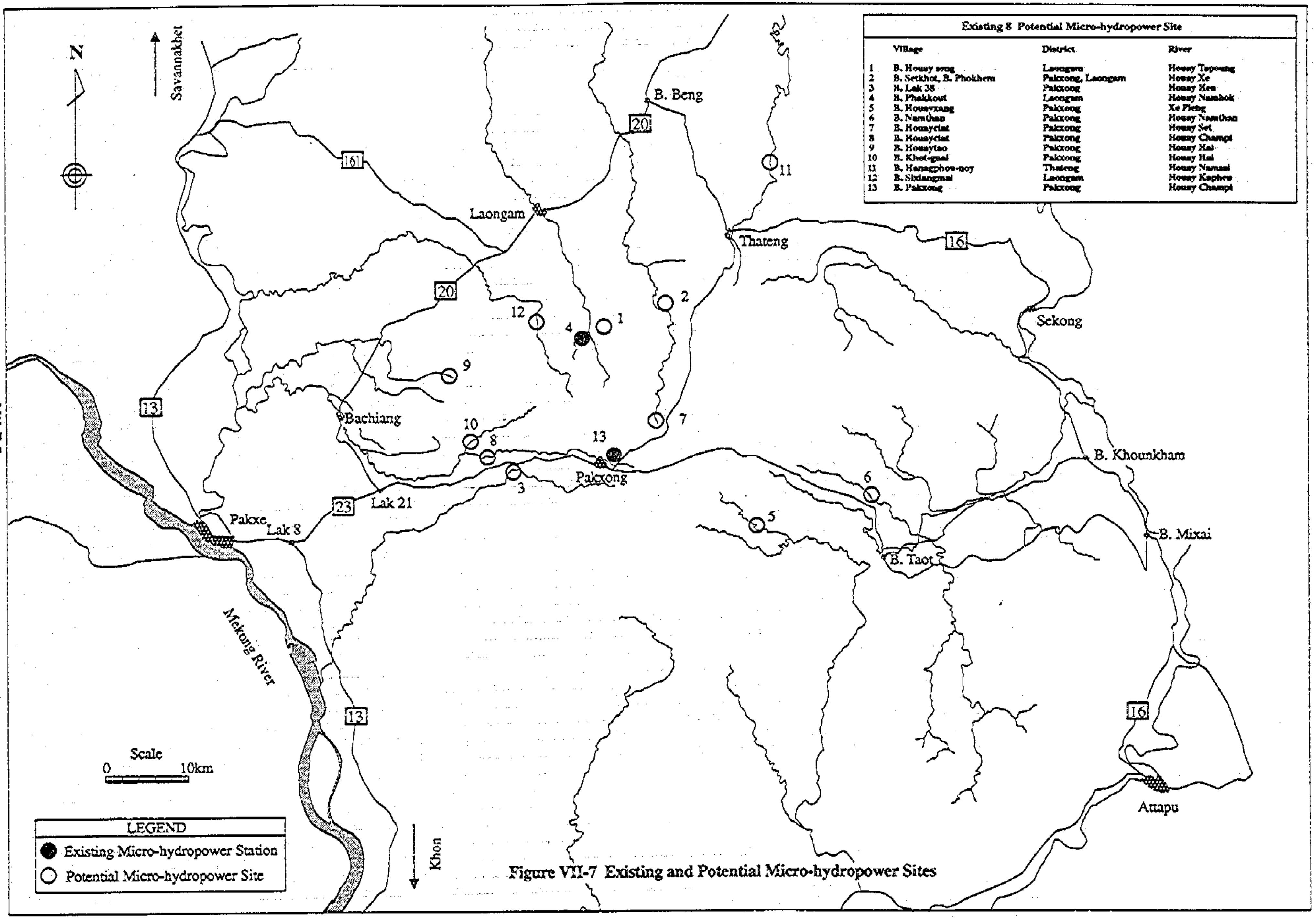


Existing 8 Potential Micro-hydropower Site

	Village	District	River
1	B. Houay seng	Laongam	Houay Tapoung
2	B. Setkhot, B. Phokhem	Pakxong, Laongam	Houay Xe
3	B. Lak 38	Pakxong	Houay Hen
4	B. Phakkout	Laongam	Houay Namhok
5	B. Houayxang	Pakxong	Xe Pleng
6	B. Namthan	Pakxong	Houay Namthan
7	B. Houayciat	Pakxong	Houay Set
8	B. Houayciat	Pakxong	Houay Champi
9	B. Houaytao	Pakxong	Houay Hai
10	B. Khot-gnai	Pakxong	Houay Hai
11	B. Hanagphou-noy	Thateng	Houay Namsai
12	B. Sixiangmai	Laongam	Houay Kaphew
13	B. Pakxong	Pakxong	Houay Champi

Figure VII-7 Existing and Potential Micro-hydropower Sites

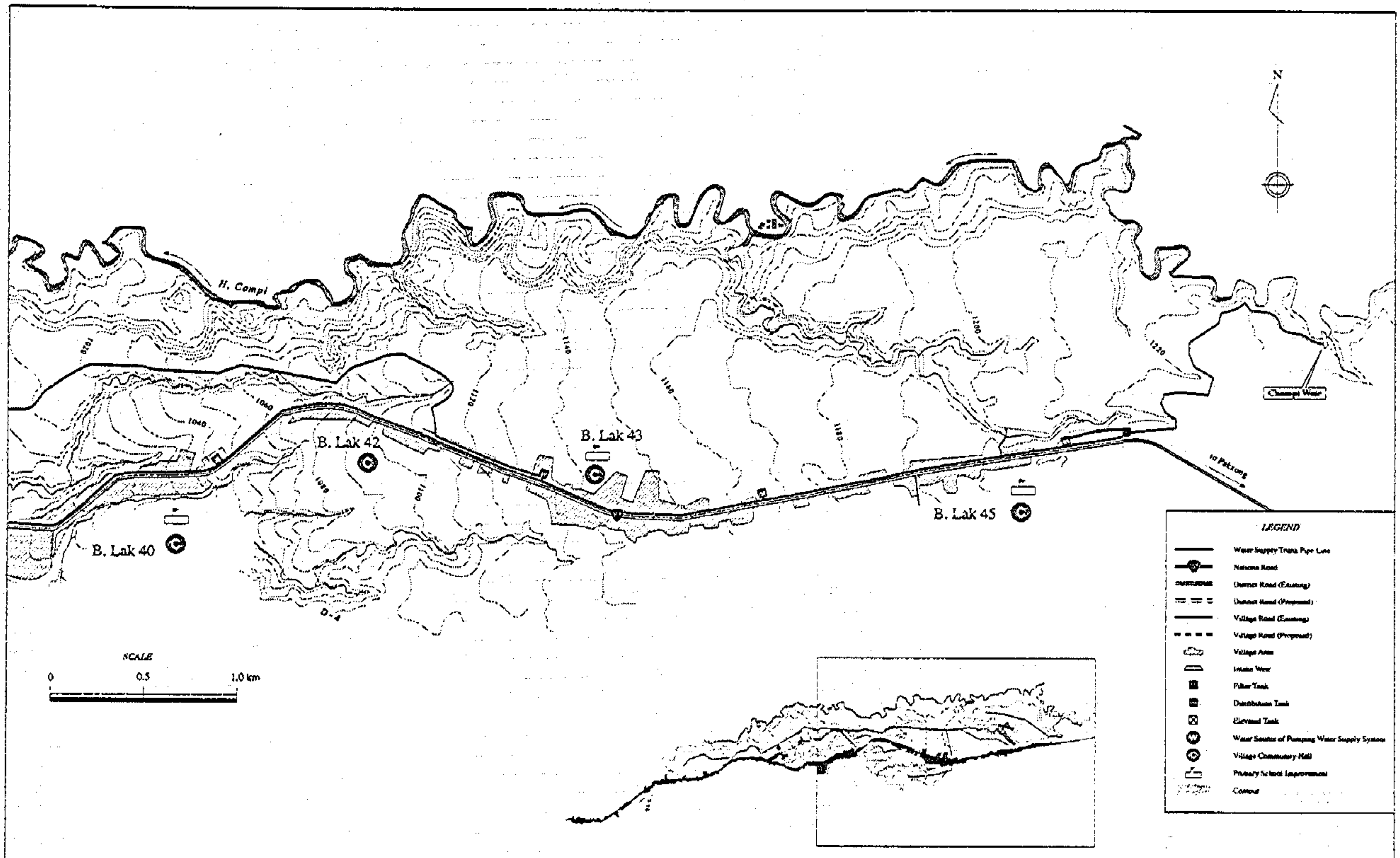


Figure VII-8 Proposed Rural Infrastructure Development Plan of Upper Champi (1/2)

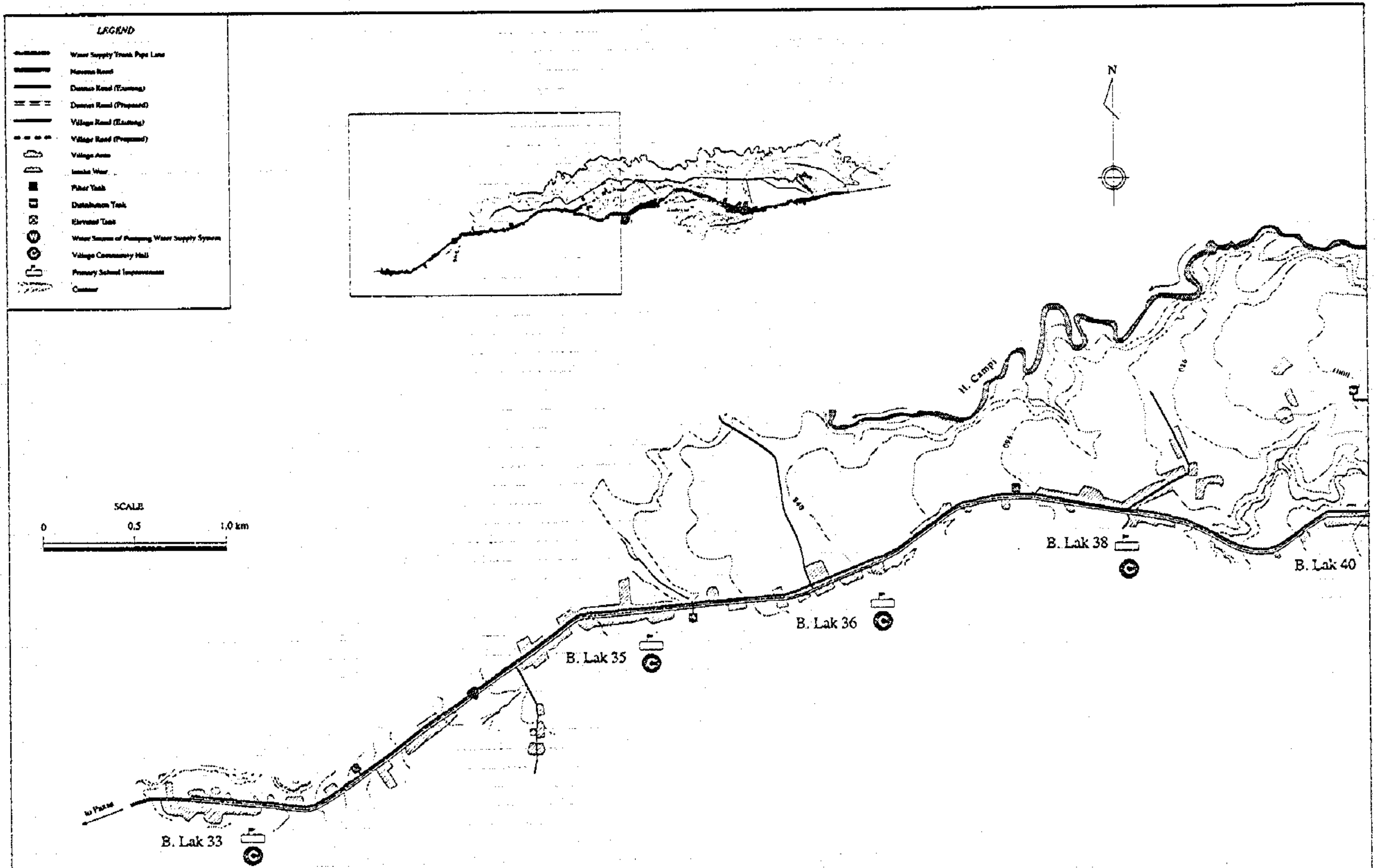


Figure VII-8 Proposed Rural Infrastructure Development Plan of Upper Champi (2/2)

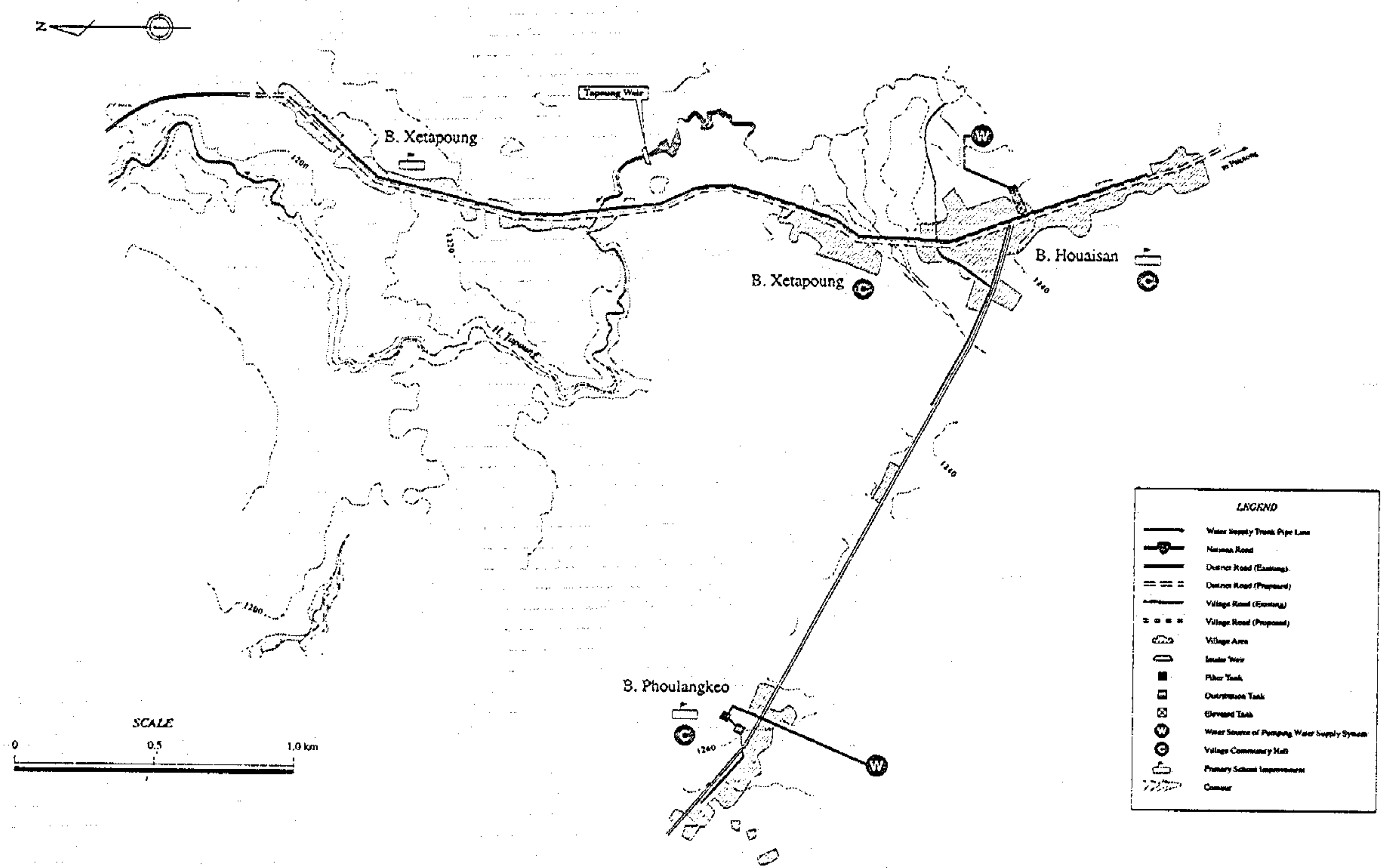


Figure VII-9 Proposed Rural Infrastructure Development Plan of Upper Tapoung Scheme

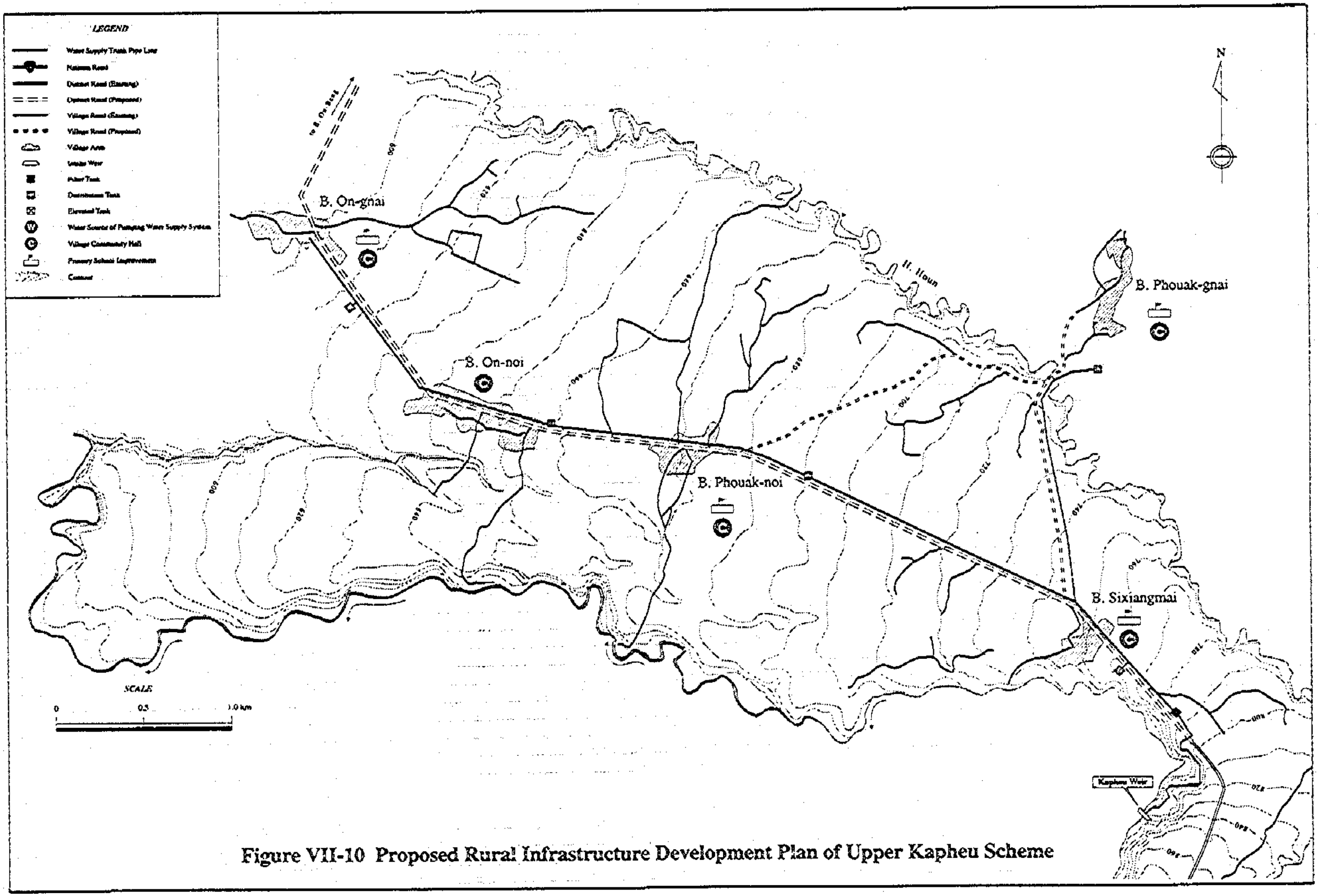
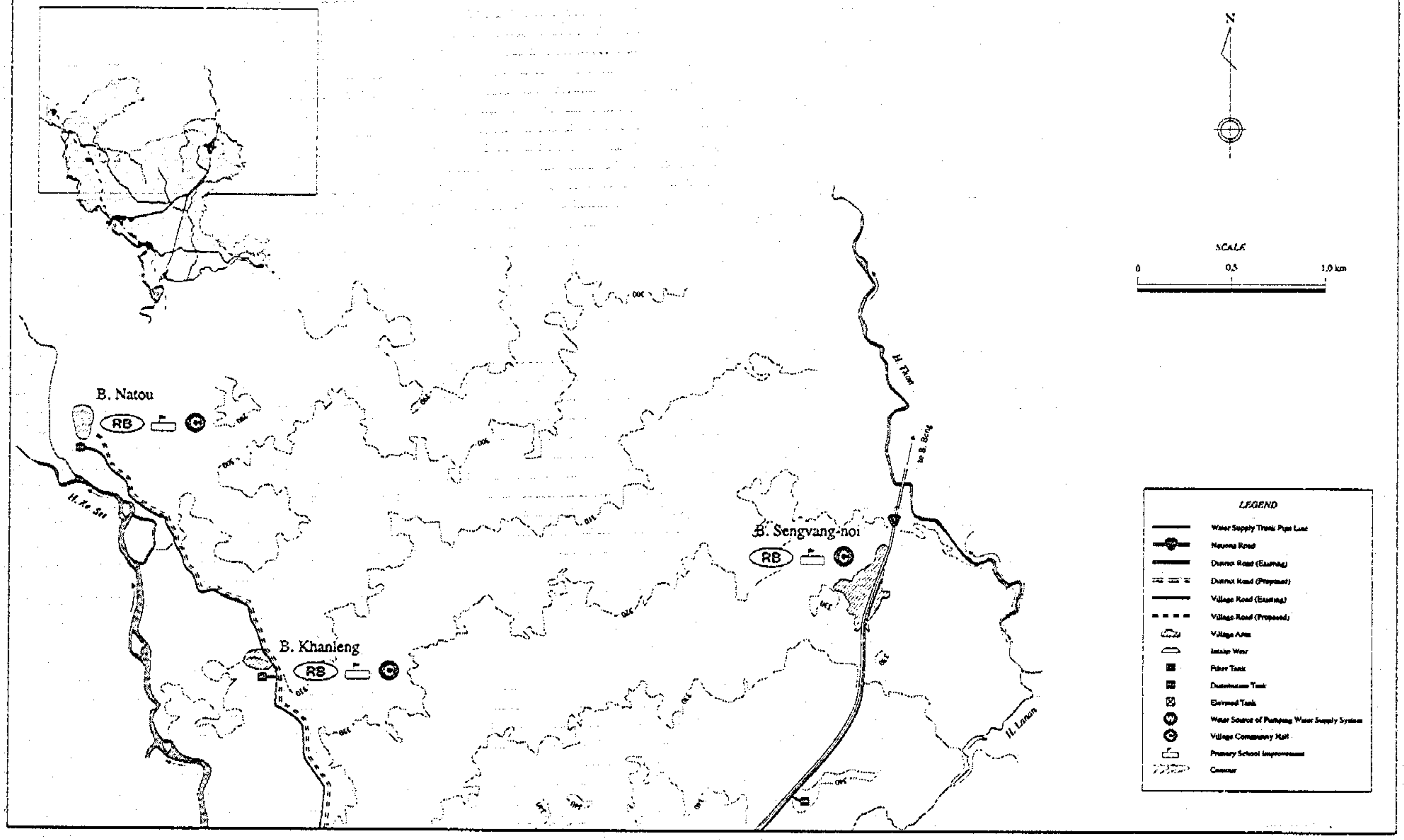


Figure VII-10 Proposed Rural Infrastructure Development Plan of Upper Kapheu Scheme

Figure VII-11 Proposed Rural Infrastructure Development Plan of Lower Xe Set Scheme (1/2)



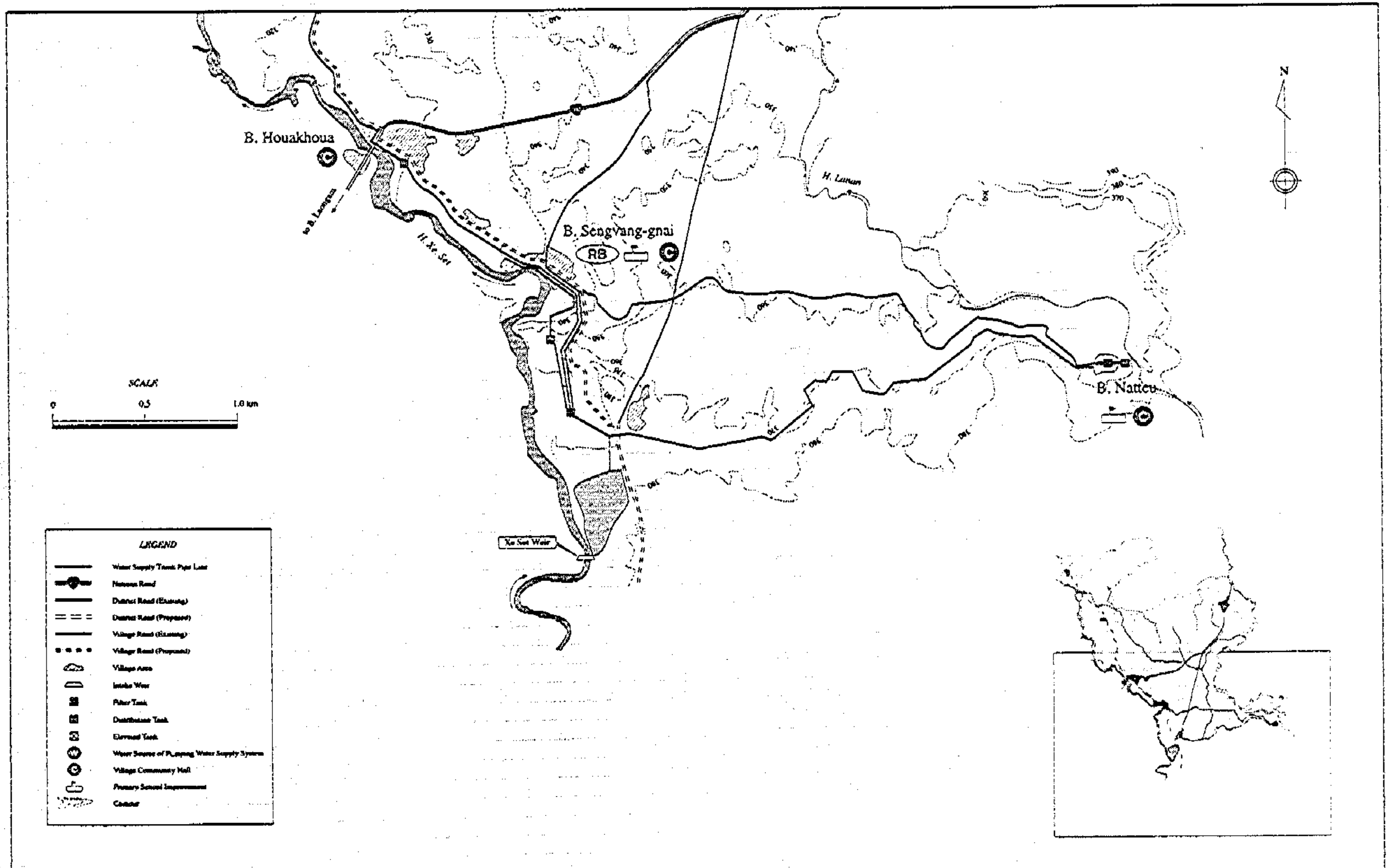


Figure VII-11 Proposed Rural Infrastructure Development Plan of Lower Xe Set Scheme (2/2)

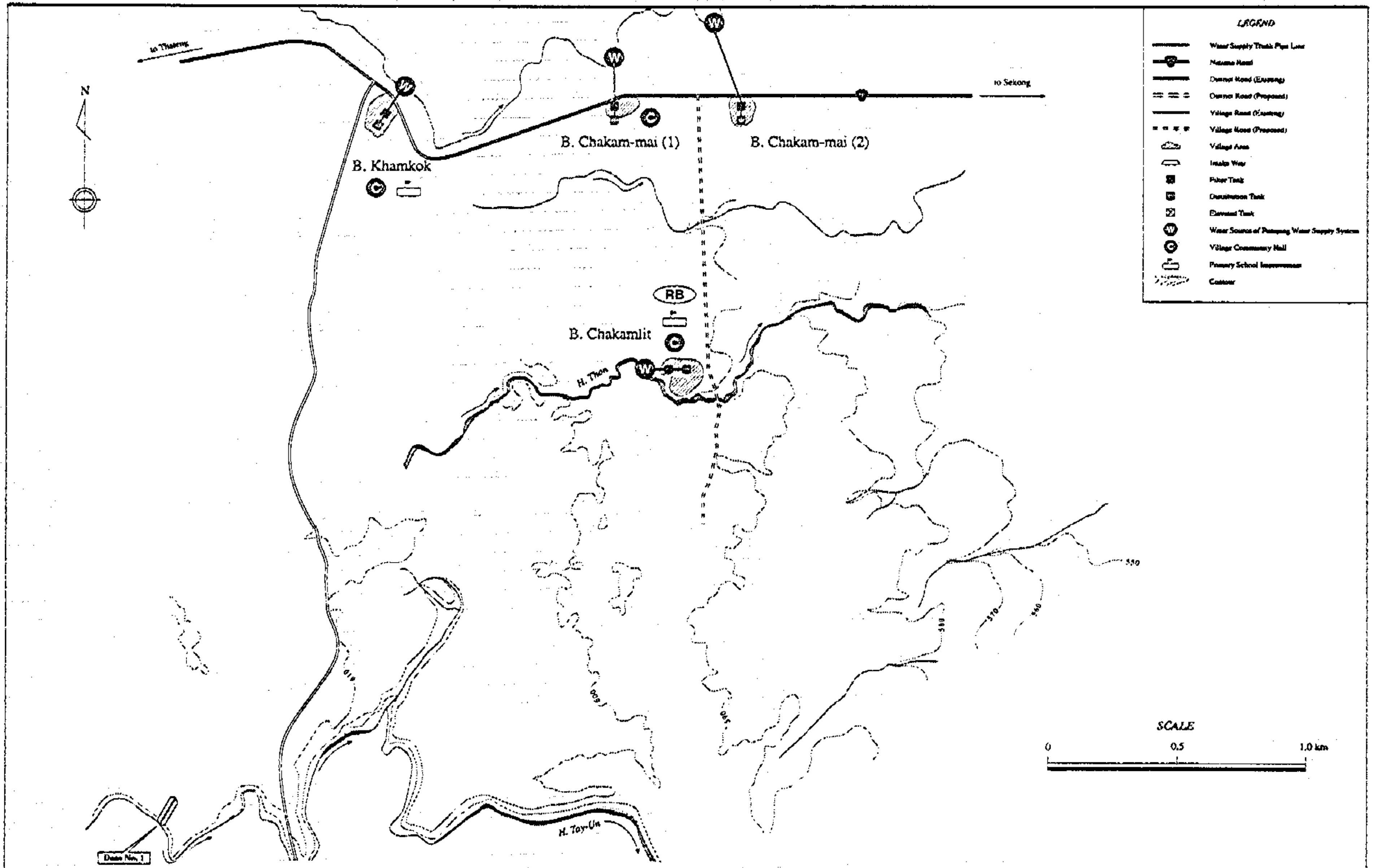
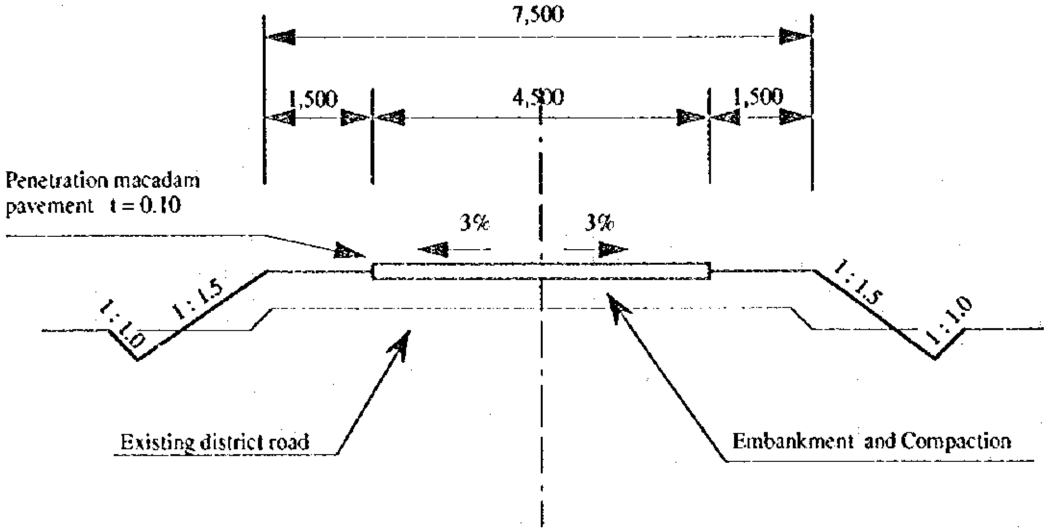
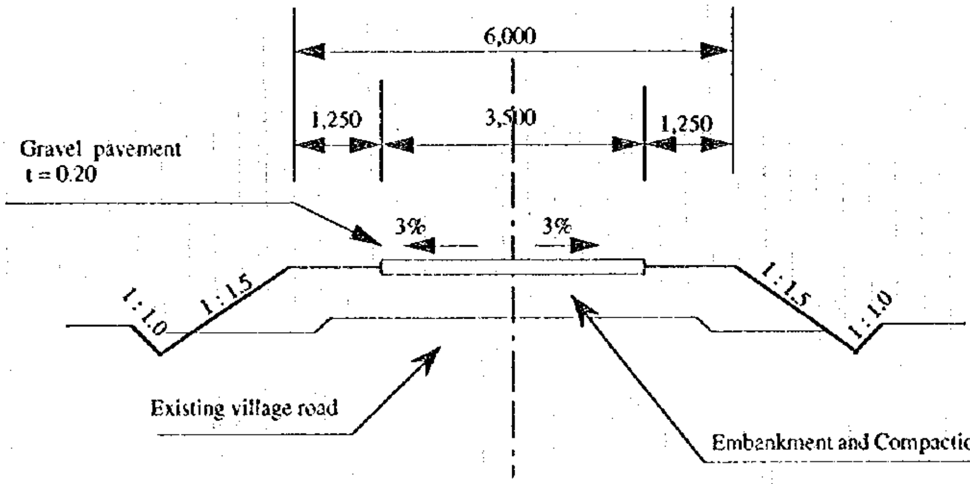


Figure VII-12 Proposed Rural Infrastructure Development Plan of Upper Tay-Un Scheme



Typical Cross Section of District Road Improvement



Typical Cross Section of Village Road Improvement

Figure VII-13 Proposed Road Improvement (Typical Cross Section)

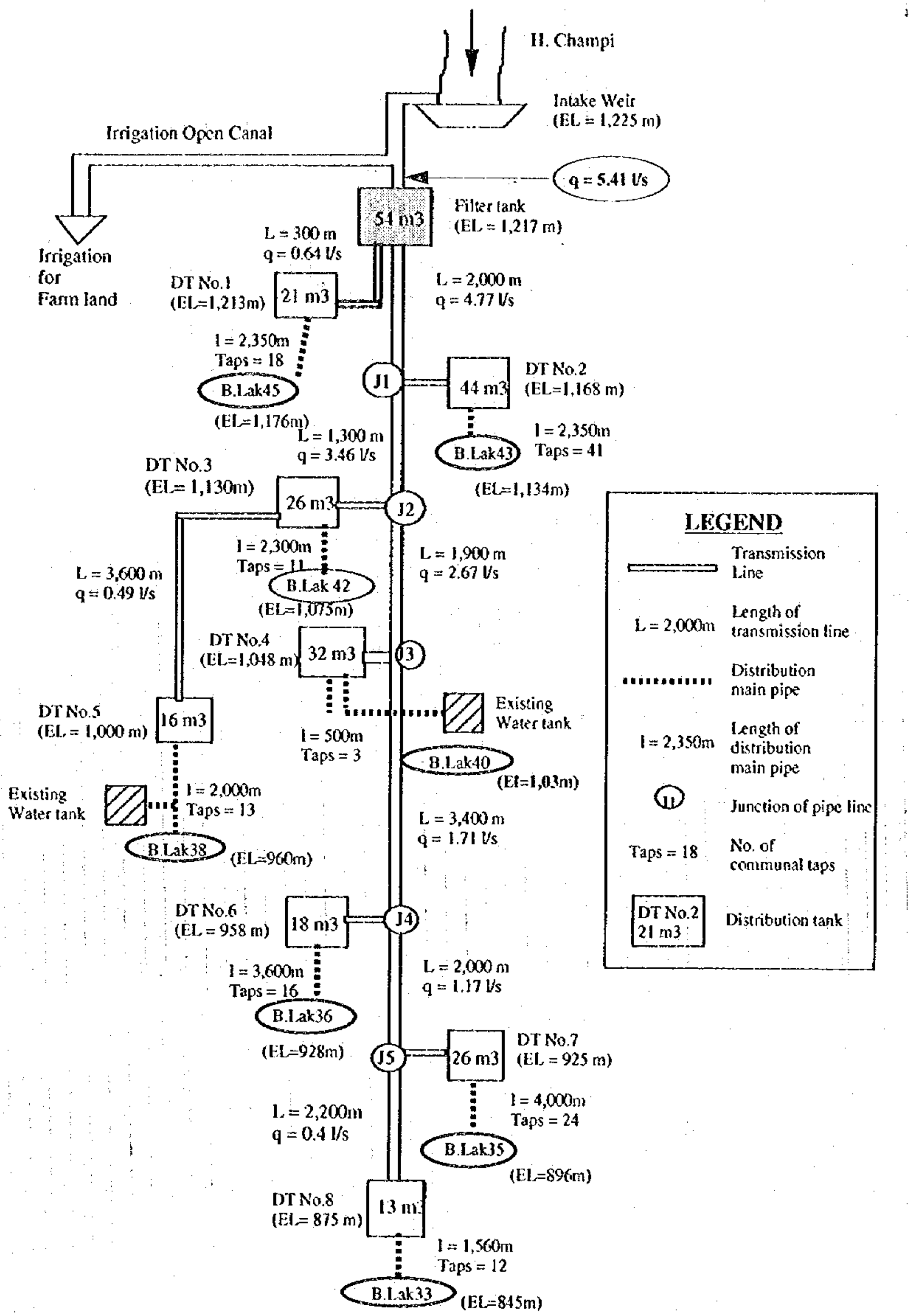


Figure VII-14 Transmission Pipe Line - Upper Champi

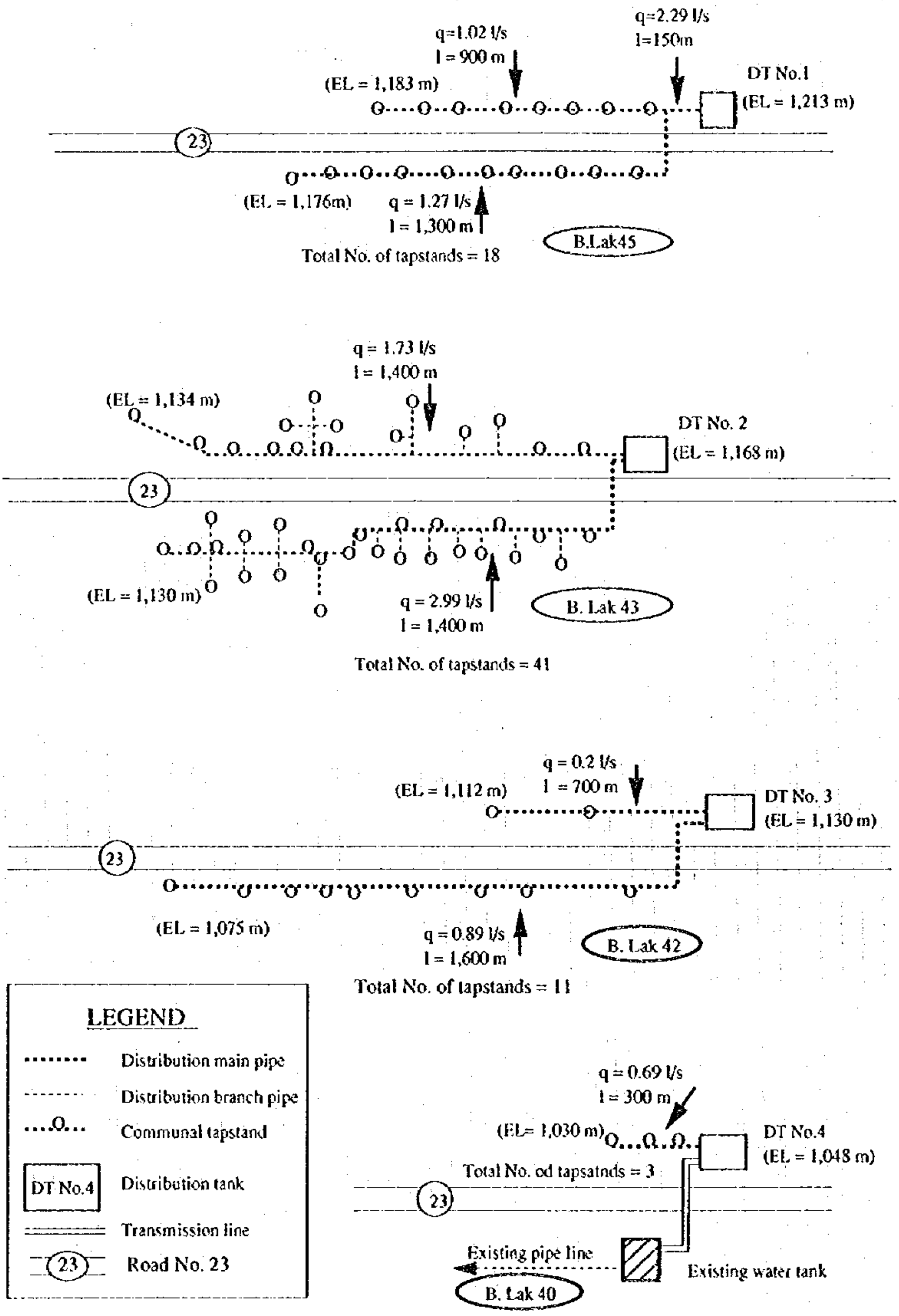


Figure VII-15 Main Distribution Pipe Line - Upper Champi (1/2)

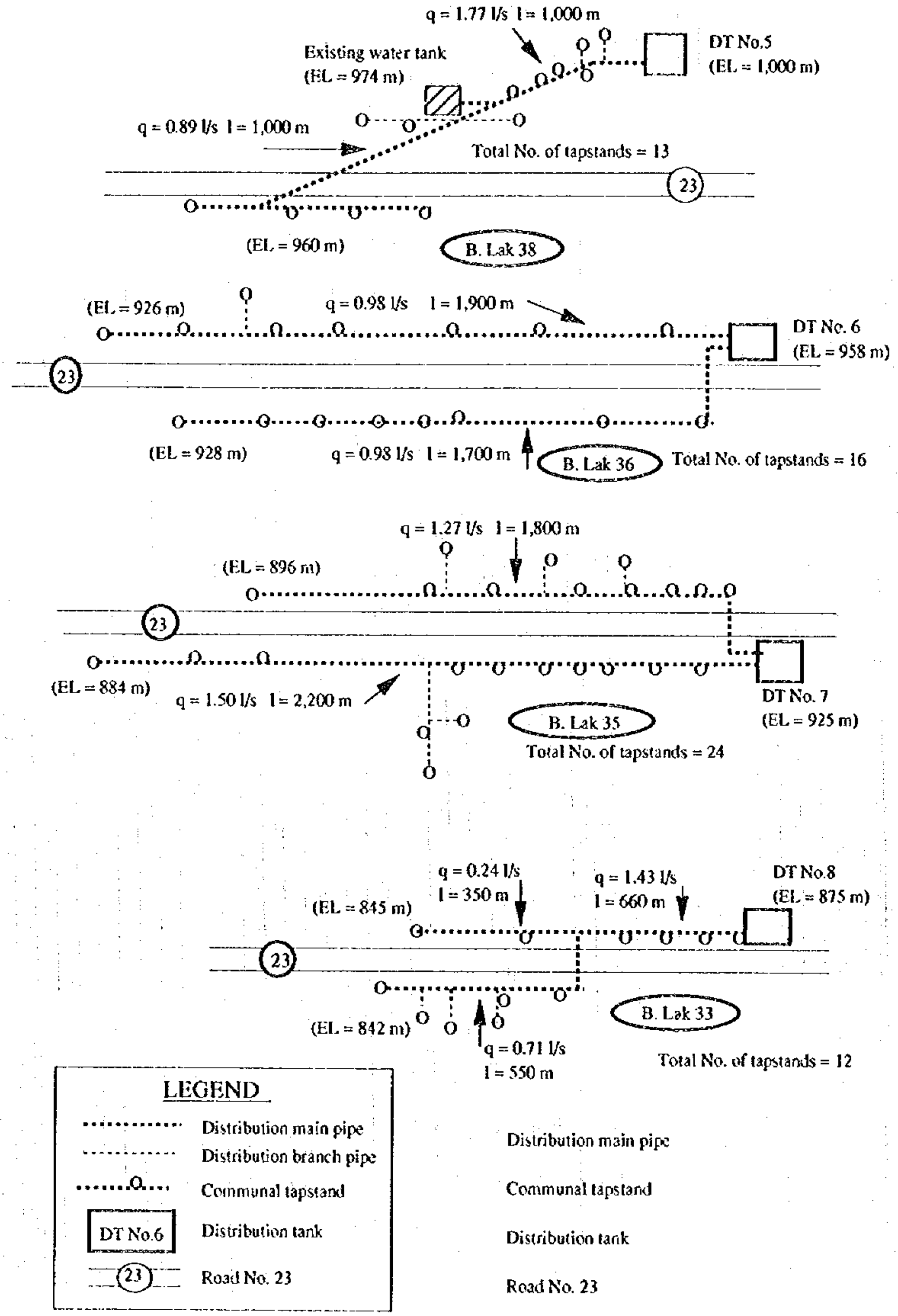


Figure VII-15 Main Distribution Pipe Line - Upper Champi (2/2)

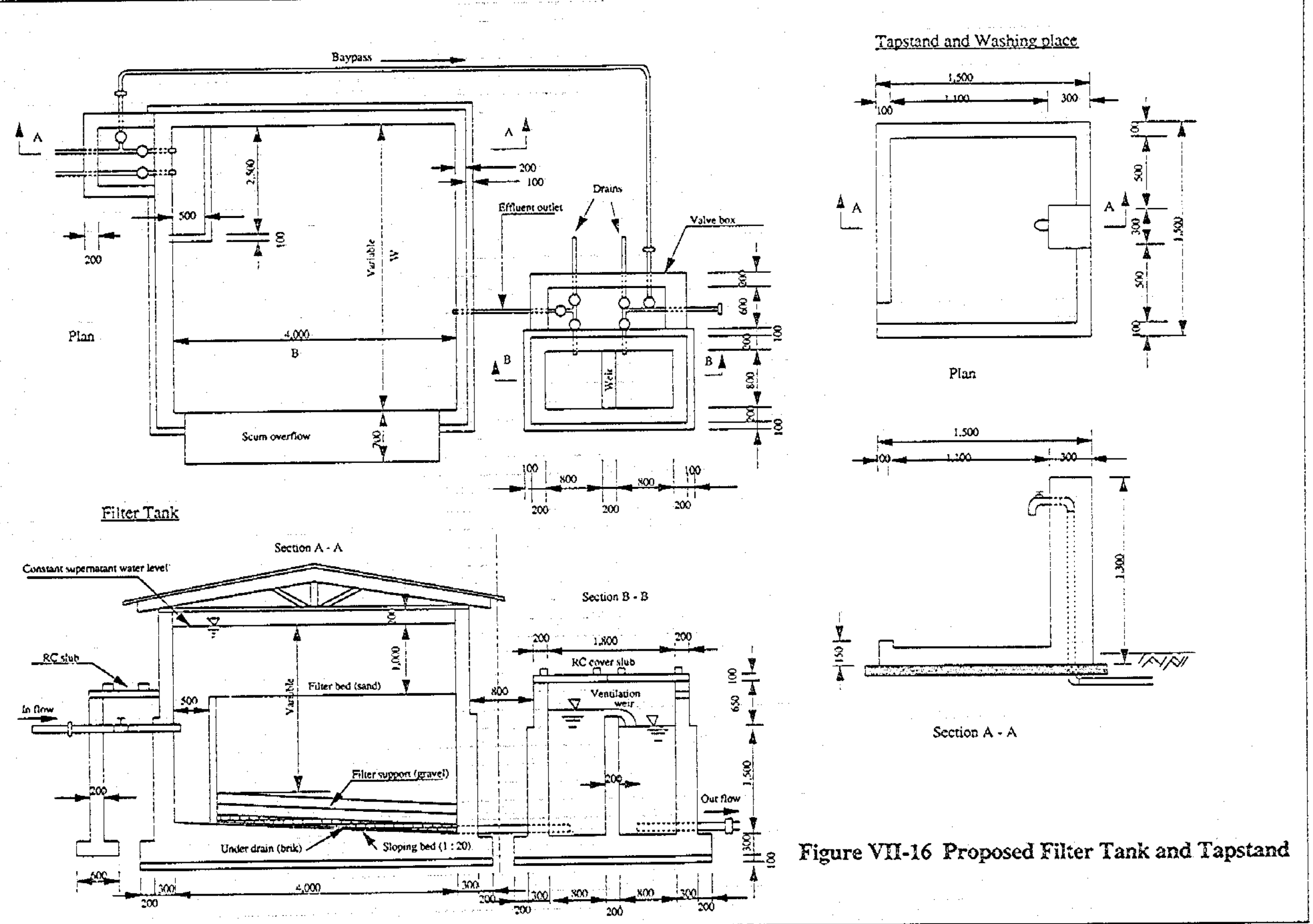


Figure VII-16 Proposed Filter Tank and Tapstand

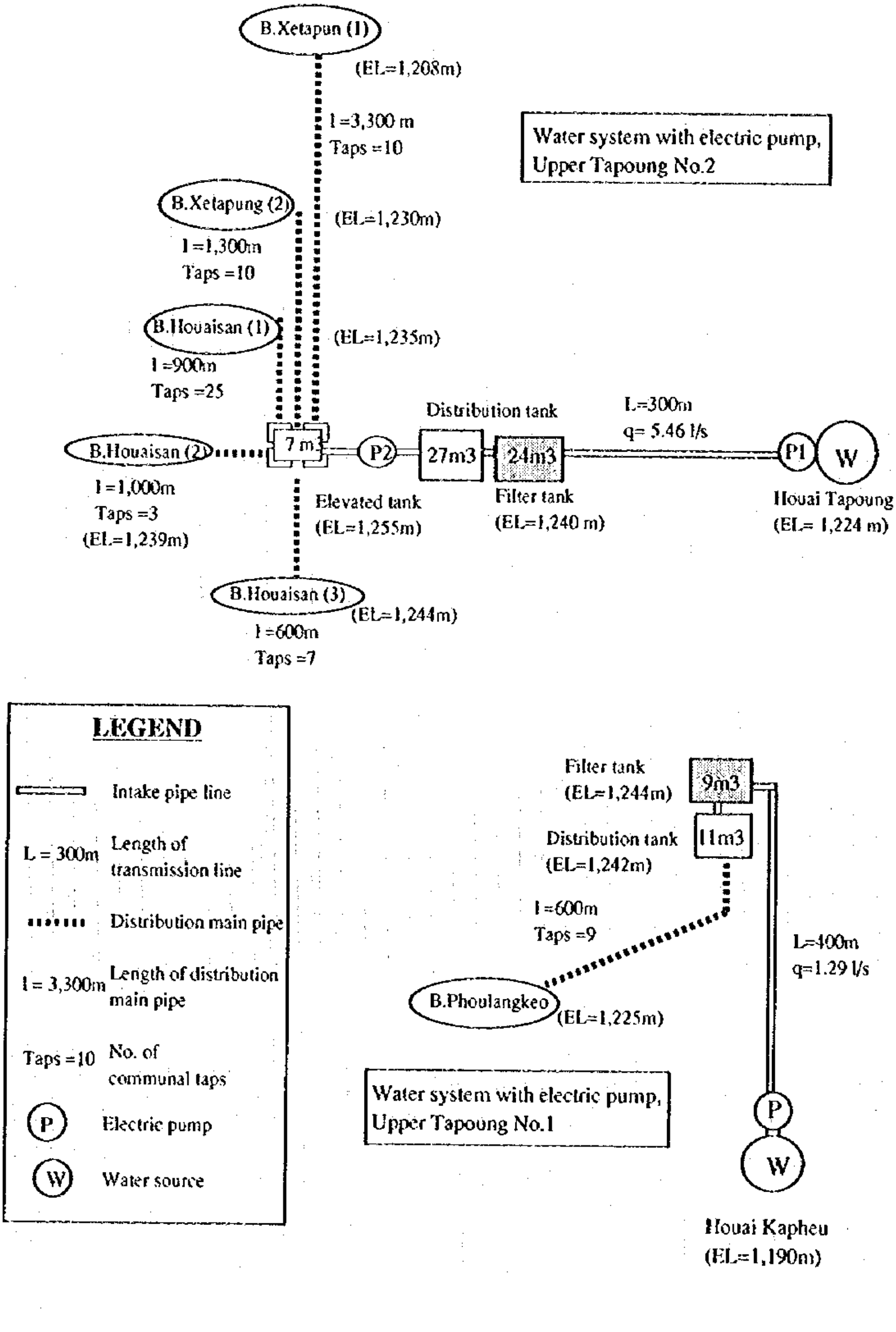


Figure VII-17 Transmission Pipe Line - Upper Tapoung

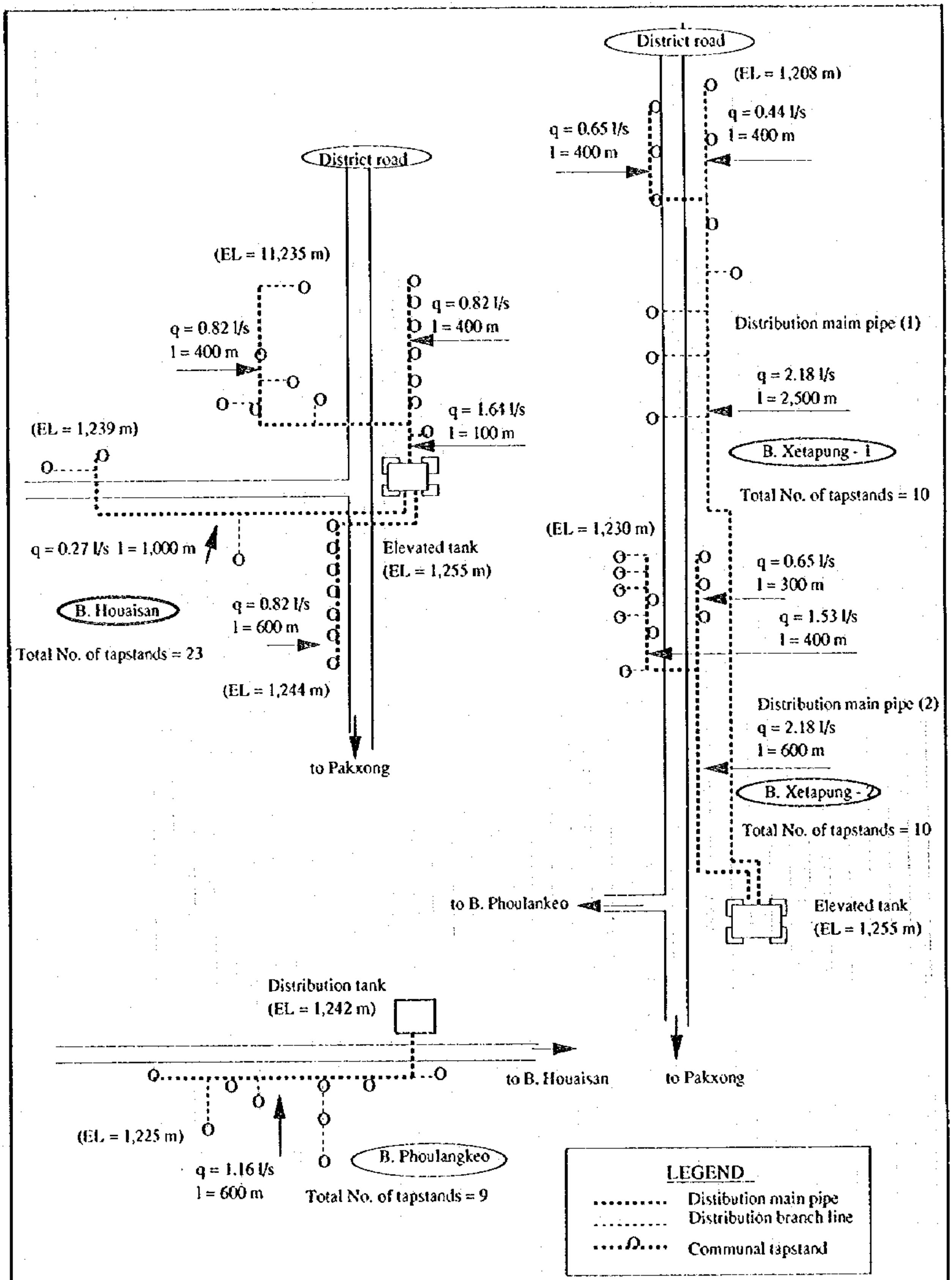


Figure VII-18 Main Distribution Pipe Line - Upper Tapoung

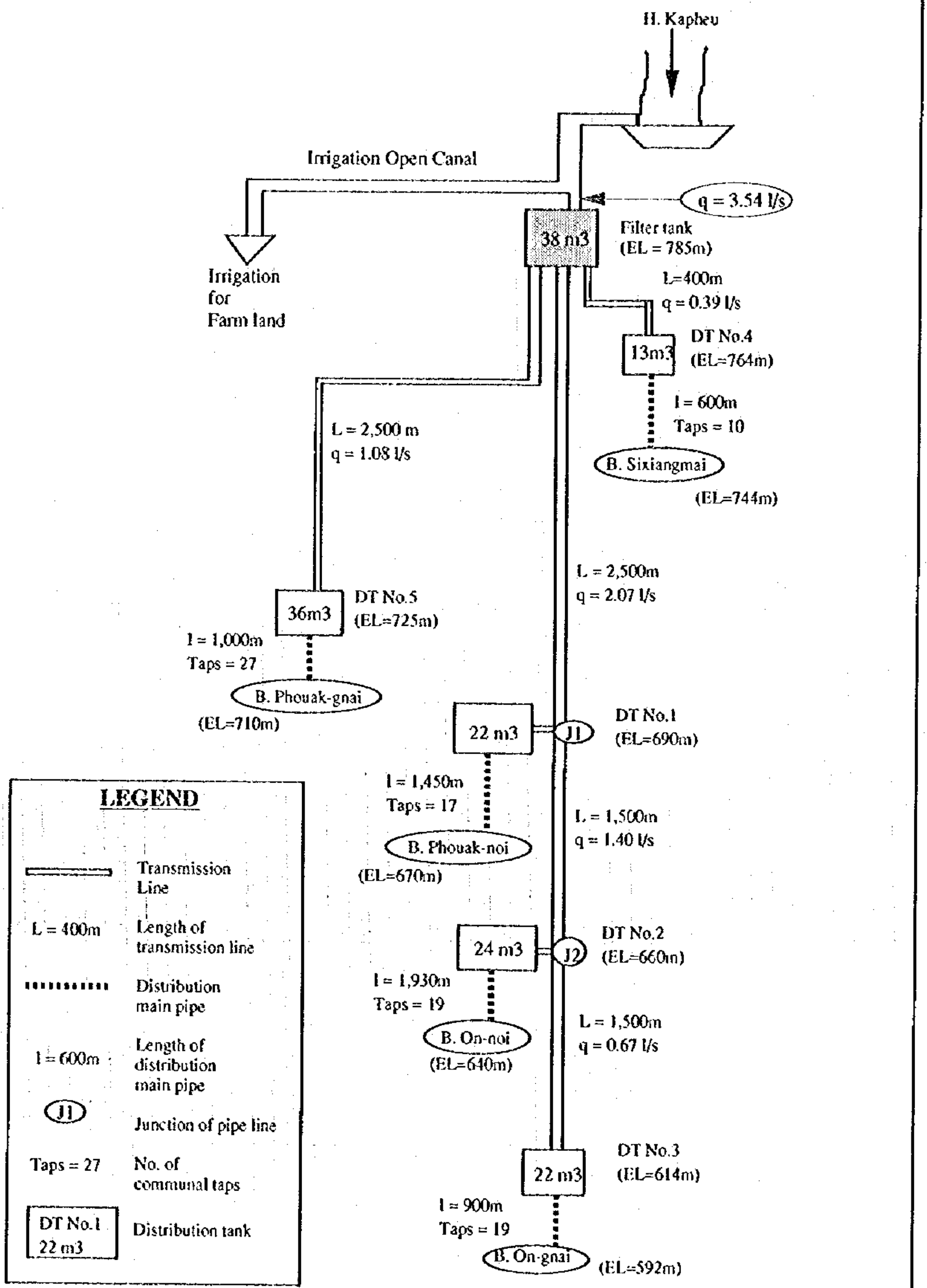


Figure VII-19 Transmission Pipe Line-Upper Kapheu

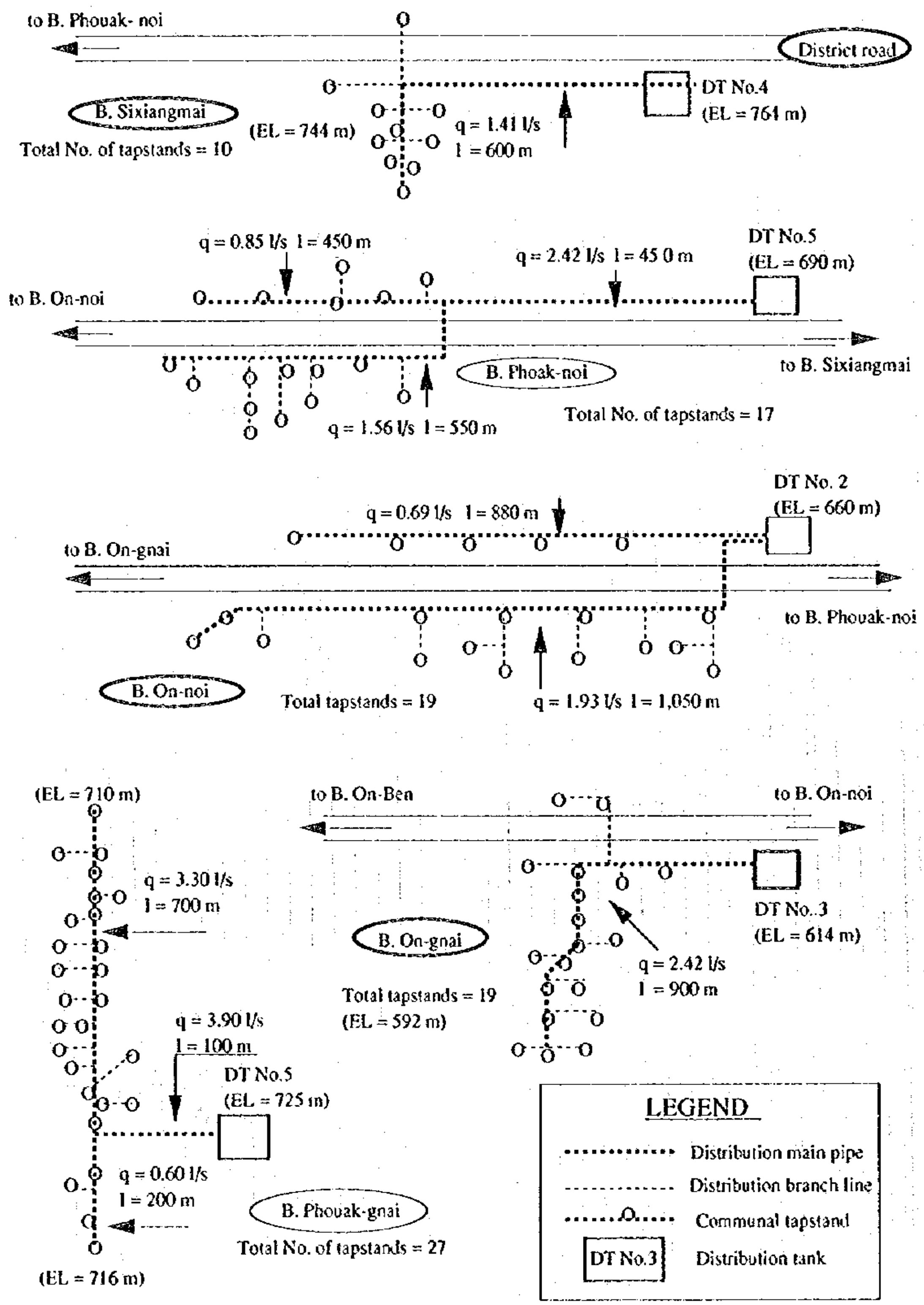


Figure VII-20 Main Distribution Pipe Line-Upper Kapheu

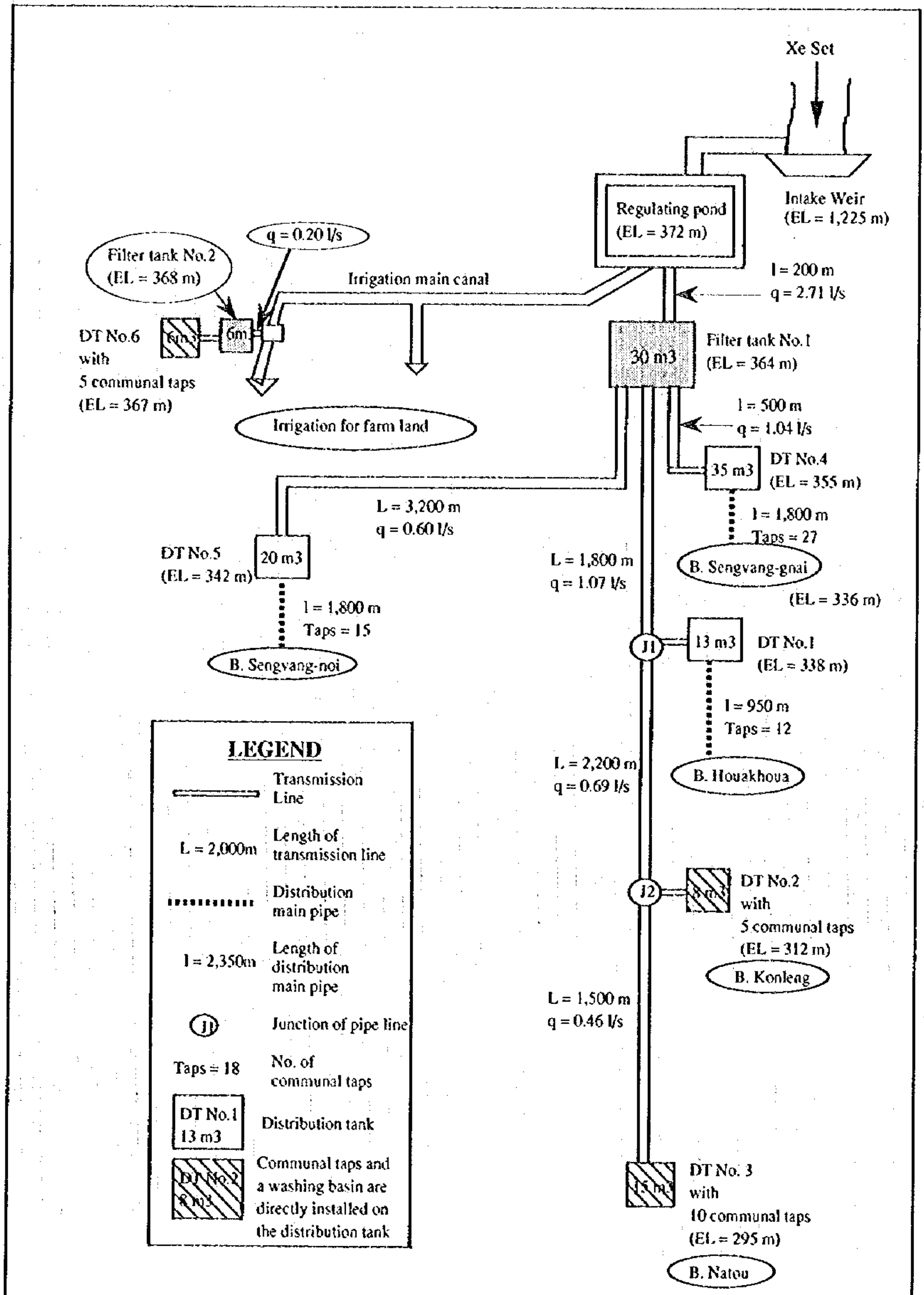
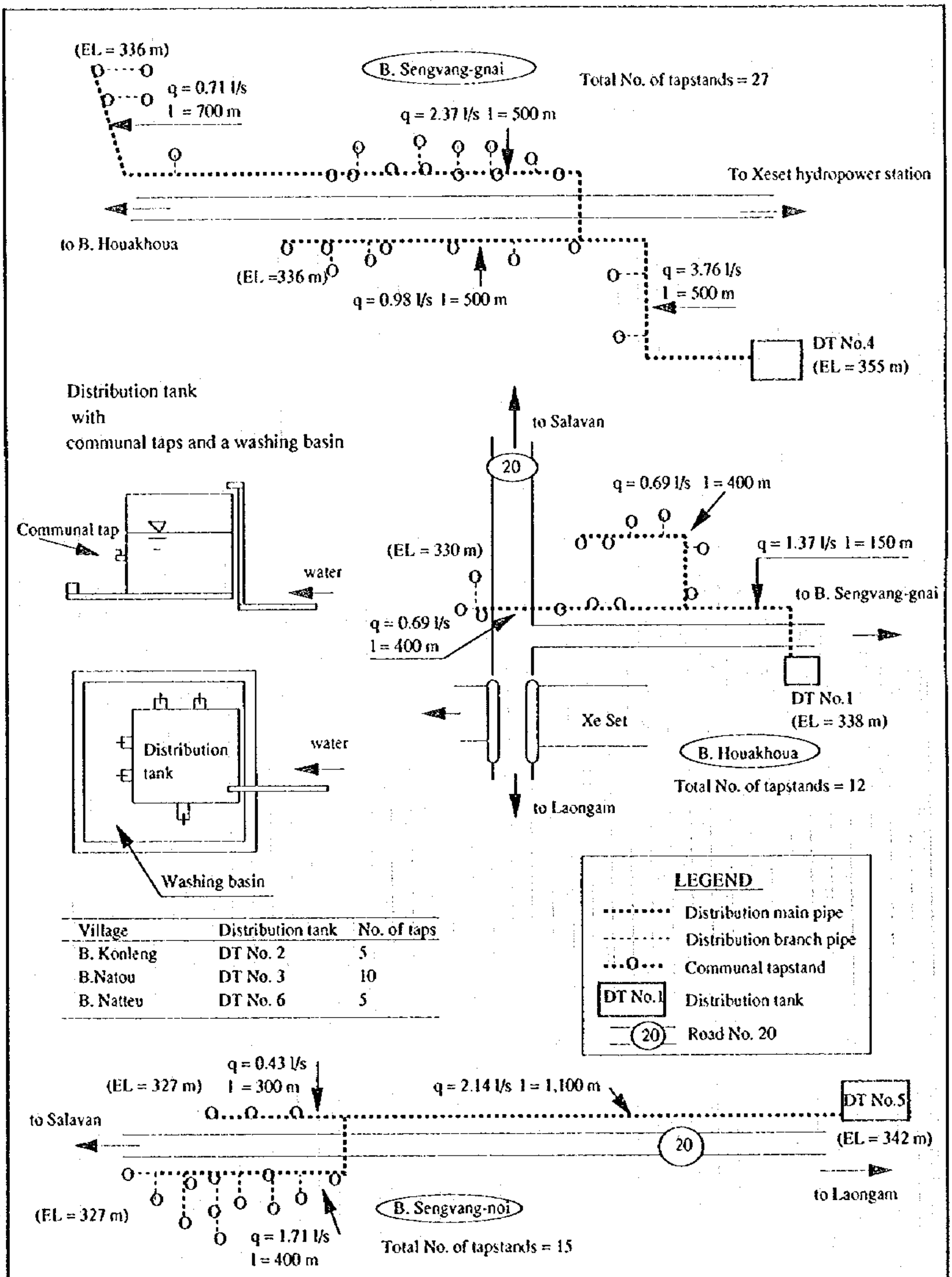
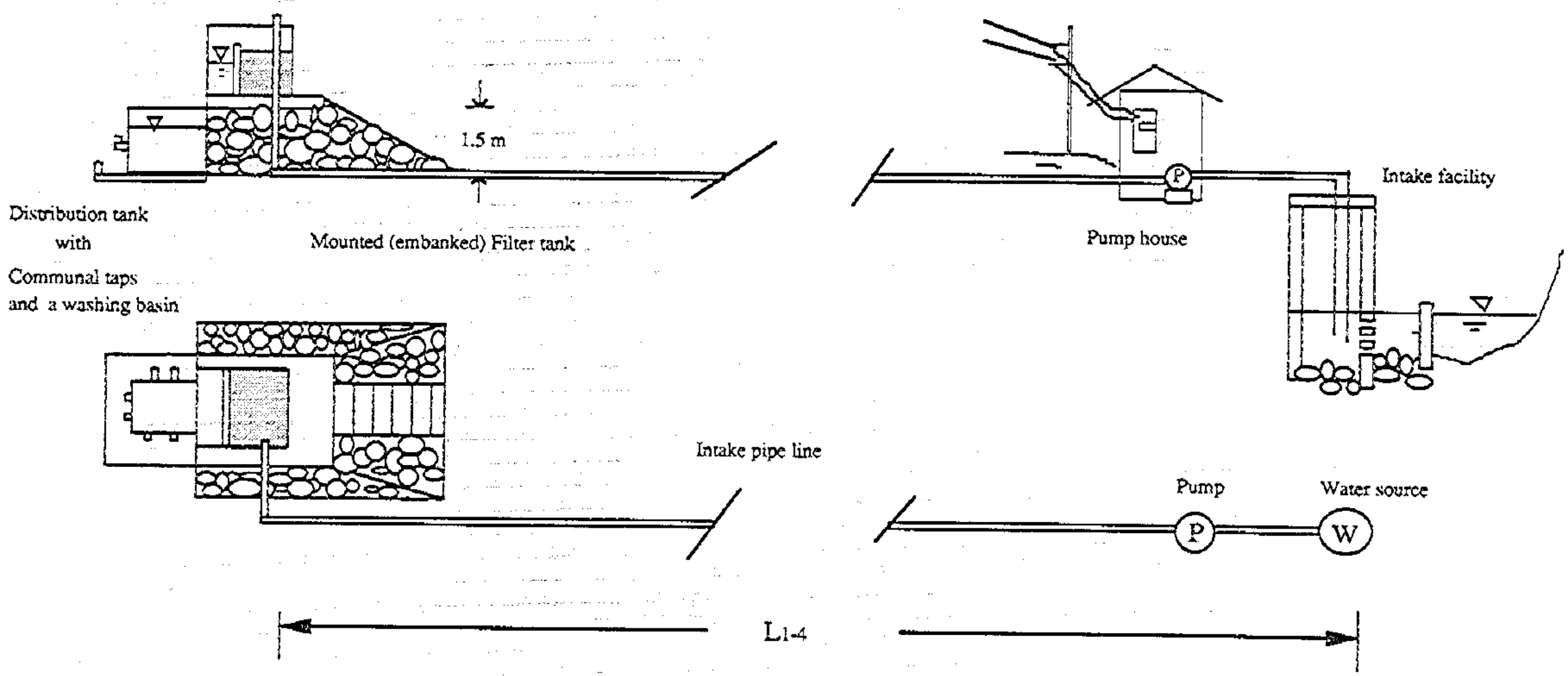


Figure VII-21 Transmission Pipe Line-Lower Xe Set



Village	Distribution tank	No. of taps
B. Konleng	DT No. 2	5
B.Natou	DT No. 3	10
B. Natteu	DT No. 6	5

Figure VII-22 Main Distribution Pipe Line-Lower Xe Set



Target village	Water source	Length of intake pipe line (m)	Required flow (lit. / sec.), 1/	Capacity of distribution tank (m3)	Capacity of filter tank (m3)	No.of taps (no.), 2/	Capacity of pump (kw)
B. Chakamlit	H. Thon	L1 = 100	0.84	10	6	5	3
B. Khamkok	H. Tit	L2 = 150	2.46	20	14	10	6
B. Chakam-mai-1	H. Tit	L3 = 200	0.63	10	6	5	2
B. Chakam-mai-2	H. Tit	L4 = 300	0.63	10	6	5	2

Note : 1/ a half of total daily demand with 3 hours pump operation (pump operation time = 3 hours x 2 times/day = 6 hours/day)
2/ Communal taps and a washing basin are directly installed on the distribution tank

Figure VII-23 Transmission Pipe Line -Upper Tay-Un

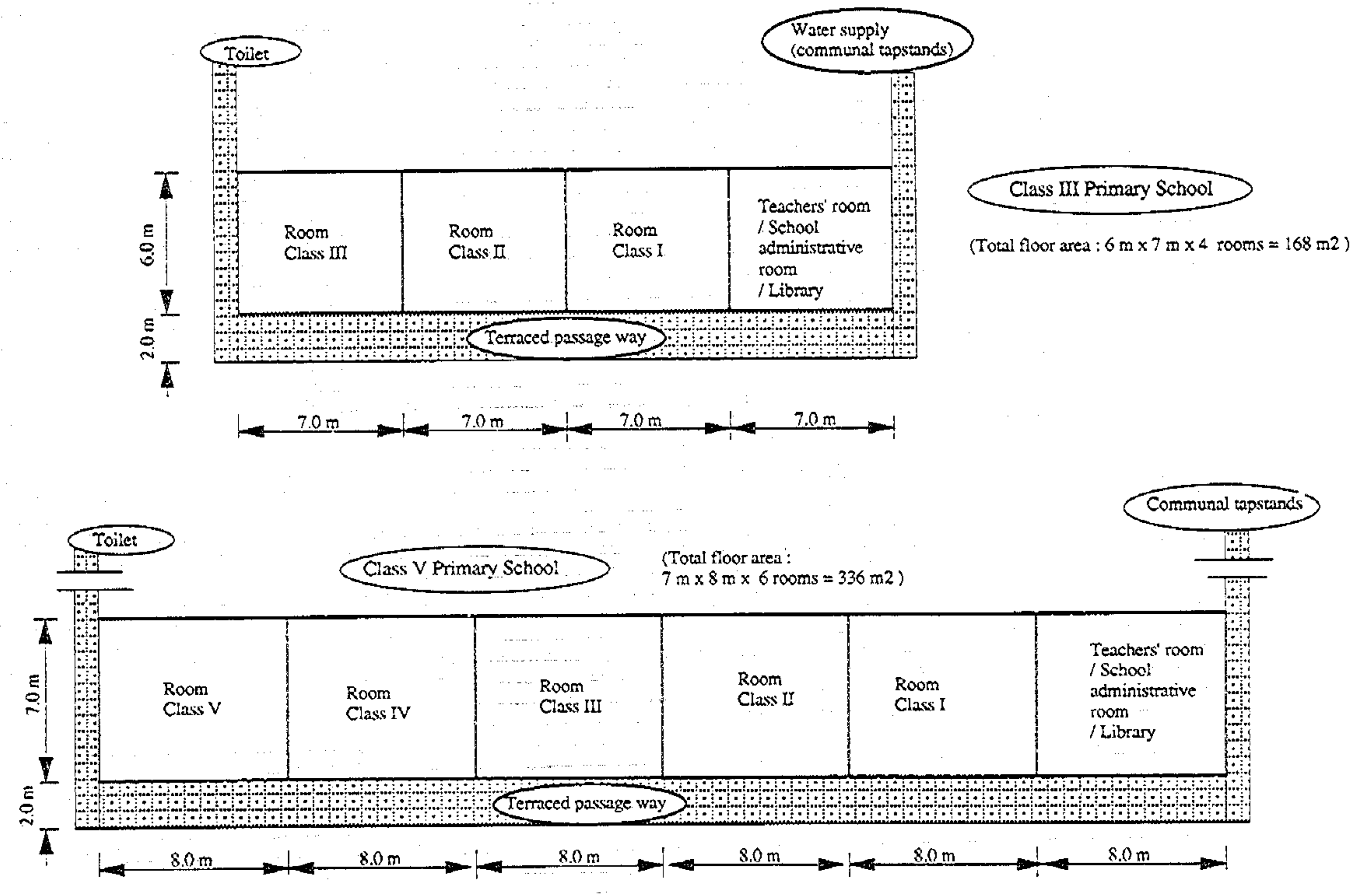


Figure VII-24 Proposed Primary School Development

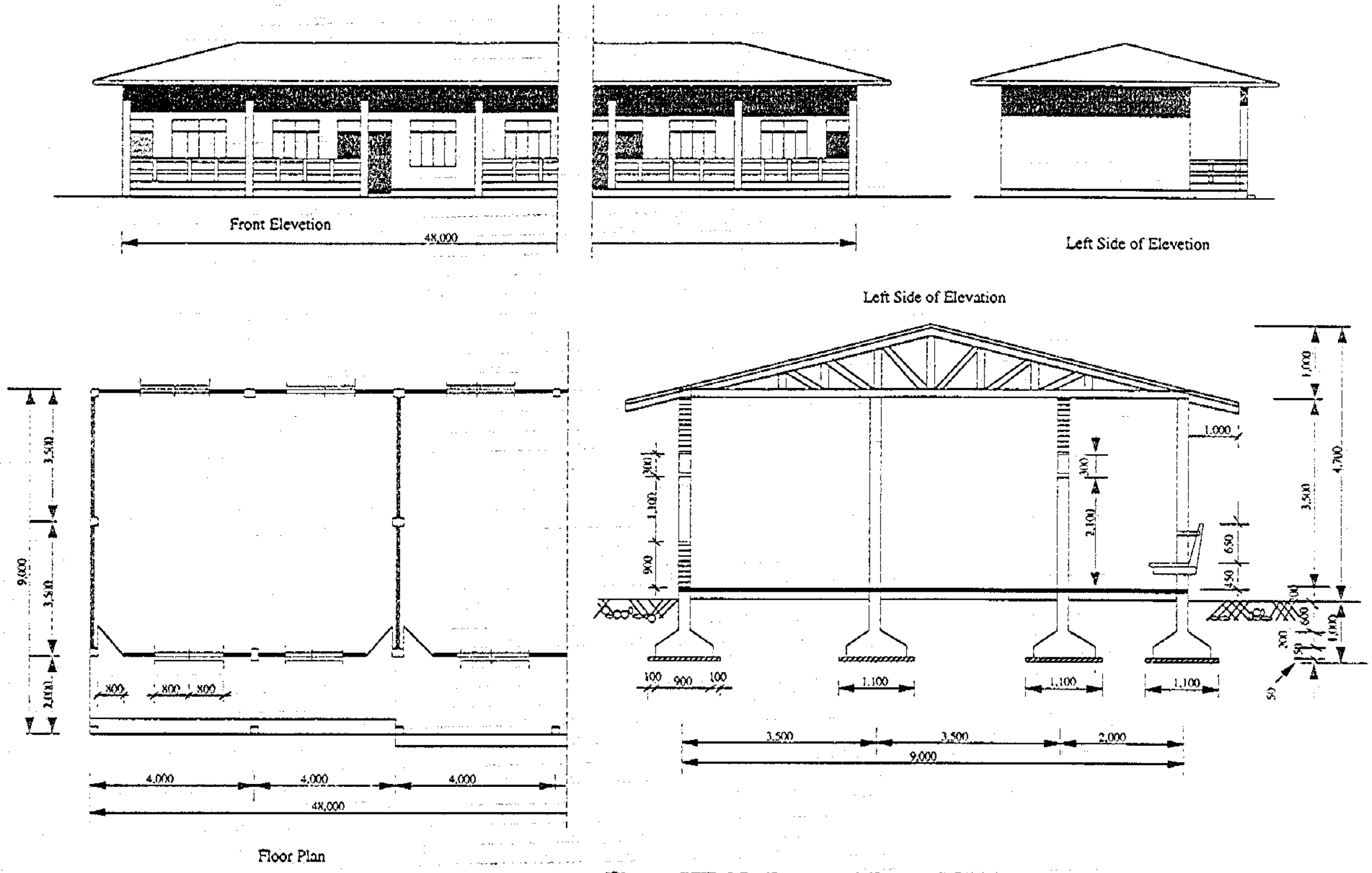


Figure VII-25 Proposed Plan of Class-V Primary School

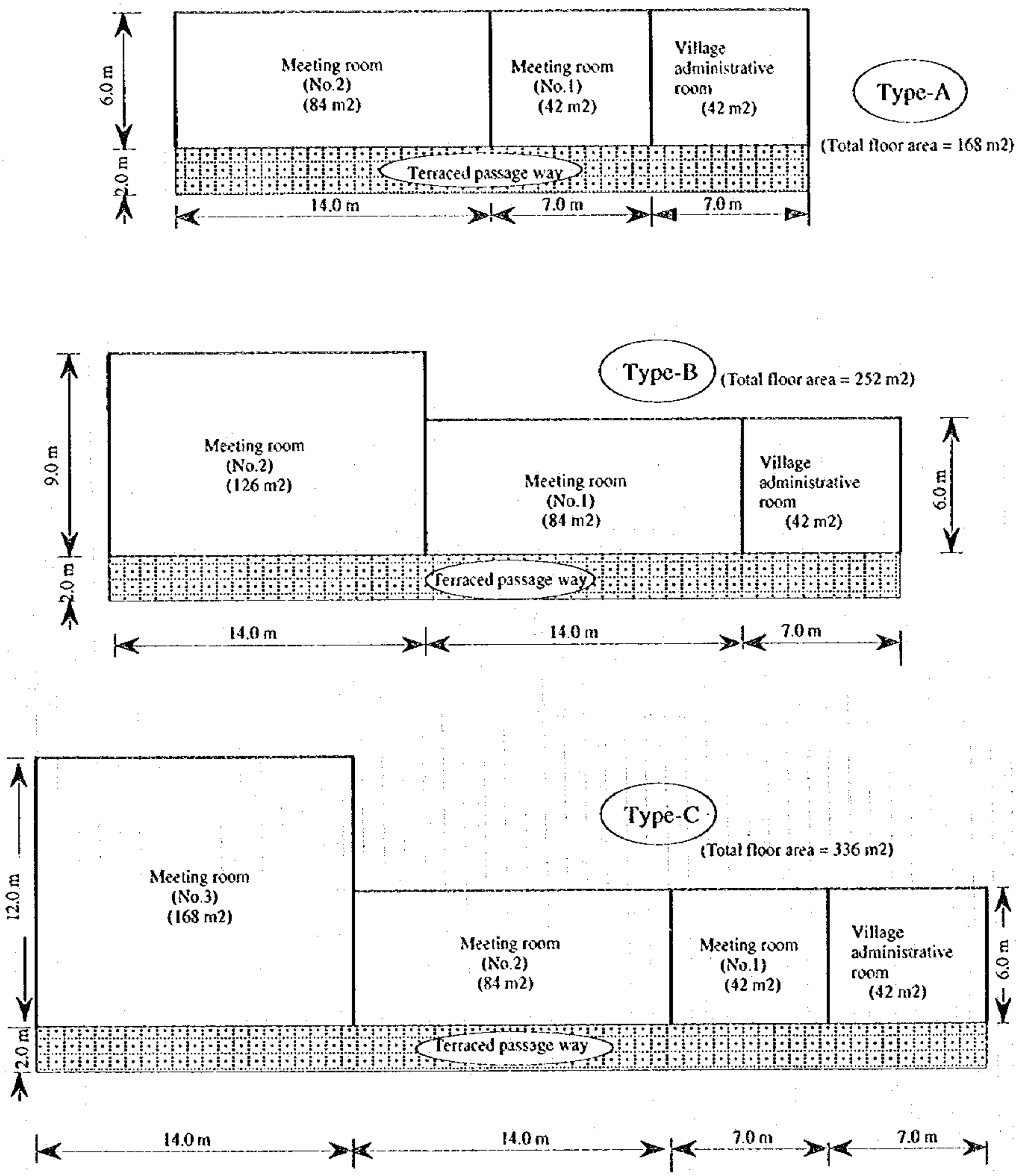


Figure VII-26 Proposed Village Community Hall Development

ANNEX VIII

AGRO-ECONOMY AND MARKETING

INTRODUCTION

Lao PDR is a land locked country with a total area of 236,800 km², surrounded by China, Vietnam, Cambodia, Thailand and Myanmar. The Mekong river across the whole country from north to south. Geomrophologically, the country is divided three part, alluvial plains and old terrace formed by the Mekong river, and mountainous area which covers about 80 % of the whole country. On the other hands, the country is administratively divided into three regions. such as northern, central and southern regions. The study area is included in the southern region.

The study area is from 200 m to 1,400 m elevation from sea level named as Boloven Plateau. The area is about 7,000 km² and administratively is laid on the five (5) districts of three (3) provinces. Because of the climatic and soil condition, which is more characteristic among the whole country. No one doubt that the area has high agricultural potential for especially, industrial crops, trees and vegetables development.

The main purpose of this annex is put on the assessment of present situation and formulation of future development plan about marketing and agricultural economic condition for the Boloven Plateau area and also the selected priority development schemes. For this purpose, data collection form the agencies concerned and interview survey to the 200 farm households in the study area and 100 farm households in priority schemes were carried out in Phase I and Phase III survey, respectively.

This annex is divided into two (2) parts as 1) Master Plan study and 2) Feasibility study. In the master plan study, the basic and long term development plan was formulated for the whole of the plateau area. On the other hand, the detailed development plan was formulated on each selected priority scheme in the feasibility study.

ANNEX VIII
AGRO-ECONOMY AND MARKETING

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Part I Master Plan Study

I-1 ECONOMIC BACKGROUND

I-1.1 National Economy

Since launching the New Economic Mechanizm (NEM) program of economic reform in 1986, the Government of Lao PDR has achieved remarkable success in stabilizing the economy an shifting from central planning to a market-based growth strategy. For the eight years under the NEM program, the inflation has reduced to single digit, the exchange rate has been stable and export growth has exceeded expectations, etc. However, the limitation and weakness of institutional basis for development and of human resources development still remain, and the pace of reform implementation has slowed down.

Growth in GDP since 1988 has averaged 7.5 % annually, led by recovery of the agricultural sector and strong growth in manufacturing and construction. Although national income remains very vulnerable to external shocks, growth appears to be stabilizing. With population growth of around 2.9 %, real per capita income growth has been near 5 % in recent year. Yearly growth rate for 1994, estimated by NSC, is at 8.1 % with contribution of increasing import duties, industry sector and agriculture sector.

Agriculture is the main stay of the national economy. Virtually, all agricultural production is in private hands, a large share of which is produced at almost subsistence levels. Agriculture and forestry account for about 56% of GDP and occupy over 85% of the labor force. The stabilized growth of the sector is essential for development of the national economy. Despite its importance, agricultural productivity in Lao PDR is rather low mainly due to traditional farming system susceptible to adverse affect of climate, drought and flood. In addition, the farmers in the mountainous area are largely engaged in slash-and-burn cultivation and the substantial amounts of logging operation result in serious problems on destroying a forest area and put significant pressure on the biodiversity.

I-1.2 Regional Economy

(1) Economic Condition

The population and number of household of the related provinces in 1994 is totaled at about 816,000 persons and 136,000, respectively. The population and households by the related provinces (Champasak, Salavan and Sekong)in 1994 are as shown below :

Province	No. of H.H.	Population ('000persons)	Area (km2)	Density (person/km2)	Annual increase rate for last 10 years (%)
Champasak	41.630	504	15,415	33	2.1
Salavan	10,090	250	10,690	23	2.1
Sekong	84,390	63	7,665	8	2.8
Total	136,110	817	33,500	24	2.3
National	741,110	4,519	236,800	19	2.4

Source: National Statistical Centre, CPC

Agriculture is the main industry which employs more than 90 % of the total population of the provinces. Rice is the staple food and the main agriculture product in the area, followed by coffee, soybean, livestocks, vegetables and others. Rice is cultivated in the lowland rice field and also upland rice fields (slash & burn cultivation) under rainfed condition. Total production of paddy was about 364,000 ton in 1994. Coffee product also is remarkable in the area, especially plateau area. Total planted area of coffee is about 24,000 ha and total production is about 8,300 ton in 1994 respectively, which is more than 90 % of the national level. The production of each crop by provinces are summarized as follows :

Province	Total Rice (ton)	Lowland Rice (ton)	Upland Rice (ton)	Coffee (ton)	Soybeans (ton)	Vegetables (ton)	Cattle (head)
Champasak	226,700	219,700	7,000	6,280	476	30,800	138,000
Salavan	124,600	107,500	17,100	1,250	785	18,280	97,000
Sekong	13,100	4,800	8,300	720	4	1,830	15,000
Total	364,400	332,000	32,400	8,250	2,265	50,910	250,000
National	1,557,000	1,235,500	341,600	9,040	5,990	141,390	1,081,000

Source: National Statistical Centre, CPC

The other industries in the provinces are electric power and timber. The existing electric power is the Xe set power station in the Laongam district, which has the capacity of 45 MW. The electric of the Xe set is mainly sold to Thailand, the rest is provided to the Pakxe and Salavan town. One large electric power station (115 MW), named as Houay Ho, is constructed under BOT in the Pakxong district at present, and the other four large power station are planned to be constructed in future.

These provinces still remains significantly forest, therefore the forest product is also significantly income. The following table indicates the forest logging and income of the provinces in 1992/1993.

Province	Quota of logging (m3)	Actual (m3)	Sale of logs ('000kip)	Other Taxes ('000kip)	Total income ('000kip)
Champasak	20,000	32,350	695,500	298,100	993,600
Salavan	13,600	13,620	368,500	169,300	537,800
Sekong	9,000	18,260	599,200	229,100	828,300
Total	42,600	64,230	1,663,200	696,500	2359,700
National	533,700	516,870	13,610,200	3,286,600	16,896,800

Source: National Statistical Centre, CPC

Related with log product, several sowing factories and/or furniture factories exist in these provinces. They are mainly located in the Pakxe district.

(2) Demand and Supply

A rough analysis on demand and supply balance of food for each province at 1994 is summarized as in the following table. The requirement of rice consumption is calculated at 300 kg of paddy/capita/year.

District	Total Population	Rice demand (Paddy)	Prod. of rice (1993)	Balance	
				Total	Per capita
	(person)	(ton)	(ton)	(ton)	(kg/person)
Champasack	504,000	151,200	204,030	52,830	105
Salavan	250,000	74,700	73,800	-900	-4
Sekong	63,000	18,900	11,830	-7,070	-112
Total	817,000	244,800	289,660	44,860	55

Source : Ministry Agriculture and Forestry

The food balance is substantially surplus in Champasak province, resulting in surplus of the balance in the three provinces. It is considered that the surplusage is transported to Salavan and Sekong for supplementing their shortage.

I-1.3 Agricultural Development Plan

As mentioned above, the productivity of the agricultural sector is still low and erratic due to lack of rural and transport infrastructures and agricultural production technology as well as due to dependence on weather conditions, though there is considerable potential for increasing and diversifying agricultural production in Laos. In order to increase productivity of agriculture and thus to improve living standard, the Government has taken effective efforts in the sector as introducing market-oriented economic system and providing the individual property right.

The objectives of the agricultural sector in Third Five Year Plan were (1) to ensure food self-sufficiency and food security, (2) to reduce slash -and-burn cultivation, (3) to properly manage and conserve forest resources, and (4) to expand the agro-forestry based industrial processing sector. In order to achieve above target, the Plan has envisaged to introduce expansion of marketable cash crops diversified from the traditional crops, to improve yields of crops through provision of agricultural inputs, to expand livestock raising and fishery farms, to improve and expand such infrastructures as roads, irrigation, flood control facilities, and to strengthen the agricultural support services. The Government also has intended to improve rural life of people through providing rural infrastructure, domestic water supply either gravity or well, rural electrification facilities, and social infrastructure such as school and, health facilities.

The preliminaly Economic Policy Framework for next five years (1996-2000) states the following macroeconomic and sectoral objectives.

a. corresponding the macroeconomic reforms to ensure a smooth transition to market oriented economy,
b. Improve the efficiency and perfoormance of the public sector,
c. accelerate socioeconomic development and improvenment of liveing standard, and
d. halt the degradation of the natural resource base.

The policy frameworke's specific targets are :

(i) 8percent annual increase in economic growth,
(ii) an inflation rate not exceeding 10 percent per annum, and
(iii) an increase in the ratio of public investment to GDP from below 9 % in 1994 to about 12 % in 2000

To attain this objectives, the following six agricultural development programs are are planned for 1995 to 2000 by the government

(i) food security and self-sufficiency in food(rice),
(ii) promotion of agricultural production,
(iii) farming stabilization and reduction of slash-and-burn cultivation,
(iv) small scale irrigation program,
(v) rural development program for uplifting living condition, and
(vi) human resource development program.

The Government also plans to develop the sustainable rate of timber production through a balanced approach between economic exploitation and forest conservation protection of forest areas.

I-2 PRESENT MARKETING CONDITION IN THE STUDY AREA

I-2.1 General

Since the New Economic Mechanizm (NEM) policy, the market economy system have been introduced and the privatalization has been promoted. Hence, all of the activities for trade is done by the private sector and all of the farm output are traded freely and marketed through private channel in market at present. Main products of the study area are coffee, cardamom, groundnut, soybean, banana, cabbage and rice, of which coffee, cardamom and livestocks are mainly exported to foreign countries.

I-2.2 Marketing System

International trade will play an important role for development of these area, because the domestic market for agricultural products in the study area is small due to the bulk of the population consumes most of what it produces (subsistence consumption). The Pakxe market is biggest among the markets of the study area, and most of the commodities of other markets are transported through the Pakxe market.

(1) Agricultural Products

Usually the agricultural commodities produced by farmers are sold to the middleman (small trader) who is visiting individual farmer, or are sold to the retailer at the nearest market by farmers. Presently, there is no farmer's marketing organization in the study area, therefore the farmer has less power to negotiate with the middleman on the price of products.

In the case of coffee, however, the Lao Coffee Exporters Association (LCEA) was established in 1994 for the purpose of ensuring the farmers fare marketing system by advising of central government. The association insists that all traders or exporters must belong to the association and need be authorized. One of the criteria of the association for business approval is that traders must pay " fare price " to the farmers fixed by the association to coffee farmers (this price is fixed according to the world market price). The marketing channel of coffee is shown in Fig. IV-I-1.

The other products, such as vegetable and rice, is marketed through private route, as mentioned above. The products is mainly collected at Pakxe market firstly, and then distributed to the other local market by middleman (small trader). The marketing channel of vegetables is shown in Fig. IV-I-2.

(2) Agricultural inputs

After the NEM economical revolution, the private sector now dominants the importation, production, and distribution of agricultural inputs with a few exceptions. There are two channels of input supply to the farmers in the study area, one is donor-supported fertilizers supply (basically under KR II), and the other private basis supply. In the former channel, the distribution is done by government service office, provincial level or district level.

Distribution of donor-supported fertilizers such as KR II is also distributed through two channels. In Champasak, one large trading company functions as wholesaler for donor-supported fertilizers, and provincial trade service office is in the place at Salavan province. The government supply is cheaper than private channel because of subsidy support. However, the involvement of the central government and/or provincial government in the importation and distribution of fertilizers under donor-supplied system can be said to hamper development of an efficient marketing system for fertilizer.

It is thought that the both distribution systems for agricultural inputs in the study area are presently inefficient for the farmers. Most of fertilizers and agro-chemicals of private basis supply are sold at Pakxe and these inputs are scarcely found in the local market, which are rather expensive, but limmited amount. The fertilizer distribution of donor-supported supply in Salavan district is also limited in amount and oppotunity to get it. Therefore, the farmers often face the problem of shortage of amount and shortage in time. Table IV-I-1 shows the availability and retail price of fertilizers in the each market and Table IV-I-2 shows the retaile prices of seed and agro-chemicals at Pakxe market.

I-2.3 Marketing Condition

The existing markets in and around the study area are shown in Fig. IV-I-3 and the detail information is summarized as follows :

	District	Area (m2)	No. of retailer	Type of market
Champasak Province				
- Pakxe Market *1	Pakxe	1,830	240	provincial level
- KM 2 Market	Pakxe	810	150	district level (all days)
- Pakxong Market	Pakxong	160	50	district level (all days)
- Bachiang Market	Bachiang	230	-	no function
- Kengkia	Bachiang	200	-	no function
Salavan Province				
- Laongam	Laongam	200	30	district level (all days)
- Salavane Market	Salavan	360	120	district level (all days)
Sekong Province				
- Thateng Market	Thateng	110	25	district level (all days)
- Lamam Market	Lamam	190	60	district level (all days)

*1: the figure shows a part of market, where mainly sold agricultural product.

The Pakxe market is center of the south four province, most of agricultural commodities of the other markets are provided through Pakxe market (Such as, the cabbage of Thateng market is produced in Pakxong, but come from Pakxe market.). Therefore, due to the long transportation term, the damaged vegetables such as cabbage, tomato and onion are often found in the Salavan , Thateng and Lamam markets. The marketing flow of agrivultural commodities is shown in Fig. IV-I-3.

As mentioned above, the domestic market for agriculture products is limited due to the bulk of the population consumes most of what it produces. In fact, the markets excluding Pakxe and km2 markets are small and the commodities sold in there also are limited. Poor transportation is also the one of the limitation factors on market expansion. Previously, some farmers and traders have tried to transport vegetables to Vientiane, these were so damaged that they could not sell.

I-2.4 Prices

(1) Market Price

The farm gate price of commodities is influenced by the marketing price, i.e. the price of coffee has shot up about three times in 1994 according to the world market price escalation. The current market price of each agriculture commodities in Pakxe market are surveyed through the interview to the retailer, and summarized as follows :

Average Retail Price of Agricultural Products at Pakxe Market (may 1995)

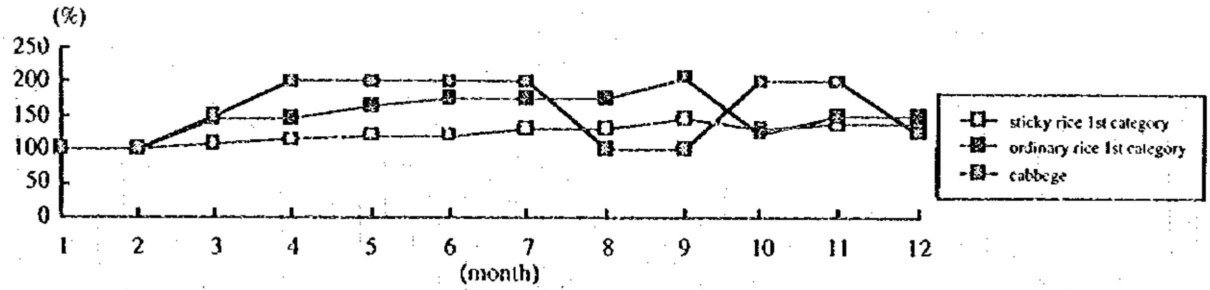
(unit : kip/kg)

Commodities	Price	Commodities	Price
Vegetables and Beans		Rices	
Cabbage	261	Ordinary category 1	295
Chinese Chabbage	400	Ordinary category 2	260
Carrot	675	Sticky category 1	258
Potato	588	Sticky category 2	238
Big Onion	657	Thai Rice	480
Red Onion	750	Beans	
Tomato	833	Groundnut	700
Gerlic	1,130	Black Bean	650
Ginger	438	Meat	
Chili (green)	900	Beef category 1st	1,900
Chili (dried)	2,575	Beef category 2nd	1,683
		Pork category 1st	1,700
		Pork category 2nd	1,350

Source : Surveyed by JICA study team

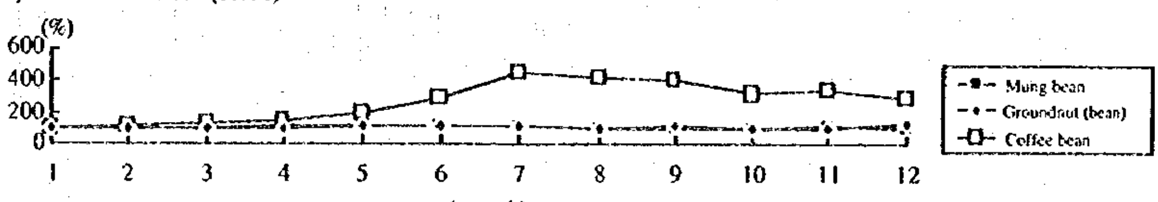
The retail price of major crops from January through December in 1994 at Pakxe market are shown in Table IV-1-3, and the price fluctuation for some crops are summarized as follows:

1) Rice and Vegetable



Price Flactuation in Pakxe Market at 1994 (Rice , Cabbage)

2) Beans and Coffee (beans)



Price Fluctuation of Pakxe Market at 1994 (mung bean, peanut, coffee)

The prices of vegetables (such as cabbage, potato, etc.) and rice are seasonally fluctuated depend upon the availability, the price is faced at twice of low price before harvest season. On the other hand, the prices of beans and meat are stable throughout the year, because they can be available in the market.

In 1994, coffee price has shot up about three times of previous year's one, from 500 kip/kg to 1,600 kip/kg, therefore almost coffee farmer's household economy was also steeply increased. However, the subsistence farmers sold their coffee to trader after harvest immediately even at low price(1,200-1,400 kip/kg : green bean), because they need the cash for purchasing rice and the other consumption. On the other hand, some farmers who has a capacity for self-sufficient in food in the study area sold their products at 2,200 kip/kg(green bean), and some are still keeping for future high price.

(2) Farm gate Prices

The farmgate prices of some crops were surveyed by farm household survey intervewed to the 200 households, and estimated on the basis of the weghted aveage and information from concerned agency such as provincial and district trade service office, and agricultural service office.

Production	Average price(kip/kg)
Paddy	150
Coffee (husked bean)	1,450
Cabbage	100
Potato	113
Soybean	156
Maize	103
Banana	300

Source : JICA Study Team and Provincial & District Trade Sevice office

Since the above prices are the annual average ones, it is thought that the figure is fluctuated seasonally according to the market price. Especially the price of vegetables varies remarkably, for example, in the case of cabbage the maximum price was 600 kip/kg at the Lao new year in 1995, but at the harvest season the price falls around 10 kip/kg.

I-2.5 Export and Import Condition of Agricultural Commodities

(1) Import

Imported items are mainly industrial products, such as motorcycles, medicines, construction materials and some agricultural products (raw materials) to export are imported from Thailand and Vietnam. Most of agricultural commodities imported are agro-inputs (fertilizers, chemicals, agricultural tools), livestocks (cattle and baffalo) and woods officially, fruits and vegetables unofficially. In the above commodities, livestocks and woods are imported from Vietnam and Cambodia to re-export to Thailand.

The Lao government prohibits to import vegetables, however the following vegetables found in Pakxe market are imported from Thailand and sometime Vietnam unofficially by the small traders.

Commodities	Imported from	Portion at Pakxe market
Vegetable		
1) onion	Thailand and Vietnum	all
2) gerlic	Thailand	all
3) chill	Thailand	all
4) carrot	Thailand	some
5) tomato	Thailand	some
6) potato	Vietnum	all
Fruit (lambutan, mangostin, apple, orange)	Thailand	all

(2) Export

Main export agricultural commodities of the study area is coffee, cardamom and livestocks. Especially coffee is exported over 80% of total amount exported from the country through Pakxe. The exported value for major agricultural commodities in the study area for 1990 to 1994 are summarized as follows:

(unit : '000 kip)

Major Exported Commodities	1991	1992	1993	1994
Agricultural Product				
1) Coffee	2,974,420	1,687,110	2,179,890	1,885,860
2) Soybean	84,640	54,540	5,950	19,050
3) Groundnut	7,780	21,290	2,860	7,930
4) Cotton	14,960	8,730	0	2,330
5) Cardamom	161,640	394,850	425,460	252,690
6) Livestocks	360,010	391,380	251,900	112,240
Total	3,603,450	2,557,900	2,866,060	2,280,100

Source : Trade Service Office in Champasak, Salavan, Selong Provinces

Besides the above activity, the unofficial export to Thailand also is done by the Lao small trader. For example, banana, cabbage and potato are exported to Thailand in those harvest season without officially declaring to the trade office. Livestocks are also considered that some are unofficially exported to Thailand.

The most of the agricultural products of the southern four provinces are exported through Pakxe. Taking into consideration the distance from the study area to Pakxe, the study area has a advantage in exporting agro-products to Thailand, however still remain a problem of road condition.

I-2.6 Quality

At present, there is no concept of quality standard at the farmer and also traders (exporters). Even in case of coffee, the exporters check only the broken beans, and the government authorizes these coffee beans as Lao standard coffee with checking of moisture condition and phytosanitary. The standard moisture condition of coffee in Lao is 14% to 7%, however the standard of EC is under 13%. Additionally, there is no taste checking system. Hence, Lao coffee is classified into the low quality class in the European market, and is treated at low price which is 10 to 20 % below of world market price.

The vegetables also are sold freely in the market by farmers and/or retailers, where the price of vegetables is set by their weight, not qualities. Only the price of rice is graded into two categories, i.e. non-broken rice and broken rice. Since there is no marketing facility and organization in the study area, the farmers are compeled to go to the local market or to wait for the middlemen coming. Therefore, due to the poor transportation, the farmers often waste their products especially in the rainy season.

It is important for future marketing development to establish quality standard or grading system of agricultural products and to establish the price system based on the quality and quantity of commodities marketed. This matter should be applied for not only export commodities but also domestic market. If farmers know that there is difference depending on the quality, they will have a intention of making high quality product. In addition, the introduction of storage facilities and road improvement are also important for future marketing development.

I-3 PRESENT AGRO-ECONOMIC CONDITION IN THE STUDY AREA

I-3.1 Land Holding and Land Tenure System

Since the government decreed the regulation of land use (No. 117) at 1989, it is authorized that officially, the land remains the national community's property, the people have the right of usufruct or the right of use of the land. By the government Decree No. 99 at 1992, the land could be inherited, transferred, leased, or sold to Laotians, all of which are legitimately recognized by the state provided the land. Each village is to maintain a land registry book for individual holdings, and submit this to authority.

Besides, the land taxation system also was changed at 1993 (No. 50). Before that, the tax on rice cultivated land was paid in kind, on the basis of assessed potential yield. On the other crops an agricultural income tax in cash was paid. Under the new system taxes are paid annually on all crops in cash, and the tax is applied to all categories of land. A different tax schedule is applied to each of four agricultural land types; land for rice field (irrigated and rainfed), for non-rice agricultural crops, for slash and burn cultivation, and other land uses. The land tax rate for agricultural land is shown in Table IV-I-4.

I-3.2 Average Farm Type and Size of the Study Area

The main farm types operated in the study area are coffee farming, lowland rice farming and slash and burn farming. The dominant farm type is summarized as follows :

Farm types	Main crops*1	Sub crops	Ave. farm size (ha)	No. of H.H	% in Total H.H
Coffee Farming	Coffee	-	2.9	4,230	17
		Upland crops	2.0	4,075	16
		Tea	2.7	1,215	5
		Vegetables	2.6	960	4
Average*3			2.5	10,480	41
Slash & Burn	Upland crops	-	1.4	2,240	9
		Coffee	1.1	6,930	27
		Lowland rice	1.0	380	2
		Fruits*2	1.4	630	2
Average			1.2	10,180	40
Paddy Farming	Lowland rice	-	1.3	1,080	4
		Upland crops	0.7	3,400	13
		Coffee	1.8	360	1
		Banana	4.5	20	0
Average			0.9	4,860	19
Total			1.7	25,520	100

Remarks : *1 : Upland crops include upland rice, soybeans, groundnut, cardamom, etc.
*2 : Fruits indicates of pineapple and banana.
*3 : Average indicates the weighted average of the households

The farm income consists of mainly three crops, coffee, lowland paddy and upland crops. The dominant farm type of the study area is the monocultivation types of coffee or slash & burn, and the combination of coffee and slash & burn (upland crops) farming. There are some farmers who cultivate vegetables such as cabbages, chinese cabbages and potatoes with coffee. Coffee farming is mainly found in the Pakxong district, and the slash & burn farming including combination type is dominant in the Laongam, Bachiang and Thateng districts. Paddy farming is mainly operated in the Salavan district.

The farm size was also estimated by each farming type based on the data of agriculture servise offices of each district. Coffee farming which is one of the dominant types in the study area is operated at about 2.5 ha. Besides, the farm size of slash and burn farming which is the other of dominant types, is about 1.2 ha and lowland rice farming is 0.9 ha, respectively. The average farm size in the study area is about 1.7 ha.

I-4.3 Food Balance of the Study area

The following table shows the food balance for each district at 1994.

District	Total Population	Rice demand (Paddy)	Production of paddy	Balance Total	Per capita
	(person)	(ton)	(ton)	(ton)	(kg/person)
Pakxong	41,758	12,530	585	-11,945	-286
Bachiang	22,275	6,680	7,990	1,310	59
Laongam	41,122	12,340	8,210	-4,130	-100
Salavan (4 zone)	20,623	6,190	7,230	1,040	50
Thaleng	14,403	4,320	2,530	-1,790	-124
Total	140,181	42,050	26,545	-15,505	-111

Source : CPC and Agriculture and Forestry Service of each district

In the study area, the rice production is completely in shortage, even that Bachiang and Salavan it is slightly surplus. However, there is a established system as a trading system of rice, where certain number of farmers grow the coffee instead of rice and buy rice by cash.

I-3.4 Present Crop Budget

(1) Labor Balance

Labor shortage will be one of the limitations for the future development stage. The labor balance study was made in order to assess the demand and supply of labor force on the cropping patterns in the study area.

The peak of labor requirement on present cropping pattern appears at the time for harvest season of coffee. The most of coffee farmers hire the labor force from the lowland surrounding the study area which is Salavan, Champasak, Khong etc. The labor requirement of the other crops including upland crops, lowland paddy, vegetables etc., is supplemented by family labor, because of the cultivated area is comparatively small.

(2) Crop Budget

The crop budget on each crops is analyzed based on the price/cost in 1995 as shown in Table IV-I-5, and summarized as below :

(unit : '000 kip/ha)

	Coffee	U. Rice	L. Rice	Cardamom	Cabbage	Potato	Soybeans	Groundnut
1. Gross income	435	225	390	450	800	1,130	156	250
2. Production cost								
1) Farm inputs	0	12	31	0	235	123	9	11
2) Hired labor	60	0	0	0	0	0	0	0
3) Others	5	4	3	2	9	6	4	4
4) Total	65	16	33	2	244	130	14	15
3. Net return	370	209	357	448	556	1,000	142	235

Note : Production cost excludes the family labour cost

As for the net return, potato is most profitable crop among the present cultivated crops, but the area of potato is very limited due to no farmer's intention , much labor requirement, etc. Coffee is also profitable crop, since the coffee price of this year is rather high comparing with recent year's one. Therefore, the above figure for coffee may not appear the typical crop budget for future. If the price is reset at 500 kip/kg of last year's price from 1,450 kip/kg, the net return is 85,000 kip/ha.

I-3.5 Agricultural Production Value

The gross production value of major crop productions at farm gate is estimated as Table IV-I-6, and summarized as follows :

Item	Pakxong		Bachiang		Laongam		Salavan		Thateng		Study Area	
	(US$)	(%)	(US$)	(%)	(US$)	(%)	(US$)	(%)	(US$)	(%)	(US$)	(%)
Coffee & Tea	11,250	76	260	10	2,250	39	40	1	510	34	14,300	52
Rice (Up& Low)	130	1	1,040	42	1,670	29	1,520	55	520	35	4,890	18
Vegetable	750	5	0	0	0	0	0	0	0	0	750	3
Cardamom	510	3	250	10	270	5	20	1	120	8	1,160	4
Tea	70	1	0	0	0	0	0	0	0	0	70	0
Livestocks	2,040	14	960	38	1,570	27	1,190	43	350	23	6,110	23
Total	14,740	100	2,510	100	5,760	100	2,770	100	1,500	100	27,280	100

Note : 1 : annual production of animals is estimated as assumption based on the total number of animals, applying 15% of cattle and buffalo, 150% of pig and poultry.
2 : Exchange rate applies 735 kip as 1 US$

The above table shows the different trend and also characteristics in each district. As for the study area, 52 % of annual farm production value depend on coffee planting, while livestocks and rice production contribute 23 % and 18 %, respectively.

I-3.6 Farm Household Economy

The present farm household economy for the farming type of farm household in the study area is assessed based on the result of the farm household survey and estimation of the crop budget. The present farm budget of three typical farm household is show in Table IV-I-7, and summarized as follows :

(Unit : kip)

	Coffee farming	Slash & Burn	Lowland rice
(average farm size)	(2.5 ha)	(1.2 ha)	farming (0.9 ha)
(no of H.H in study area)	(11,480 H.H)	(10,180 H.H)	(4,860 H.H)
1. Gross Income	(940,100)	(423,,900)	(416,600)
- Farm Income	940,100	373,900	324,000
- Non Farm Income	0	50,000	92,600
2. Production Cost	136,400	37,000	27,800
3. Net Income	803,700	386,900	388,800
4. Living Expense	(778,000)	(386,900)	(388,400)
- Food items	490,100	308,400	291,900
- Non Food items	287,900	78,500	96,500
3. Net Reserve	25,700	0	400

Note : *1 : Estimation is based on the weighted average of each farm type's figure
*2 : Income and expenses are including own consumptions

The total annual living expenses of the coffee farmers in 1994 is estimated about 0.9 million kip, while expenses of sash & burn and lowland rice farmers are about 0.4 million kip. The study on farm budget makes it clear that farm economy for the sash & burn and lowland rice farmers is in the most subsistence level. However, as mentioned in previous chapter, the coffee farmers household economy is assumed as the exceptional case by the extra price. In case of the low price such as about 500 kip/kg, its annual expenses will be about 0.4 million kip.

In comparison with the national average consumption at 1993 as shown below, it is apparent that the farm economy of the study area is in lower level.

	Urban		Rural		Average	
	('000kip)	(%)	('000kip)	(%)	('000kip)	(%)
Food consumption	860	57	570	68	630	64
Non-food expenses	650	43	260	32	350	36
Total	1,510	100	830	100	980	100

Source : Lao Expenditure and Consumption Survey, 1992/1993, State Statistical Center, Lao PDR.

I-4 BASIC CONCEPTS FOR THE PROJECT DEVELOPMENT

I-4.1 Marketing Constraints

The present marketing constraints in the study area are summarized as the following paragraphs.

(1) Lack of Marketing Organization

Since there is no market organization which has a viewpoint of farmers development, the following limitation are resulted.

a. low price of agricultural products (no power of negotiation)

Since the market channel is not established and the farmers have no transportation facilities and also no money, the initiative of trading is in the trader's side. Hence, the farmers is often compelled to be sold their product at low price.

b. untimely & deficiently supply of farm input

As mentioned previous section, the market channel and organizations are not established to trade farm inputs yet, the farmers often face a shortage of farm input. This is one of the reason for the low yield of crops.

c. low quality

Since the most of agricultural products is inferior quality, this is one reason that these are traded at lower price in the international trade. The farmers have no sense of quality grading and no intention to control the quality of products, in addition there is no organization for quality control.

(2) Poor Road and Transportation Facilities

Due to poor road and transportation facilities for villages in the study area, the villagers are isolated during the rainy season, and the farmers often loose the access to the market for selling their products and also purchasing their food, especially rice. The road condition of national road No. 13 which runs north (Vientiane) to south (Khong) is also so terrible that transportation of agro-products such as vegetables and fruits from the study area to the Vientiane is limmited in the rainy season.

(3) Lack of grading Standard and Facilities

There is no concepts of grading standard at trading of agricultural products at present. Since the price is decided just based on the quantity, that is low level and the farmers income also is in subsistence level. To introduce and improve the quality control is important for commercialization and also farmers development.

Most of villagers have privately owned coffee mills and the mills are used for milling of coffee and also rice. However, these are the antiquated machineries which produce poor, ungraded coffee beans. There is only one coffee milling factory which has new type of machinery in the study area.

Since there is no marketing support system for farmers, no transportation facilities and no storage facilities for vegetables, to keep the quality of vegetables is quite difficult in the rainy season. Hence, the vegetables are often wasted in the rainy season.

(4) Poor Information Services on Market

Due to lack of roads, communication facilities, organizations to disseminate information on the market needs and also commercialize sense, farmers are kept without relation with the markets.

I-4.2 Agro-economical Constraints

The present farmer's economy in the study area is mostly concentrated on agriculture at subsistence level to produce their food or cash crops to purchase the food. The present constraint for the agro-economic development is that the slash & burn cultivation is popular farming type and the farm income of this type is compelled to be subsistence level due to inefficient farm practice. For the future development, the farming practice should be shifted from slash & burn cultivation to stable farming practice, such as cash crop cultivation and irrigated paddy cultivation.

From the NEM introduction, the free market system has been filtered into the Laos people, but it is found that the farmer are still isolated and have not enjoyed sufficiently, due to limited information service and poor extension service.

The farming pattern in the study area can be found that it is already attained at diversified farming type, from macro regional viewpoint. However, marketing system and farming support system and also farming practice is seriously low and/or primitive. For the future development, the above matters should be improvement through long term extension works, such as extension of farmer's school by using the demonstration farm.

I-4.3 Basic Development Concepts

I-4.3.1 Basic Concepts for Market Development

The establishment of efficient marketing system is one of the important factors to vitalize the regional economy as well as to develop farmer's intention on improved practice and promoting crop diversification. Expansion and improvement of the existing market system with establishment and development of organization and facilities are essential for the market improvement in the study area. The following items are especially focused on for the improvement. The basic and concrete concepts for marketing development is shown in Fig. IV-I-4.

(1) Organization Establishment and System Improvement

Under the free market system, it is essential to keep the market-oriented principles, such as to prepare commodities of quality and a certain quantity to meet market requirements, and to ship constantly or timely every year according to the requirements of market. In this connection, it is inevitable to establish a well-rationalized marketing system through organizing the farmers to control quality and quantity of products, so that the farmers will become possible to negotiate with the traders on the appropriate prices of products as well as inputs through the organization, e.g. farmers cooperatives, local traders organization, etc. Furthermore, a whole sale system will be established to introduce a principle of competitive prices.

To formulate appropriate prices of the commodities at every level of market, accurate and timely information on markets such as required quantities of products and inputs is fundamental matter. Manpower development will also be necessary for operation and management of the system, organization, and also for collection and dissemination of information on market, etc.

(2) Facility development:

Together with the improvement of marketing system and organization, development of marketing facilities for collecting, cleaning, weighing, packing, storing and shipping are also required. Any farmer will be able to sell their products to the collection ware house operated by the organizations whenever they want to sell their products. Especially, Since the study area has high potential for vegetable production because of their climatical and soil condition, the vegetable trading facilities is one of the essential facilities for market development. Market information facilities for dissemination to farmers are also important facility for future market and agriculture development.

(3) Strengthening of support services

Most of officers in the districts seem to be not the specialist for marketing promotion but for acting as clerks, and they are also not well-informed and trained about the marketing system under NEM by the province or the central government. Most of them are just waiting some instructions from the province and not active to promote agricultural production and marketing of their own district.

To improve and strengthen the function and capacity of marketing support services at the province and the districts levels, it is essential to recruit specialists for marketing promotion of agricultural products and to give proper training on the marketing system under NEM. In addition, improvement of their office space and equipment is required sufficiently for collecting, analyzing and disseminating markets information from and to the central government, farmers and international markets especially in Thailand.

(4) Model Development

Establishment of vegetable wholesale market (collecting and delivery station) at Pakxong, Laongam, and Thateng is proposed as model development for future marketing development. It is recommended that the operation manual for organization operating The operation manual for organization operating is prepared based on the result of model development, for the easy dissemination to the other area.

I-4.3.2 Basic Concept for Agro-Industry Development

At present, the coffee cropping is more popular and farmer has a intention to grow coffee, but coffee price is most elastic, therefore the farmers economy also will be unstable depending on the coffee price. Tea development is one of the alternatives for economical stabilization of farm household economy. It can be said that the study area has a high potential for tea plantation, from natural conditions such as soil condition, climate. In fact, about 300 ha of tea plantation surroundings KM 35 to KM 40 along No. 23 National Road is used for harvesting of tea and the production are sold at local market and some portion of this is exported to Vietnam. In addition, tea price is stable and will be up based on the World Bank price prospect.

The quality and also quantity problems lies ahead for the future tea export. Therefore, processing equipment should be installed and graded up the quality, with increasing productivity and area expansion to increase the amount. A farmers organization of tea product also should be established with implementation of the processing facilities, which will have functions for operating processing factory, buying farmers product, trading as exporter and wholesaler, technical support services for farmers, and financial services for expansion of tea plantation. The operation of organization have to be done independently, but in the first stage may be need for some assistance of government agency.

I-5 PROPOSED DEVELOPMENT PLAN

I-5.1 Market and Price Forecast

The population of the study area at 2005 is estimated to be 30 % up from present condition, by applying the growth rate of 1990 - 1994. The gaps between the total requirement and the total production of each crops can be filled by domestic product. In addition, if the road condition from Pakxe to Vientiane is improved, the domestic market for the product of the study area will be widened, for instance the transportation of vegetables to Vientiane will be possible. In addition, potato, onion, chilies, etc. as import substitute crops can be expected, especially at Vientiane market, since the most of these crops are imported from Vietnam unofficially at present condition.

Presently, the some commodities, such as banana, cabbage, groundnut and potatoes are exported to Thailand unofficially. It is expected that, however still remaining the problem of duty barrier, the market of Thailand will be available and the exported volume also will continue to increase.

Exportable commodities such as coffee and cardamom could be thought as marketable crops. Coffee is most flactuatable commodity in that price. In fact, the price rose sharply in July, 1994 due to decreasing of the Brazil's production in last June. Therefore the coffee price may be declined in future, although it is high at present. Based on the World Bank Price Prospect Report (February, 1995), financial coffee price at 2005 was forecasted below :

	1994	2005
World market price (US$/ton) *1	3,357	2,136
Farmgate price *2 (kip/kg)	1,,400 - 1,500	820 - 900

Remarks : : 1 : in constant 1994 price.
2 : Transferring to farmgate price from world market price is calculated based on the formulation of LCEA.

Note : Price in world market is of husked coffee (green been), and it in farmgate is unhusked one.

From the above estimation, the future farmgate price of coffee is prospected to be less than two third of the current farmgate price. However, it is thought that coffee is still profitable compared with other commodities. In fact, whole annual production of coffee is exported even in present quality condition. Taking into consideration that coffee's quality will be up, it can be thought that exportation for the future production will be also possible at reasonable price.

In future, tea price could increase significantly if Russia would import a substantial amount of tea from India under their bilateral agreement. Another factor that could raise tea prices would be the lifting of the trade embargo on Iraq. Taking it into consideration that tea is reported to be smuggled into Iraq, its import would increase substantially if the embargo are lifted.

I-5.2 Marketing Development Plan

The market development plan is formulated taking into consideration the basic development concepts described above, such as organization establishment and system improvement, facilities development, strengthening of support services. The main commodities to be considered for market and processing development in the study area is mostly of the products of agriculture such as coffee, vegetables and rice (paddy). The market development is necessary to be promoted not only for market facilities but also in consideration of storing, farmers organization promotion, women in development, and along with agricultural development. The proposed development plan is illustrated in Fig. IV-I-4 and summarized as follows:

(1) Strengthening of Supporting Services

Strengthening of Trade Service Office of Champasak, Salavan and Sekong Provinces and also of each district in the study area, with office facilities, and manpower improvement is essential.

(2) Improvement of Marketing System

Whole sale system should be introduced to the marketing system in the area.

(3) Market organization and facility development

Establishment of trading point for vegetables is one of main items for future marketing development plan. Through the wholesale market, operated by the marketing board, the farmers can trade in their product with middleman at fare price. In addition, the competitive marketing system can be introduced smoothly.

It is recommended that the trading point shall be set up at Pakxong, Laongam and Thateng town firstly, from the viewpoint of accessibility of farmers and effect of model project. About 121,000 ton of vegetables will be produced in the project area. Taking the future production into consideration, the facilities to be installed are planned as follows :

Items	Specification (draft)
Working and storage space *1	Area is about 300-1000 m^2, platform type, 0.8 m height of Parking lot.
Building	Steel frame structure
Parking lot	5 m in width and 10 m length
Wash basin	with 2 faucets for vegetable washing
Office space	Office space for marketing board stuff and some buyers
Communication facility	Telephone or wireless radio, motorcycle
Other office equipment	Weighing machine and office tool

With the above facilities, the market organization (marketing board) also should be established. Marketing board is operated by the district government staff, and it has to function like farmers' organization as summarized below :

i) collecting and delivery of farmers product (vegetables),
ii) operating of wholesale market,
iii) agro-input supply,
iv) market information supply,
v) introducing of grading system and quality control, and
vi) training of government staff of district and provincial level

(4) Farmers Organization

There is no farmers' organization in the study area, hence the farm input supply and farm product delivery have been inefficient for the farmer. Market information supply, farm input delivery, dissemination of grading system, etc will be carried out by the farmers' organization. Farmers' organization are planned to be established in each district. This farmers' organization has a deep relationship with marketing organization. As the marketing organization has the many functions, the first step of action of the farmers' organization is to cooperate with and help the marketing organization in their activities. Through the on-the-job training, the farmers' abilities will be improved and the technical fundamental of farmers' organization will be consolidated. From the next phase, when the farmers have confidence of operation of the organization, the marketing organization will be incorporated with the farmers' organization.

(5) Tea Product Organization

As mentioned previous section, tea is one of exportable commodity in future and through operating the tea processing and trading by farmers' organization. Farmers' organization for tea product will be set up at Pakxong or km 40 with tea processing facility. It will have functions for operating processing factory, buying farmers product, trading as exporter and wholesaler, technical support services for farmers, and financial services for expansion of tea plantation. The capacity of equipment to be installed will be about 1.0 to 2.0 ton /day of tea (output), based on the tentative estimation of future production. These plan will be implemented at medium term phase.

(6) Development Program

The proposed plan is divided into three program according to the terms, such as long, middle and short term programs. The facility development, new system introduction, organization establishment, etc will be made as the short term program. However, the personal training and system dissemination will be continued as middle and/or long term programs, because they will take long years to attain to the goal. The development program is shown in Fig. IV-1-4.

Short term program	:	(1) Facility development, (2) Introduction of wholesale market system, (3) Organization development, (4) Establishment of farm input supply system
Middle term program	:	(1) Dissemination of wholesale market system, (2) Preparation of operation manual for the organization, (3) Establishment of market information system and dissemination of commercialism, (4) Organization development
Long term program	:	(1) Training and strengthening of government stuffs, (2) Training of farmers, (3) Transferring of market organization system to farmers' organization, (4) Dissemination of the project effects to the other area

For forthcoming 15 years, the following active development plan is proposed to be carried out. The plan is divided as three phases as shown below.

Phase I	(1996-2000) :	Market organization and facility development at Pakxong with introduction of wholesale system and grading system, with establishment of farm inputs supply system
Phase II	(2001-2005) :	Market organization and facility development at Laongam, Thateng Establishment of tea product organization with installation of facility
Phase III	(2006-2010) :	Establishment of farmers organization at Pakxong

I-5.3 Selected 16 Project

I-5.3.1 Crop Budget under Without and With Project Conditions

Crop production costs and value per ha under without and with Project conditions are estimated by using the financial prices as of 1994 basically. However, since the present coffee price is exceptional case, coffee price is re-applied to the future price based on the World Bank Price Prospect, as mentioned in Section 6.1. Incremental financial crop budget per ha is shown in Table IV-8 and summarized as follows :