..	T-3
Table IX-4	Breakdown of Construction Cost of Tonle Bati Irrigation Works .....	T-4
Table IX-5	Breakdown of Construction Cost of On-farm Works .....	T-6
Table IX-6	Breakdown of Construction Cost of Agricultural Development Center (Full Development Stage) .....	T-7
Table IX-7	Breakdown of Construction Cost of Agricultural Development Center (First Development Stage) .....	T-8
Table IX-8	Breakdown of Equipment Cost of Agricultural Development Center .....	T-9
Table IX-9	Breakdown of Construction Cost of Road Network (Full Development Stage) .....	T-10
Table IX-10	Breakdown of Construction Cost of Road Network (Kandal Stung) .....	T-11
Table IX-11	Breakdown of Construction Cost of Road Network (Tonle Bati) .....	T-12
Table IX-12	Breakdown of Construction Cost of Water Supply Facilities .....	T-13
Table IX-13	Breakdown of Construction Cost of Other Rural Infrastructures .....	T-14

## ANNEX IX COST ESTIMATE

### 1. GENERAL

The preliminary costs of implementation of the Project are estimated on the basis of the following conditions:

- a. The exchange rate used is

$$\text{US\$ } 1.00 = \text{Riel } 2,200 = \text{Yen } 100$$

- b. The main construction works will be carried out by the contractor(s) selected through competitive bidding. The on-farm works will be executed by the farmers associations concerned for the respective service areas.
- c. The unit prices of the works will be divided into foreign currency portion and local currency portion. Local currency portion is estimated with reference to current market prices in the middle of 1994, and the cost data obtained from the similar works around the Study area. Foreign currency portion is estimated on the basis of CIF Phnom Penh.
- d. Contingency allowed in the cost estimate is 10 % of the construction cost.

### 2. COST ESTIMATE

#### 2.1 Construction Cost

The project cost will consist of construction cost, procurement of machinery, land acquisition cost, engineering and administration cost and contingency. The total cost is estimated to be US\$ 101.3 million, consisting of the foreign currency portion of US\$ 59.5 and the local currency portion of US\$ 41.8. The cost required for implementation of the first stage works will be US\$ 66.8 million, consisting of the foreign currency portion of US\$ 43.6 million and the local currency portion of US\$ 23.2 million. The detail are as shown in Table IX-1, and the summary is as shown below.

Description	Total cost			First Stage		
	Foreign Currency	Local Currency	Total	Foreign Currency	Local Currency	Total
1. Construction cost						
1.1 Irrigation and drainage	33.61	17.74	51.35	27.76	10.72	33.48
1.2 Rural development center	2.96	2.33	5.29	1.45	1.14	2.59
1.3 Rural road network	4.79	4.42	9.21	3.40	3.13	6.53
1.4 Rural water supply system	2.56	1.32	3.88	0.71	0.36	1.07
1.5 Village clinic	0.19	0.19	0.38	0.07	0.07	0.14
1.6 School building	0.69	0.69	1.37	0.46	0.46	0.92
1.7 Community hall	1.61	1.61	3.23	0.63	0.63	1.26
1.8 On-farm development	0	5.30	5.30	0	2.20	2.20
Sub-total	46.42	33.60	80.02	34.47	18.73	53.20
2. Procurement of O/M equipment	1.90	0.10	2.00	0.95	0.05	1.00
3. Engineering services and administration	5.80	4.04	9.84	4.25	2.25	6.50
4. Land acquisition	0	0.23	0.23	0	0.03	0.03
5. Contingencies	5.41	3.80	9.21	3.96	2.11	6.07
Total	59.53	41.77	101.30	43.64	23.16	66.81

The detailed breakdowns of the cost estimate of respective project components, procurement cost of equipment, and other related cost are shown in Table IX-2 to IX-11.

## 2.2 Annual Disbursement Schedule

The annual disbursement for the first stage development is worked out according to the implementation schedule as shown below.

Unit : US\$ 1,000

Year	Foreign Currency	Local Currency	Total
1st year	5,805	3,017	8,822
2nd year	15,515	8,335	23,850
3rd year	17,513	8,895	26,408
4th year	4,809	2,917	7,726
Total	43,642	23,164	66,806

### 3. OPERATION AND MAINTENANCE COST

Operation and maintenance costs of irrigation and drainage works for the first stage development are estimated to be US\$ 181,000.

### 4. COST OF REPLACEMENT OF PROJECT FACILITIES

Pumping equipment of irrigation and metal works of irrigation canal related structures are periodically to be replaced. Replacement cost for them is estimated as shown below with the respective economic life.

Items	Replacement Cost (US\$ 1,000)	Useful Life (year)
1. Pumping equipment		
- Small pumps in Kandal Stung area	11	20
- Tonle Bati pump station	1,391	30
2. Metal works		
-Kompong Tuol intake gates	2,675	20
-Gates for canal related structures	3,374	20

## *Tables*

**Table IX-1 Summary of the Project Cost**

Unit : 1,000 US\$

Construction Work Items	First Stage Works		Second Stage Works		Total	
	F/C	L/C	F/C	L/C	F/C	L/C
<b>I. CONSTRUCTION COST</b>						
1. Irrigation and Drainage Systems						
1) Improvement of Tuk Thla and Kompong Tuol Regulators	12,277	4,483	0	0	12,277	4,483
2) Irrigation and drainage system - Kandal Stung System	5,201	2,549	3,823	4,218	9,025	11,968
- Tonle Bati System	10,281	3,692	2,030	2,803	12,311	6,494
Sub-Total	27,759	10,724	5,853	7,020	33,612	17,744
2. On-Farm Development						
- Kandal Stung Area	0	1,299	0	1,349	0	2,648
- Tonle Bati Area	0	901	0	1,748	0	2,649
Sub-Total	0	2,200	0	3,096	0	5,297
3. Social / Rural Infrastructures						
1) Rural Development Center	1,450	1,139	1,515	1,190	2,965	2,329
2) Rural Road Network	3,397	3,136	1,390	1,284	4,787	4,420
3) Rural Water supply Facilities	706	364	1,857	957	2,563	1,321
4) Village Clinic	71	71	119	119	190	190
5) School Building	460	460	225	225	685	685
6) Community hall	631	631	983	983	1,614	1,614
Sub-Total	6,715	5,801	6,089	4,758	12,804	10,559
Total (Item - I)	34,474	18,725	11,942	14,875	46,416	33,600
II. Procurement of O&M Equipment	950	50	950	50	1,900	100
III. Engineering/Administration (12%)	4,251	2,253	1,547	1,791	5,798	4,044
IV. Land Acquisition	0	30	0	200	0	230
Total (Item - II, III, IV)	5,201	2,333	2,497	2,041	7,698	4,374
V. Physical Contingency (10%)	3,967	2,106	1,444	1,692	5,411	3,797
Total (Item - I+II+III+IV+V)	43,642	23,164	15,883	18,607	59,525	41,771
Total						101,296



**Table IX 2 Breakdown of Construction Cost of Kompong Tuol Irrigation Intake**

Unit : 1,000 US\$

Work	Unit	First Stage Works			Second Stage Works				
		Q'ty	F/C	L/C	Total	Q'ty	F/C	L/C	Total
1 Tuk Thla Regulator			2,128.3	504.4	2,632.8	-	-	-	-
- Earth Works	L.S.	1	183.7	60.6	244.3	-	-	-	-
- Structure Works	L.S.	1	804.3	264.8	1,069.1	-	-	-	-
- Gate Works	Sets	5	1,140.3	179.0	1,319.4	-	-	-	-
2 Kompong Tuol Regulator			4,100.6	985.8	5,086.4	-	-	-	-
- Earth Works	L.S.	1	297.7	97.5	395.2	-	-	-	-
- Structure Works	L.S.	1	1,762.9	530.2	2,293.2	-	-	-	-
- Gate Works	Sets	5	2,040.0	358.1	2,398.0	-	-	-	-
3 Improvement of RN-3			1,885.8	1,839.7	3,725.5	-	-	-	-
- Earth Works	L.S.	1	1,356.6	1,168.1	2,524.7	-	-	-	-
- Asphalt Pavement Works	Km	1.9	529.1	671.6	1,200.7	-	-	-	-
4 Emergency Spillway			2,629.0	586.3	3,215.3	-	-	-	-
- Earth Works	L.S.	1	162.9	127.6	290.6	-	-	-	-
- Structure Works	L.S.	1	2,466.1	458.7	2,924.8	-	-	-	-
5 Flood Dike			571.4	395.3	966.6	-	-	-	-
- Earth Works	L.S.	1	459.0	316.8	775.8	-	-	-	-
- Structure Works	L.S.	1	112.4	78.4	190.8	-	-	-	-
6 Intake Gate (Kandal Sing intake and regul:			317.3	58.5	375.8	-	-	-	-
- Earth Works	Sites	2	27.9	9.7	37.6	-	-	-	-
- Structure Works	Sites	2	87.8	34.4	122.2	-	-	-	-
- Gate Works	Sets	4	201.6	14.3	215.9	-	-	-	-
7 Radio Communication System	L.S.	1	644.6	113.1	757.7	-	-	-	-
<b>Total</b>			<b>12,276.9</b>	<b>4,483.1</b>	<b>16,760.1</b>	-	-	-	-

**Table IX 3 Breakdown of Construction Cost of Kandal Stung Irrigation Works**

Work	Unit	Unit : 1,000 US\$							
		First Stage Works				Second Stage Works			
		Q'ty	F/C	L/C	Total	Q'ty	F/C	L/C	Total
1. Preparatory Works	L.S.	1	18.9	23.7	42.6	1	16.7	22.6	39.4
2. Irrigation Canals			4,045.9	1,836.8	5,882.7		1,365.3	1,720.5	3,085.8
1) Main Irrigation Canals	Km	5.4	1,513.2	559.5	2,072.6	-	-	-	-
- Earth Works	L.S.	1	149.5	69.3	218.8	-	-	-	-
- Canal Lining Works	Km	5.4	805.6	384.5	1,190.1	-	-	-	-
- Structure Works	Nos.	36	520.3	91.7	611.9	-	-	-	-
- Pumping Station	Nos	2	37.7	14.0	51.8	-	-	-	-
2) Lateral Irrigation Canals	Km	14.3	1,338.2	538.4	1,876.6	16.3	1,365.3	594.0	1,959.3
- Earth Works	L.S.	1	286.8	173.1	460.0	1	328.3	142.9	471.2
- Canal Lining Works	Km	5.6	480.5	236.1	716.6	6.5	516.6	224.8	741.4
- Structure Works	Nos.	61	495.3	101.1	596.4	25	520.3	226.4	746.7
- Pumping Station	Nos	4	75.5	28.1	103.6	-	-	-	-
3) Tertiary Irrigation Canals	Km	54.9	1,194.6	738.9	1,933.5	63.4	0.0	1,126.5	1,126.5
- Earth Works	L.S.	1	808.4	607.3	1,415.7	1	0.0	816.3	816.3
- Structure Works	Nos.	619	386.2	131.6	517.8	715	0.0	310.1	310.1
3. Drainage Canals			615.2	380.1	995.4		340.2	474.8	814.9
1) Main Drainage Canals	Km	18.1	333.4	176.6	510.0	20.9	340.2	194.8	535.0
- Earth Works	L.S.	1	217.2	136.4	353.7	1	233.9	134.0	367.8
- Structure Works	Nos.	18	116.2	40.1	156.3	21	106.3	60.9	167.2
2) Tertiary Drainage Canals	Km	62.2	281.8	203.5	485.4	71.8	0.0	279.9	279.9
- Earth Works	L.S.	1	160.9	151.1	312.0	1	0.0	202.9	202.9
- Structure Works	Nos.	110	120.9	52.4	173.3	125	0.0	77.1	77.1
4. Operation / Maintenance Road									
- Laterite Pavement	Km	28.5	170.1	142.7	312.8	32.9	173.5	157.5	331.0
5. Demonstration Farm									
- On-Farm Works	ha	265	350.7	166.3	517.1	-	-	-	-
6. On-Farm Works									
- Farm Inlet	Nos.	-	-	-	-	4000	194.1	74.0	268.1
7. Saba Dam / Connection Canal	L.S.	-	-	-	-	1	1,733.2	1,768.6	3,501.9
<b>Total</b>			<b>5,200.9</b>	<b>2,549.7</b>	<b>7,750.6</b>		<b>3,823.1</b>	<b>4,218.0</b>	<b>8,041.1</b>

**Table IX 4 Breakdown of Costruction Cost of Tonle Bati Irrigation Works (1/2)**

		Unit : 1,000 US\$							
Work	Unit	First Stage Works				Second Stage Works			
		Q'ty	F/C	L/C	Total	Q'ty	F/C	L/C	Total
1. Preparatory Works	L.S.	1	26.2	29.4	55.7	1	16.5	25.9	42.4
2. Head Works			2,911.8	1,095.4	4,007.2	-	-	-	-
1) Stung Toch Diversion Weir			432.2	96.2	528.5	-	-	-	-
- Earth Works	L.S.	1	52.6	29.3	81.9	-	-	-	-
- Structure Works	L.S.	1	192.8	56.3	249.1	-	-	-	-
- Gate Works	Sets	3	186.9	10.6	197.5	-	-	-	-
2) Stung Toch Intake Gate			130.1	19.0	149.1	-	-	-	-
- Earth Works	L.S.	1	8.1	2.8	10.9	-	-	-	-
- Structure Works	L.S.	1	39.4	11.4	50.8	-	-	-	-
- Gate Works	Sets	3	82.6	4.9	87.5	-	-	-	-
3) Connection Canal	Km	7.6	2,349.5	980.2	3,329.6	-	-	-	-
- Earth Works	L.S.	1	430.8	218.2	649.0	-	-	-	-
- Canal Lining Works	Km	6.1	1,882.6	752.6	2,635.2	-	-	-	-
- Structure Works	Nos.	2	36.1	9.4	45.4	-	-	-	-
3. Irrigation Canals			6,325.7	2,033.6	8,359.3	1,378.5	2,049.1	3,427.6	
1) Intake Gate			130.1	19.0	149.1	-	-	-	-
- Earth Works	L.S.	1	8.1	2.8	10.9	-	-	-	-
- Structure Works	L.S.	1	39.4	11.4	50.8	-	-	-	-
- Gate Works	Sets	3	82.6	4.9	87.5	-	-	-	-
2) Pumping Station			1,953.1	269.0	2,222.1	-	-	-	-
- Earth Works	L.S.	1	19.7	4.4	24.1	-	-	-	-
- Structure Works	L.S.	1	81.7	24.0	105.7	-	-	-	-
- Pump House Works	L.S.	1	27.5	13.2	40.8	-	-	-	-
- Pump / Accessory Works	Sets	4	1,824.2	227.3	2,051.5	-	-	-	-
3) Main Irrigation Canal	Km	8.3	2,123.1	754.9	2,878.0	-	-	-	-
- Earth Works	L.S.	1	289.4	139.0	428.4	-	-	-	-
- Canal Lining Works	Km	7.2	1,195.1	511.9	1,707.0	-	-	-	-
- Structure Works	Nos.	29	638.6	104.1	742.7	-	-	-	-
4) Lateral Irrigation Canal	Km	10.1	1,008.5	364.6	1,373.2	16.3	1,378.5	694.0	2,072.5
- Earth Works	L.S.	1	180.2	106.9	287.1	1	284.7	143.3	428.0
- Canal Lining Works	Km	5.5	397.2	179.4	576.6	5.5	575.9	290.0	865.9
- Structure Works	Nos.	58	431.1	78.4	509.5	95	517.9	260.7	778.6
5) Tertiary Irrigation Canals	Km	48.1	1,110.9	626.0	1,736.9	78.2	0.0	1,355.1	1,355.1
- Earth Works	L.S.	1	777.0	524.0	1,301.0	1	0.0	1,010.1	1,010.1
- Structure Works	Nos.	511	333.9	102.0	435.9		0.0	345.0	345.0

**Table IX-4 Breakdown of Construction Cost of Tonle Bati Irrigation Works (2/2)**

		Unit : 1,000 US\$							
Work	Unit	First Stage Works				Second Stage Works			
		Q'ty	F/C	L/C	Total	Q'ty	F/C	L/C	Total
<b>4. Drainage Canals</b>			<u>365.3</u>	<u>218.0</u>	<u>583.4</u>		<u>316.9</u>	<u>509.7</u>	<u>826.7</u>
1) Main Drainage Canals	Km	10.4	155.3	77.8	233.1	16.9	212.2	148.2	360.4
- Earth Works	L.S.	1	135.4	72.5	207.9	1	189.0	131.9	320.9
- Structure Works	Nos.	4	19.9	5.3	25.2	9	23.2	16.2	39.5
2) Lateral Drainage Canal	Km	13.7	76.6	48.3	124.9	22.3	104.7	91.9	196.6
- Earth Works	L.S.	1	71.4	46.6	118.0	1	98.9	86.7	185.6
- Structure Works	Nos.	5	5.2	1.7	6.9	8	5.9	5.1	11.0
3) Tertiary Drainage Canals	Km	41.8	133.4	91.9	225.4	67.9	0.0	269.7	269.7
- Earth Works	L.S.	1	91.8	78.6	170.4	1	0.0	202.6	202.6
- Structure Works	Nos.	40	41.6	13.4	55.0	65	0.0	67.1	67.1
<b>5. Operation / Maintenance Road</b>									
- Laterite Pavement Works	Km	17.5	94.6	71.3	165.9	28.4	129.3	135.7	265.0
<b>6. Demonstration Farm</b>									
- On-Farm Works	ha.	259	221.6	151.6	373.2	-	-	-	-
<b>7. On-Farm Works</b>									
- Farm Inlet	Nos.	-	-	-	-	3940	188.7	83.0	271.7
<b>8. Tonle Bati Lake Related Works</b>			<u>335.7</u>	<u>92.7</u>	<u>428.3</u>	-	-	-	-
1) Protection Dike	L.S.	1	112.1	30.4	142.5	-	-	-	-
2) Road Heightening	L.S.	1	120.9	55.8	176.7	-	-	-	-
3) Repairing of Drain Outlet	L.S.	1	102.7	6.4	109.1	-	-	-	-
<b>Total</b>			<u>10,281.0</u>	<u>3,692.0</u>	<u>13,973.0</u>		<u>2,030.0</u>	<u>2,803.4</u>	<u>4,833.3</u>

**Table IX 5 Breakdown of Construction Cost of On-farm Works**

Work	Unit	Unit : 1,000 US\$							
		First Stage Works				Second Stage Works			
		Q'ty	F/C	L/C	Total	Q'ty	F/C	L/C	Total
<b>Kandal Stung Area</b>									
1. Kandal Stung Area			0.0	1,299.0	1,299.0		0.0	1,348.8	1,348.8
- Land Leveling / Boundary	ha	1,935	0.0	852.7	852.7	2000	0.0	885.4	885.4
- Quarterly Irri. & Drain Canals	ha	1,935	0.0	442.9	442.9	2000	0.0	459.9	459.9
- Farm Inlet (Installation)	Nos	2,000	0.0	3.4	3.4	2000	0.0	3.5	3.5
2. Tonle Bati Area			0.0	901.0	901.0		0.0	1,748.0	1,748.0
- Land Leveling / Boundary	ha	1,400	0.0	591.7	591.7	2541	0.0	1,148.6	1,148.6
- Quarterly Irri. & Drain Canals	ha	1,400	0.0	307.4	307.4	2541	0.0	596.8	596.8
- Farm Inlet (Installation)	Nos	1,400	0.0	1.5	1.5	2541	0.0	3.0	3.0

**Table IX-6 Breakdown of Construction Cost of Agricultural Development Center  
( Full Development Stage)**

Works	Unit	Quantity	Total (US\$)
<b>1 Kandal Stung Center No.1</b>			
<b>1.1 Building Facilities</b>			
1) Main building	m2	550	176,000
2) House for generator and pump	m2	50	5,000
3) Staff quarter	m2	1,700	510,000
4) Garage	m2	120	8,400
5) Outside toilet	m2	20	2,000
6) Storage & office	m3	1,000	150,000
7) Water supply facilities	L.S	1	46,000
<b>1.2 Outdoor works</b>			
1) Road surfacing	site	6	24,000
2) Earthworks	site	5	100,000
<b>1.3 Equipment</b>			
L.S 1 361,000			
<b>1.4 Electric supply facilities</b>			
1) Generator	set	4	160,000
2) Distribution line	km	4	100,000
Total			1,642,400
<b>2 Kandal Stung Center No.2</b>			
<b>2.1 Building Facilities</b>			
1) Main building	m2	550	176,000
2) House for generator and pump	m2	50	5,000
3) Staff quarter	m2	2,000	600,000
4) Garage	m2	75	5,250
5) Outside toilet	m2	20	2,000
6) Storage & office	m3	1,500	225,000
7) Water supply facilities	L.S	1	46,000
<b>2.2 Outdoor works</b>			
1) Road surfacing	site	6	24,000
2) Earthworks	site	5	100,000
<b>2.3 Equipment</b>			
L.S 1 385,000			
<b>2.4 Electric supply facilities</b>			
1) Generator	set	4	160,000
2) Distribution line	km	4	100,000
Total			1,828,250
<b>3 Tonle Bati Center</b>			
<b>3.1 Building Facilities</b>			
1) Main building	m2	0	0
2) House for generator and pump	m2	0	0
3) Staff quarter	m2	2,300	690,000
4) Garage	m2	75	5,250
5) Outside toilet	m2	20	2,000
6) Storage & office	m3	2,000	300,000
7) Water supply facilities	L.S	1	46,000
<b>3.2 Outdoor works</b>			
1) Road surfacing	site	6	24,000
2) Earthworks	site	5	100,000
<b>3.3 Equipment</b>			
L.S 1 397,000			
<b>3.4 Electric supply facilities</b>			
1) Generator	set	4	160,000
2) Distribution line	km	4	100,000
Total			1,824,250
Grand Total			5,294,900

**Table IX-7 Breakdown of Construction Cost of Agricultural Development Center ( First Stage)**

Work	Unit	Quantity	Total (US\$)
<b>1. Kandal Stung Center No.2</b>			
<b>1.1 Building Facilities</b>			
1) Main building	m2	500	160,000
2) House for generator and pump	m2	50	5,000
3) Staff quarter	m2	1,200	360,000
4) Garage	m2	75	5,250
5) Outside toilet	m2	20	2,000
6) Storage & office for input supply	m3	660	99,000
7) Water supply facilities	L.S	1	46,000
<b>1.2 Outdoor works</b>			
1) Road surfacing	m2	6	24,000
2) Earthworks	m2	5	100,000
<b>1.3 Equipment</b>			
	L.S	1	361,000
<b>1.4 Electric supply facilities</b>			
1) Generator	set	4	160,000
2) Distribution line	km	4	100,000
<b>Total</b>			<b>1,422,250</b>
<b>2. Tonle Bati Center</b>			
<b>2.1 Building Facilities</b>			
1) Main building	m2	0	0
2) House for generator and pump	m2	0	0
3) Staff quarter	m2	1,000	300,000
4) Garage	m2	75	5,250
5) Outside toilet	m2	20	2,000
6) Storage & office for input supply	m3	560	84,000
7) Water supply facilities	L.S	1	46,000
<b>2.2 Outdoor works</b>			
1) Road surfacing	m2	6	24,000
2) Earthworks	m2	5	100,000
<b>2.3 Equipment</b>			
	L.S	1	346,000
<b>2.4 Electric supply facilities</b>			
1) Generator	set	4	160,000
2) Distribution line	km	4	100,000
<b>Total</b>			<b>1,167,250</b>
<b>Grand Total</b>			<b>2,589,500</b>

**Table IX-8 Breakdown of Equipment Cost of Agricultural Development Center**

**(1) Full Development Stage**

Equipment	Unit	Kandal Stung No.1		Kandal Stung No.2		Tonle Bati	
		Quantity (US\$)	Cost (US\$)	Quantity (US\$)	Cost (US\$)	Quantity (US\$)	Cost (US\$)
4WD vehicle	unit	4	108,000	4	108,000	4	108,000
Minibus	unit	1	45,000	1	45,000	1	45,000
Mobile	unit	1	18,000	1	18,000	1	18,000
Cold storage	set	1	10,000	1	10,000	1	10,000
Copy machine	set	1	8,000	1	8,000	1	8,000
Personal Computer	set	2	12,000	2	12,000	2	12,000
Portable generator	set	2	4,000	2	4,000	2	4,000
Mortor cycle	unit	16	48,000	24	72,000	28	84,000
Farm machinery	set	1	108,000	1	108,000	1	108,000
<b>Total</b>			<b>361,000</b>		<b>385,000</b>		<b>397,000</b>

**(2) First Stage**

Equipment	Unit	Kandal Stung No.1		Kandal Stung No.2		Tonle Bati	
		Quantity (US\$)	Cost (US\$)	Quantity (US\$)	Cost (US\$)	Quantity (US\$)	Cost (US\$)
4WD vehicle	unit	0	0	4	108,000	4	108,000
Minibus	unit	0	0	1	45,000	1	45,000
Mobile	unit	0	0	1	18,000	1	18,000
Cold storage	set	0	0	1	10,000	1	10,000
Copy machine	set	0	0	1	8,000	1	8,000
Personal Computer	set	0	0	2	12,000	2	12,000
Portable generator	set	0	0	2	4,000	2	4,000
Mortor cycle	unit	0	0	16	48,000	11	33,000
Farm machinery	set	0	0	1	108,000	1	108,000
<b>Total</b>		<b>0</b>	<b>0</b>		<b>361,000</b>		<b>346,000</b>



**Table IX-9 Breakdown of Construction Cost of Road Network  
(Full Development Stage)**

Work	Unit	Quantity	Total (US\$)
<b>First Stage</b>			
1. Improvement of Provincial Road			
Provincial Road No.104	km	9.1	2,986,620
Provincial Road No.105	km	6.8	2,189,600
2. Improvement of Village Road			
Kandal Stung Study Area	km	8	348,800
Tonle Bati Study Area	km	14.6	1,008,860
Total			6,533,880
<b>Second Stage</b>			
1. Improvement of Village Trunk Road			
	km	15.9	888,810
2. Improvement of Village Road			
Kandal Stung Study Area	km	37.6	1,639,360
Tonle Bati Study Area	km	2.1	145,110
Total			2,673,280

**Table IX-10 Breakdown of Construction Cost of Road Network  
(Kandal Stung)**

Works	Unit	Quantity	Cost		Total (US\$)
			FC (US\$)	LC	
1. Provincial Road No.104	km	9.1			
1.1 Excavation	m3	6,352	30,490	0	30,490
1.2 Banking	m3	16,447	263,152	0	263,152
1.3 Compaction	m2	7,110	18,486	0	18,486
1.4 Asphalt Pavement(t=5cm)	m3	2,275	1,023,750	0	1,023,750
1.5 Lower Sub-base	m3	6,171	802,230	0	802,230
1.6 Upper Sub-base	m3	5,187	674,310	0	674,310
1.7 Sodding	m2	29,115	174,690	0	174,690
1.8 Mesonry	m3	0	0	0	0
1.9 Drainage culvert	Nos.	0	0	0	0
1.10 Pipe culvert	Nos.	0	0	0	0
1.11 Side ditch	m	0	0	0	0
Total			2,987,108	0	2,987,108
2. Provincial Road No.105		6.8			
2.1 Excavation	m3	1,870	8,976	0	8,976
2.2 Banking	m3	4,215	67,440	0	67,440
2.3 Compaction	m2	10,920	28,392	0	28,392
2.4 Asphalt Pavement(t=5cm)	m3	1,700	765,000	0	765,000
2.5 Lower Sub-base	m3	5,347	695,110	0	695,110
2.6 Upper Sub-base	m3	3,876	503,880	0	503,880
2.7 Sodding	m2	8,649	51,894	0	51,894
2.8 Mesonry	m3	835	58,450	0	58,450
2.9 Drainage culvert	Nos.	0	0	0	0
2.10 Pipe culvert	Nos.	66	6,600	0	6,600
2.11 Side ditch	m	2,000	4,500	0	4,500
Total			2,190,242	0	2,190,242
3. Improvement of village road	km	8			
3.1 Excavation	m3	3,158	15,158	0	15,158
3.2 Banking	m3	1,375	22,000	0	22,000
3.3 Compaction	m2	15,246	39,640	0	39,640
3.4 Gravel with laterite (t=20cm)	m3	4,816	192,640	0	192,640
3.5 Asphalt Pavement(t=5cm)	m3	22	9,900	0	9,900
3.6 Sodding	m2	5,129	30,774	0	30,774
3.7 Drainage culvert	Nos.	6	26,580	0	26,580
3.8 Pipe culvert	Nos.	73	7,300	0	7,300
3.9 Side ditch	m	2,200	4,950	0	4,950
Total			348,942	0	348,942

**Table IX-11 Breakdown of Construction Cost of Road Network  
(Tonle Bati)**

Works	Unit	Quantity	Total (US\$)
I. Improvement of village trunk road	km	15.9	
1.1 Excavation	m3	2,360	11,328
1.2 Banking	m3	6,540	104,640
1.3 Compaction	m2	55,200	143,520
1.4 Gravel with laterite (t=20cm)	m3	8,464	338,560
1.5 Asphalt Pavement(t=5cm)	m3	0	0
1.6 Sodding	m2	16,620	99,720
1.7 Drainage culvert	Nos.	28	124,040
1.8 Pipe culvert	Nos.	406	40,600
1.9 Side ditch	m	12,200	27,450
Total			889,858
2. Improvement of village road		14.6	
2.1 Excavation	m3	5,347	25,666
2.2 Banking	m3	5,395	86,320
2.3 Compaction	m2	52,613	136,794
2.4 Gravel with laterite (t=20cm)	m3	13,432	537,280
2.5 Asphalt Pavement(t=5cm)	m3	0	0
2.6 Sodding	m2	16,437	98,622
2.7 Drainage culvert	Nos.	19	84,170
2.8 Pipe culvert	Nos.	239	23,900
2.9 Side ditch	m	7,200	16,200
Total			1,008,952

**Table IX-12 Breakdown of Construction Cost of Water Supply Facilities**

Work	Unit	Quantity	Total (US\$)	
<b>First Stage</b>				
1. Kandal Stung area				
1.1 Level I (> 50 m)	set	0	0	0
1.2 Level I (< 50 m)	set	42	539,700	
1.3 Level II	set	1	59,700	
			Sub-total	599,400
2. Tonle Bati area				
2.1 Level I (> 50 m)	set	0	0	0
2.2 Level I (< 50 m)	set	32	411,200	
2.3 Level II	set	1	59,700	
			Sub-total	470,900
			Total	1,070,300
<b>Second Stage</b>				
1. Kandal Stung area				
1.1 Level I (> 50 m)	set	67	1,246,870	
1.2 Level I (< 50 m)	set	30	385,500	
1.3 Level II	set	0	0	
			Sub-total	1,632,370
2. Tonle Bati area				
2.1 Level I (> 50 m)	set	0	0	0
2.2 Level I (< 50 m)	set	92	1,182,200	
2.3 Level II	set	0	0	
			Sub-total	1,182,200
			Total	

**Table IX-13 Breakdown of Construction Cost of Other Rural Infrastructures**

	Unit	Quantity	Total
			(US\$)
<b>1 First Stage</b>			
<b>1.1 Village clinic (3 sites)</b>			
1.1 Building work	m2	288	72,000
1.2 Water supply	set	3	55,830
1.3 Earth work	site	3	9,780
1.4 Related furniture	set	3	5,010
Total			142,620
<b>1.2 Class room improvement (39 class rooms)</b>			
2.1 Building work	m2	2,808	702,000
2.2 Earth work	site	39	109,200
2.3 Related furniture	set	39	109,590
Total			920,790
<b>1.3 Community facilities (7 sites)</b>			
3.1 Main building work	m2	1,340	402,000
3.2 Cookhouse	m2	28	5,600
3.3 Latrine	m2	84	12,600
3.4 Staff quarter (including electricity supply)	m2	1,500	375,000
3.5 Day care house	m2	700	175,000
3.6 Water supply	set	7	130,270
3.7 Earth work	site	7	140,000
3.8 Related furniture	set	7	22,260
Total			1,262,730
<b>2 Second Stage</b>			
<b>2.1 Village clinic (5 site)</b>			
1.1 Building work	m2	480	120,000
1.2 Water supply	set	5	93,050
1.3 Earth work	site	5	16,300
1.4 Related furniture	set	5	8,350
Total			237,700
<b>2.2 Class room improvement (19 class rooms)</b>			
2.1 Building work	m2	1,368	342,000
2.2 Earth work	site	19	53,200
2.3 Related furniture	set	19	53,390
Total			448,590
<b>2.3 Community facilities (11 sites)</b>			
3.1 Main building work	m2	1,590	477,000
3.2 Cookhouse	m2	44	8,800
3.3 Latrine	m2	132	19,800
3.4 Staff quarter (including electricity supply)	m2	2,600	650,000
3.5 Day care house	m2	1,540	385,000
3.6 Water supply	set	11	204,710
3.7 Earth work	site	11	220,000
3.8 Related furniture	set	11	34,980
Total			1,965,310









A black and white photograph of a landscape. In the foreground, there is a wide, flat field, possibly a rice paddy or a similar agricultural area. In the middle ground, there is a line of trees, including several tall palm trees. The word "JICA" is overlaid in the center of the image, in a stylized, bold font. The background is a bright, overexposed sky.

JICA