

6. FEASIBILITY OF THE PRIORITY PROJECTS

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6.1 Selection of Priority Projects and Programs

(1) Selection Process

For several of the 25 projects which were selected as "most significant projects" in Chapter 3, feasibility studies were carried out. These priority projects were selected based on the following criteria:

- 1) The project meets the development strategy; in other words, the level of significance indicated in the project list (Table 3-2) is high;
- 2) The project needs initiatives of and will be carried out by the public sector. Accommodation development projects were not selected, since they may be developed by the private sector;
- 3) The project requires urgent implementation and consent is given to the project by the authorities concerned. However, projects for which extensive study, e.g. detailed design, has already been carried out are not selected; and
- 4) The investment scale is large enough to consider its implementation under a soft loan agreement.

It should be noted that, although recognized as priority project, the following projects were not selected:

- 1) Power supply and telecommunication projects

An appropriate budget has already been appointed to these projects. It is stressed that their implementation as scheduled is indispensable to develop the Study Area into a prominent international tourist destination.

- 2) Solid waste disposal projects

The establishment of proper solid waste disposal systems is very important to sustain the Study Area's natural environment. The Study Team has identified issues concerning solid waste disposal in the Study Area, but study on the most adequate solutions should be carried out on a national scale, since it involves various legislative and administrative issues.

(2) Selection of Priority Projects and Programs

As a result of above procedure the following 8 projects were selected:

- 1) Cultural and Recreational Center in Cha-Am (6.2),
- 2) Phet Kasem Road Improvement in Cha-Am and Hua Hin (6.3),

- 3) Improvement of Circulation Roads in Phetchaburi (6.3),
- 4) Improvement of Phetchaburi Coastal Road (6.3),
- 5) Municipal Water Supply Development in Cha-Am and Hua Hin (6.4),
- 6) Sewerage System Development in Cha-Am (6.5),
- 7) Tourism Promotion Program, and
- 8) Environmental Management Program.

Project numbers 1, 2 and 7 respond to the target to develop and improve tourist attractions in the Study Area, projects 3 and 4 strengthen the linkage of tourism resources, projects 5 contributes to the target to develop necessary infrastructure and projects 6 and 8 enhance the quality of the Study Area's natural environment.

Feasibility studies were carried out for the first 6 projects, including details of the proposed developments and their economic/financial analysis. The result of the feasibility studies is described here after.

6.2 Cultural and Recreational Center in Cha-Am

(1) Outline of the Project

The project involves the development of a cultural and recreational center on a government owned site in Takard Phlee in northern Cha-Am. The objectives of the project are as follows:

- To be the center of Thai art and cultural education in western Thailand;
- To be a center for activities of the local community and the young;
- To be a recreational center for local population as well as tourists from within and outside the country; and
- To be the special tourist attraction with unique events.

The site allocated for the development of the complex covers 389 rai (62.3 ha), 226 rai (36.2 ha) of which will be utilized for the development of tourism facilities. The master plan for the complex is shown in Figure 6-1, Figure 6-2 presents an image sketch of the center and Table 6-1 includes an overview of the facilities proposed.

(2) Organization

The project shall be jointly developed by the public and the private sector. The following organization structure is suggested and illustrated in Figure 6-3:

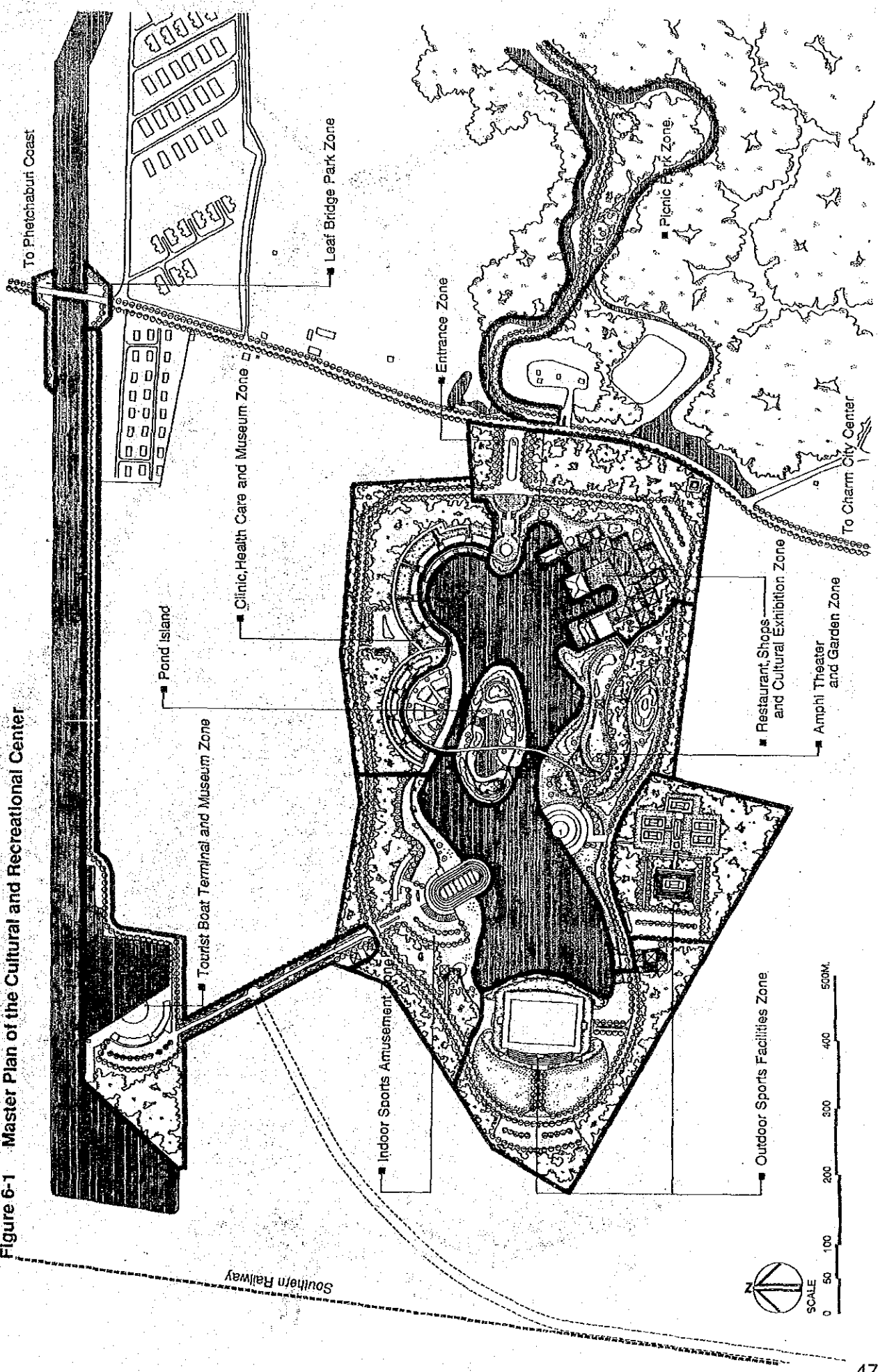
1) Land Development Corporation (LDC)

The LDC shall develop public facilities and the required public infrastructure for the project, is responsible land management and maintenance of the public facilities, and shall undertake the supervision of the entire project.

2) Private Sector Developers (PSD)

The PSDs rent the developed land and tourist facilities and shall provide tourist related services in order to generate proceeds. In the light of know-how required for tourist services, a private company with no public participation is preferred.

Figure 6-1 Master Plan of the Cultural and Recreational Center



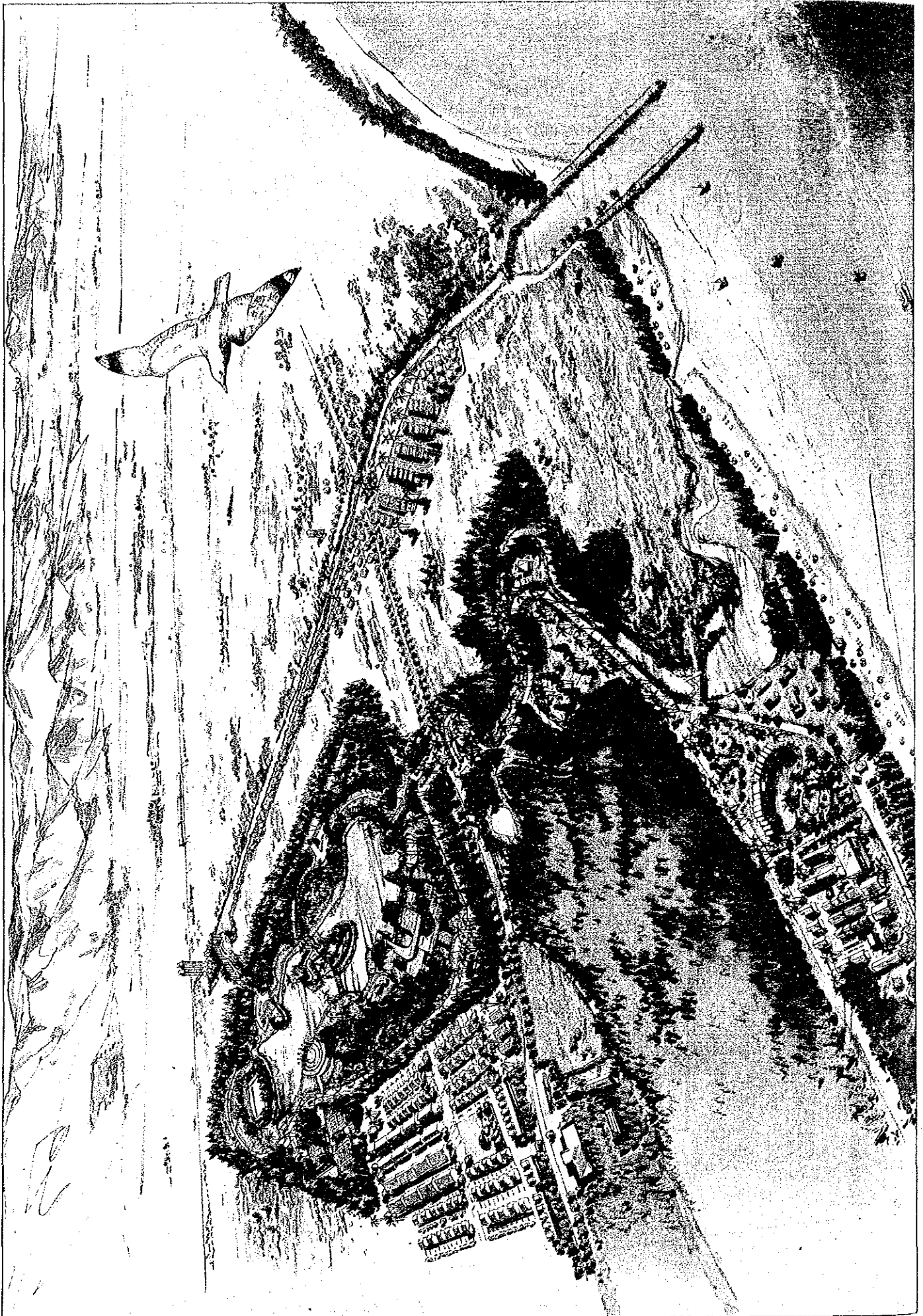


Table 6-1 Facility Program for the Cultural and Recreational Center

units: Site Area: ha
Floor Area: sq.m

Zone	Facility	Site Area	Bldg. Floor Area	Details	Construction Body
2	Restaurants, Shops and Exhibition Hall	6.30	3,900	- Main restaurant: 2,200 sq.m, 400 seats - Souvenir shops: 5 units, each 20 sq.m - Exhibition hall: 510 sq.m - Road/parking: 7,100 sq.m. - Landscaping	Private Private Public Private Public
3	Amphi-theater and Garden	18.45	300	- Amphi-theater: 3,300 sq.m - Garden w/play equipment: 54,200 sq.m - Garden coffee shop, boat pier: 300 sq.m - Road/Parking: 4,700 sq.m	Public Public Public
4	Outdoor Sports Facilities	12.63	2,100	- Multipurpose stadium w/fixed spectator stands: 1,000 sq.m. - Main building: 1,000 sq.m. - Landscaping (incl. stadium area): 31,400 sq.m. - Tennis courts: 3,400 sq.m. - Main spectator stand: 1,800 sq.m. - Club house, tennis museum: 600 sq.m. (bldg.) - Landscaping: 8,600 sq.m. - Road/parking: 19,300 sq.m.	Public Private Public Private Private Private Public Public
5	Indoor Sports and Amusement Facilities	5.98	8,400	- Amusement swimming pool w/locker rooms: 5,100 sq.m. - Gym, squash courts, running track & coffee shop: 1,100 sq.m. - Conference rooms: 1,100 sq.m. - Landscaping/parking: 12,000 sq.m. - Road/parking: 9,500 sq.m. - Restaurant: 300 sq.m.	Private Private Private Public Public Private
6	Clinic, First Aid and Science Museum	7.17	3,900	- Clinic, first aid and offices: 650 sq.m - Thai traditional massage, esthetic rooms, etc.: 350 sq.m - Human science museum: 650 sq.m - Clinic's accommodation rooms: 2,100 sq.m - Staff housing: 100 sq.m - Landscaping: 26,900 sq.m - Road/parking: 8,900 sq.m	Private Private Private Private Private Public Public
7	Tourist Boat Terminal and Marine Museum	7.49	1,200	- Tourist boat pier: 17,000 sq.m, connecting canal - Terminal building, marine museum: 1,200 sq.m - Spectator stand for boat racing along the canal - Landscaping: 32,140 sq.m - Road/parking: 10,860 sq.m	Public Private Public Public Public
8	Leaf Bridge Park	0.21	100	- Parking w/landscaping: 2,000 sq.m - Food stall: 100 sq.m	Public Private
9	Picnic Park	2.17	0	- 10 picnic units: 1,000 sq.m - Additional landscaping: 13,600 sq.m - Road/parking: 8,160 sq.m	Public Public Public

source: Study Team

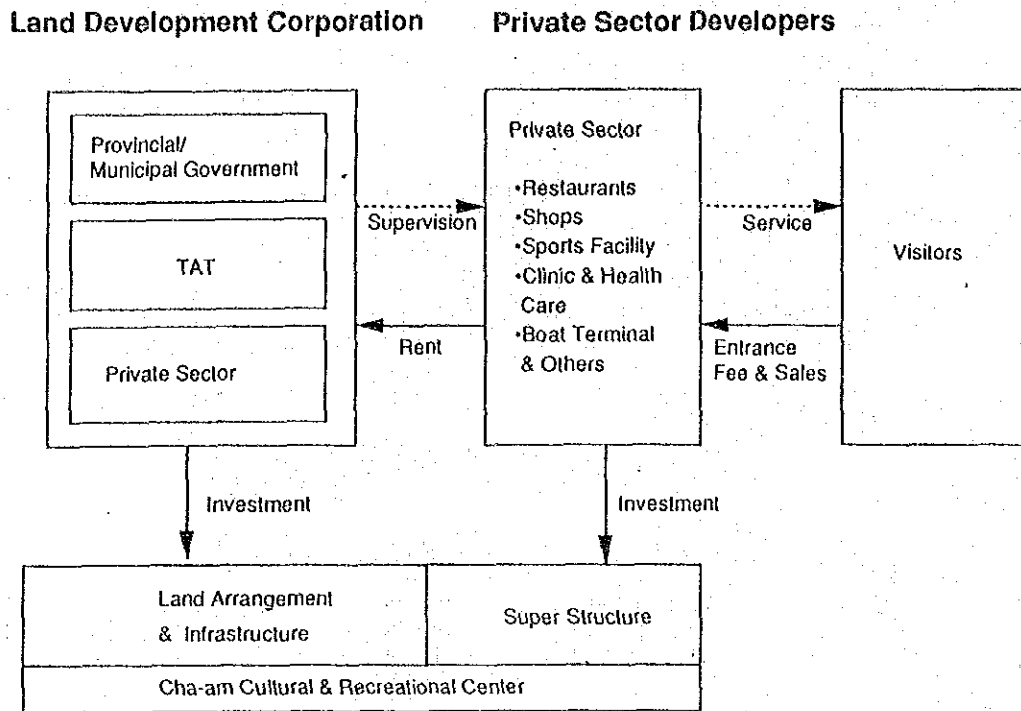


Figure 6-3 Proposed Organization for Development of the Cultural and Recreational Center

(3) Construction Cost and Implementation Schedule

An overview of the project cost is shown in Table 6-2. Cost estimates are based on the property development study recently conducted in Cha-Am in 1991. The implementation schedule is shown in Figure 6-4.

Table 6-2 Construction Cost of the Cultural and Recreational Center

	Site Area	Construction Cost
Restaurant, shops and cultural exhibition site	63,000	37,958
Stadium site	74,700	67,984
Tennis courts site	51,600	34,928
Indoor sports and amusement site	59,800	99,271
Clinic, first aid and museum site	71,700	58,626
Amphi theater and garden	184,500	31,398
Exterior	18,000	113,184
Infrastructure		23,637
Terminal site	74,900	113,296
Leaf bridge park	2,100	3,007
Picnic area	21,760	35,546
Total	622,060	618,835

units: sq.m, 1,000 baht
source: Study Team

FEASIBILITY OF THE PRIORITY PROJECTS

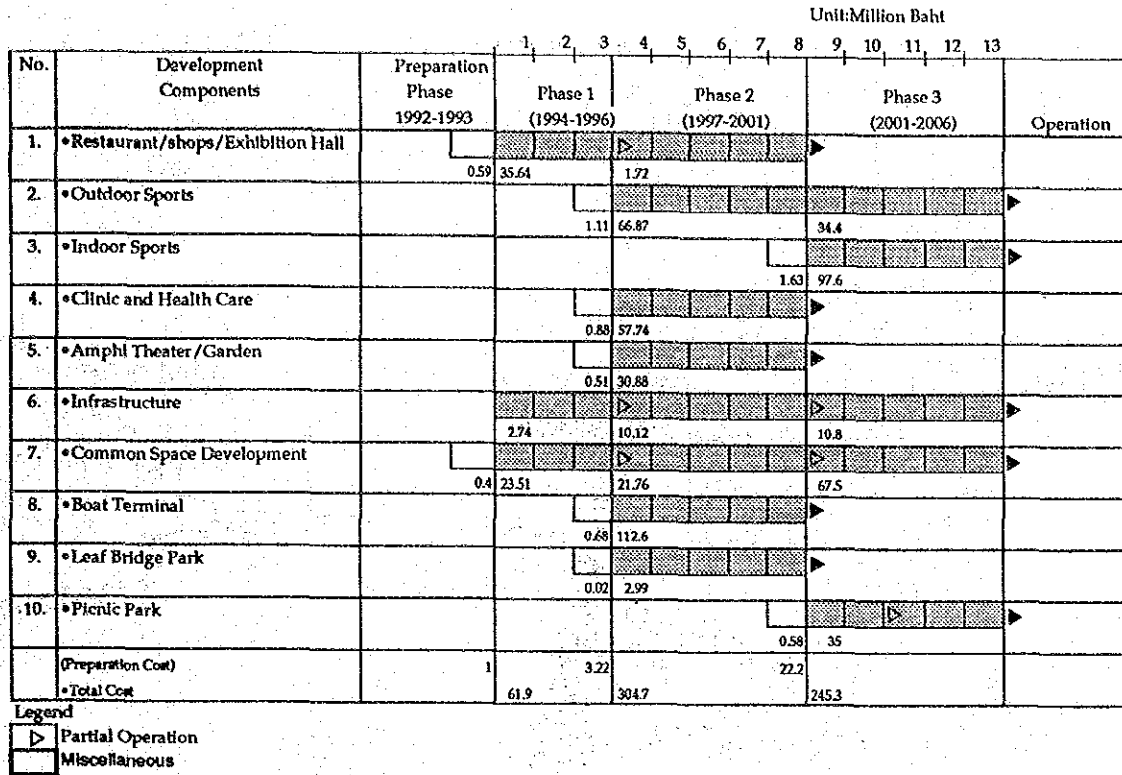


Figure 6-4 Implementation Schedule for the Cultural and Recreational Center

(4) Financial Feasibility of the Project

The financial rate of return (FIRR) is 4.90 % for LCD and 29.89 % for PSD. Since the complex will be operated by a public corporation, its construction may be financed with a low interest loan of an international institution. Therefore an FIRR of 3 % will be sufficient for LCD. For PSD FIRR should exceed 16.5 %, which is the ceiling of general interest rates.

Sensitive analysis shows that even in case the construction cost, rent or down payment will be 10% higher than expected, or the number of tourists will be 10% lower than expected, the FIRR will exceed the minimum rates for both LDC (4.88%, 6.13%, 5.29% and 4.88% respectively) and PSD (26.11%, 29.30%, 26.46% and 25.73%).

6.3 Transportation Development Projects

(1) Phet Kasem Road Improvement

With the construction of the new bypass of Highway No 4, the stretch of the existing highway from Cha-Am to Pranburi will change its function to local access road to the principle tourist centers of Cha-Am and Hua Hin. To improve the sense of arrival and traffic safety in these principal tourist centers this project aims to provide ample pedestrian space and lush landscaping.

The following improvements are proposed for Phet Kasem Road:

- Development of a central median and side-walks and improvement of crossings. Measurements are as follows:

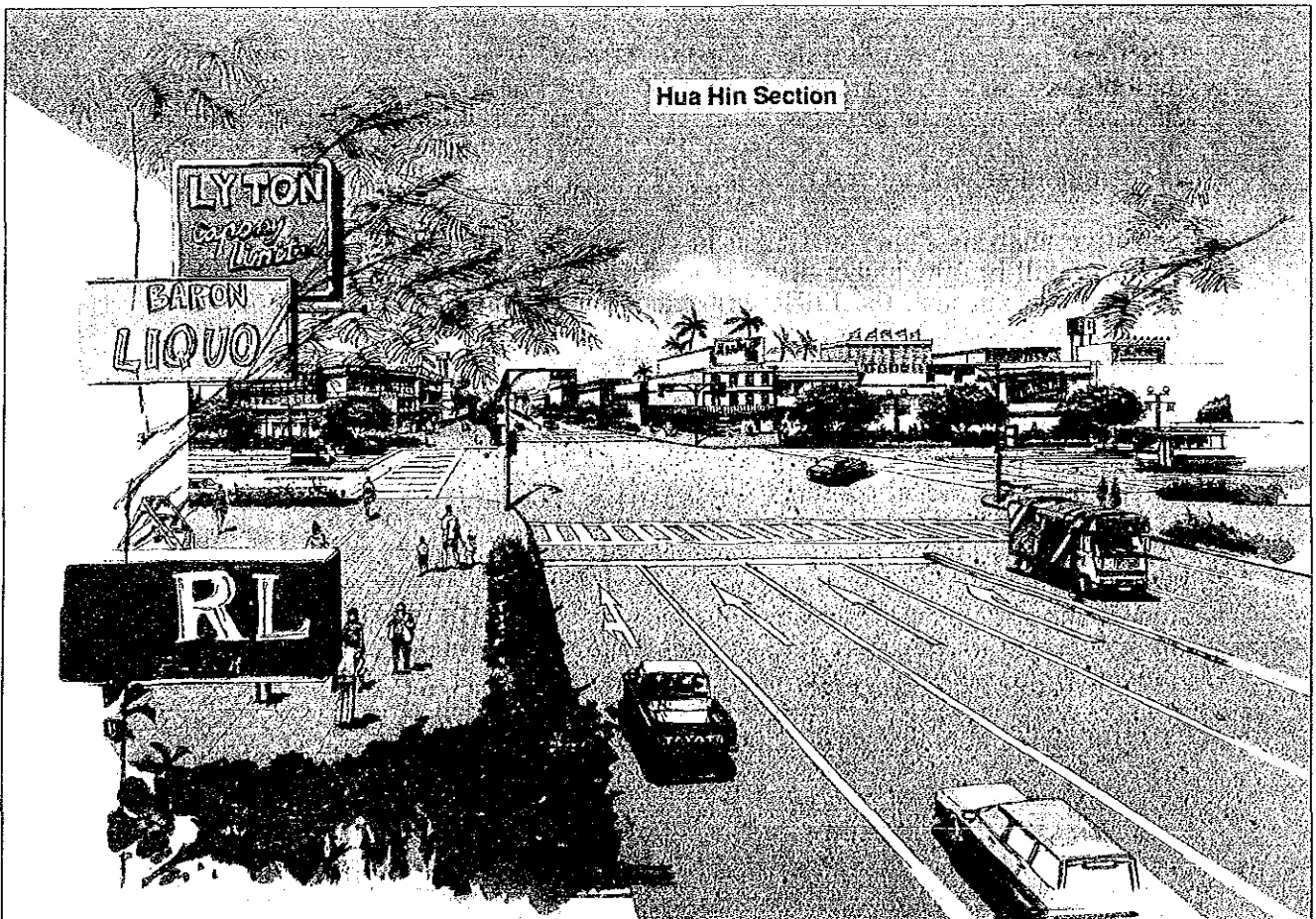
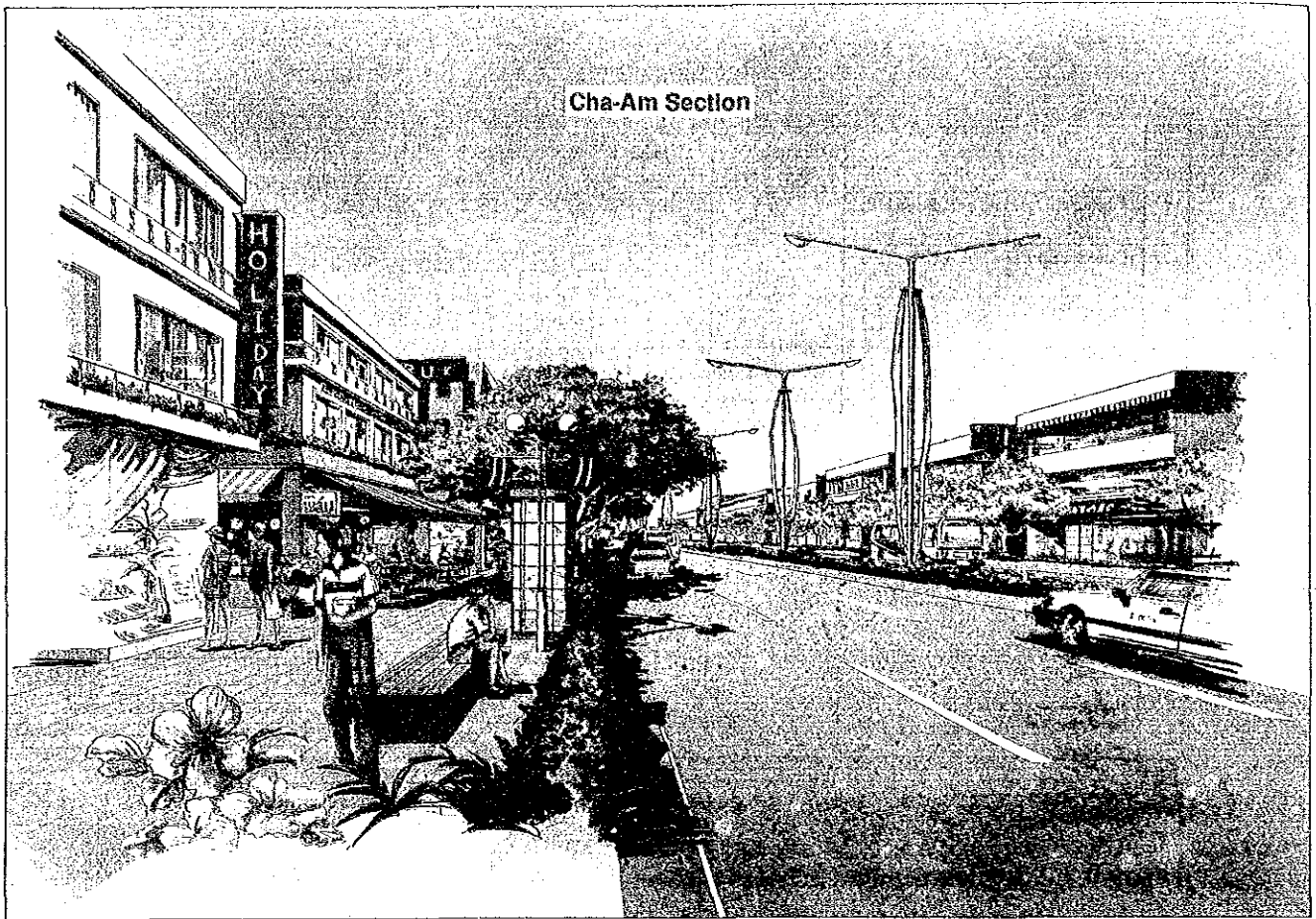


Figure 6-5 Image Sketches of Phet Kasem Road after Improvement

	Cha-Am Section	Hua Hin Section
Length of Section :	0.67 km	2.50 km
Total Width :	40.00 m	30.00 m
Road Width :	24.80 m	18.00 m
Land Width :	6 lanes 3.50 m 3.23 m	6 lanes 3.00 m
Central Median :	4.30 m	2.00 m
Side Walks :	7.60 m	5.00 m

- Sidewalk pavement,
- Road lighting,
- Road markings,
- Tree planting,
- Traffic control signals, and
- Underground development of electric power cables.

Figure 6-5 shows the improvement plan and Figure 6-6 presents an image sketch of Phet Kasem road after improvement.

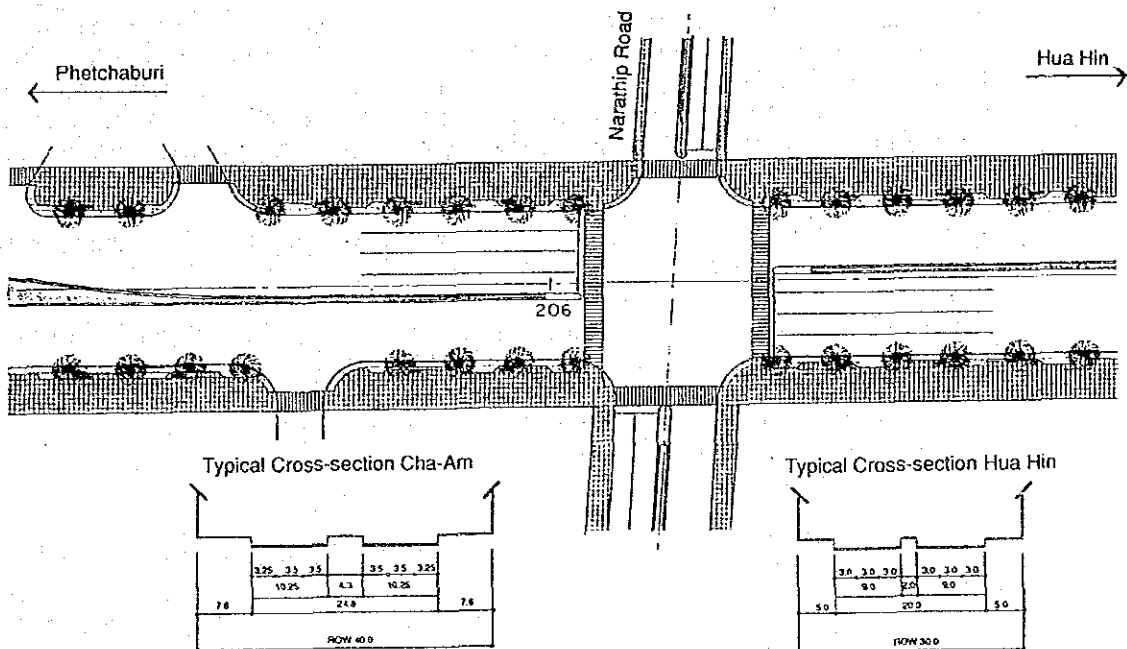


Figure 6-6 Improvement Plan of Phet Kasem Road

The development cost of the project are shown in Table 6-3. Improvement is scheduled to be completed in 1994 for the Cha-Am Section and in 1997 for the Hua Hin Section.

Table 6-3 Development Cost of Phet Kasem Road Improvement

	unit: 1,000 baht	
	Cha-Am Section	Hua Hin Section
Earthwork	904	2,033
Surface Course	3,422	7,500
Incidentals	23,690	87,133
Sub-total	28,016	96,666
Contingency	2,802	9,667
Total of Construction Cost	30,818	106,333
Maintenance	1,541	5,317
Design & Supervision	1,541	5,317
Total of Development Cost	33,900	116,967

source: Study Team

(2) Improvement of Circulation Roads in Phetchaburi Province

The purpose of this project is to improve the traffic conditions, safety and comfort of the roads between the Phetchaburi City and Kang Krachan National Park, and to improve the access to major tourism attractions and facilities and provide a circular tour in Cha-Am and Hua Hin Clusters.

The total length of the tour route is 138 km, and the route comprises National Highway No. 4 under control of the Department of Highways (including the old Phet Kasem Road) and the roads shown in Figure 6-7 under RID and OARD control. The improvements planned in this project cover 20.5 km of the road under RID control and 14.0 km under OARD control. The sections to be improved are shown in Figure 6-8 and necessary works are described as follows:

- 20.5 km under RID control : overlay pavement, marking, arrangement of guide signs, and incidentals.
- 14.0 km under OARD control : pavement, marking, arrangement of guide signs, and incidentals

The construction costs of this project are shown in Table 6-4 and the project is scheduled to be completed in 1995.

Table 6-4 Development Cost of Phetchaburi Circulation Road Improvement

	unit: 1,000 baht	
	RID Road 20.5 km overlay	OARD Road 14 km pavement
Sub-base Course		11,424
Surface Course	28,290	11,480
Incidentals	3,901	2,408
Sub-total	32,191	25,312
Contingency	3,219	2,531
Total of Construction Cost	35,410	27,843
Maintenance	1,771	1,392
Design & Supervision	1,771	1,392
Total of Development Cost	38,952	30,627

source: Study Team

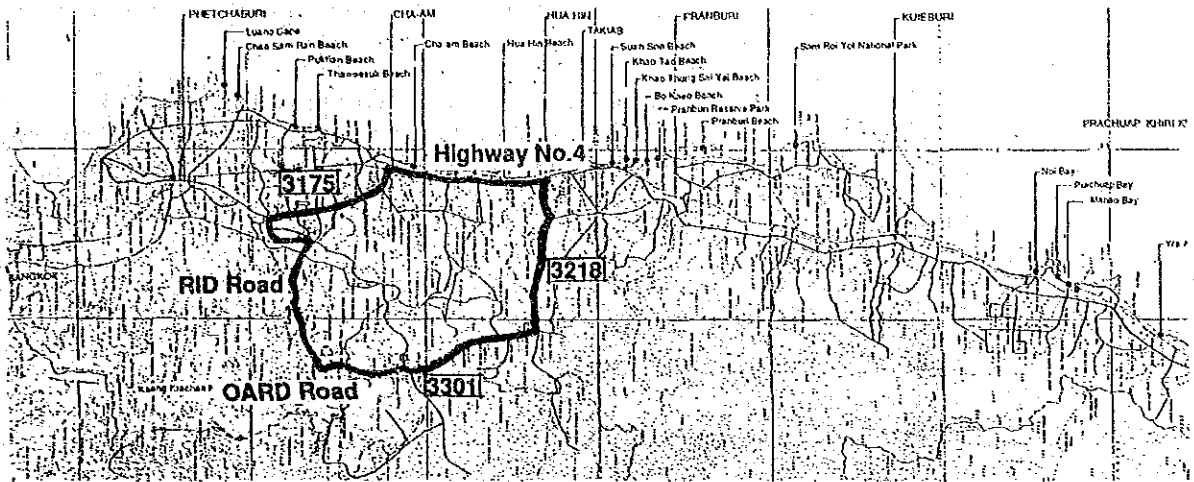


Figure 6-7 Location of the Circulation Route In Phetchaburi Province

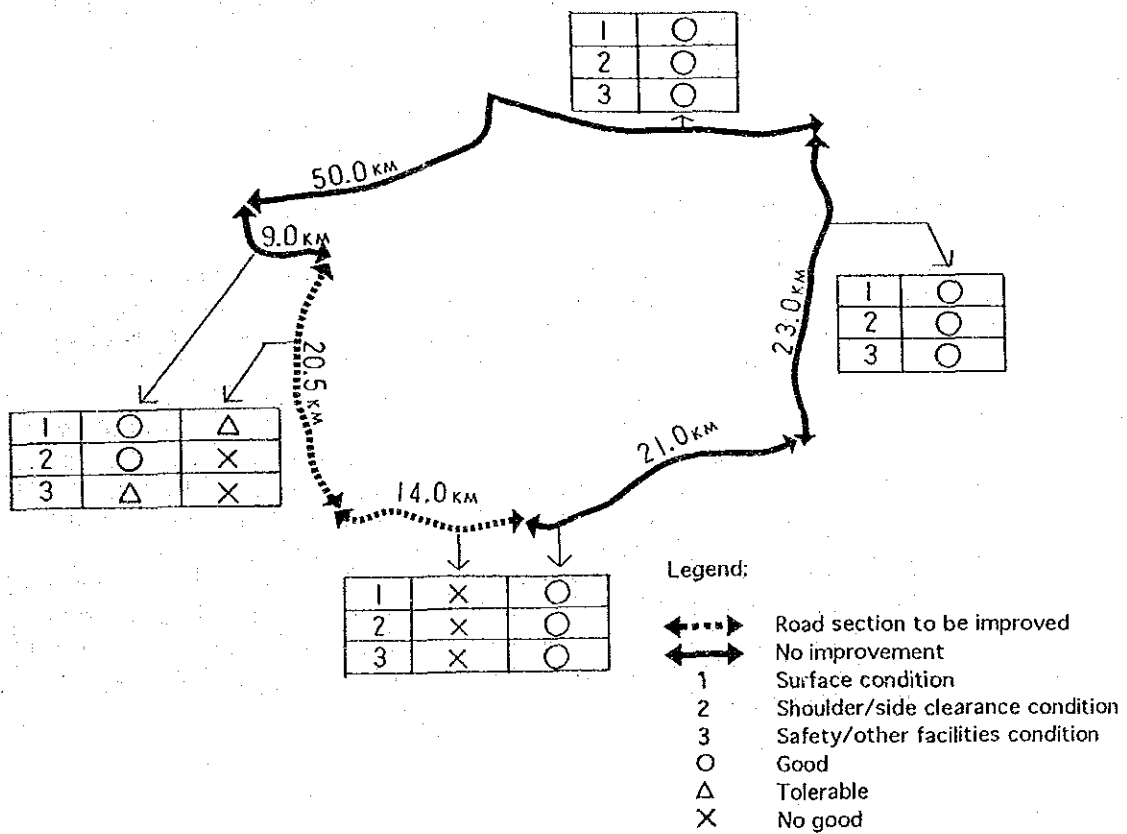


Figure 6-8 Existing Road Condition and Improvement Plan of the Circulation Roads in Phetchaburi Province

(3) Improvement of Phetchaburi Coastal Road

The purpose of this project is to provide a safe and comfortable access road for tourists visiting the Cha-Am and Hua Hin area, and coming from Phetchaburi and crossing the coastal area.

The road referred to above is a 6 meter wide two way two lane road under RID control and stretches for 32.6 km along the coast north of Cha-Am. The location of the road is shown in Figure 6-9 and Figures 6-10 illustrates the sections which require improvement. Improvement required on the above described roads are overlay pavement, marking, arrangement of guide signs and incidentals.

The construction costs of this project are shown in Table 6-5 and the project is scheduled to be completed in 1995.

Table 6-5 Development Cost of Phetchaburi Coastal Road Improvement

		unit: 1,000 baht
		Phetchaburi Coastal Road
Surface Course		44,988
Incidentals		6,277
	Sub-total	51,265
Contingency		5,127
	Total of Construction Cost	56,392
Maintenance		2,820
Design & Supervision		2,820
	Total of Development Cost	62,032

source: Study Team

(4) Economic Feasibility of the Projects

Purpose of the Phet Kasem Road Improvement Project is to enhance to quality of Hua Hin / Cha-Am Beach Area as a whole as attractive tourist destination, but it is not realistic to expect an increased flow of tourists from this project alone. Therefore, its quantitative evaluation is not carried out.

The economic viability of the other 2 projects is evaluated by using cost benefit analysis. Cost benefit flows from 1996 to 2011 show that the EIRR for improvement of the circulation roads and the coastal road are 24.1% and 27.0% respectively, confirming that both projects are economically feasible.

Results of sensitive analysis show that even in case the construction cost with be 20% higher than expected, or the number of tourists will be 20% lower than expected, the project will still be feasible with an EIRR of 19.3% and 18.3% respectively for the circulation roads improvement project, and 22.2% and 21.2% for the coastal road improvement project.

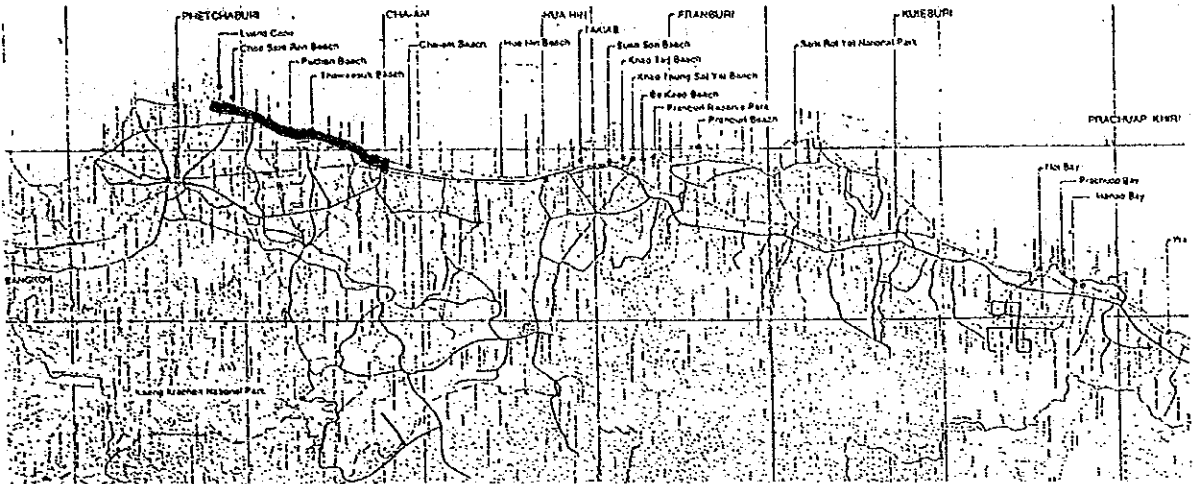


Figure 6-9 Location of Phetchaburi Coastal Road

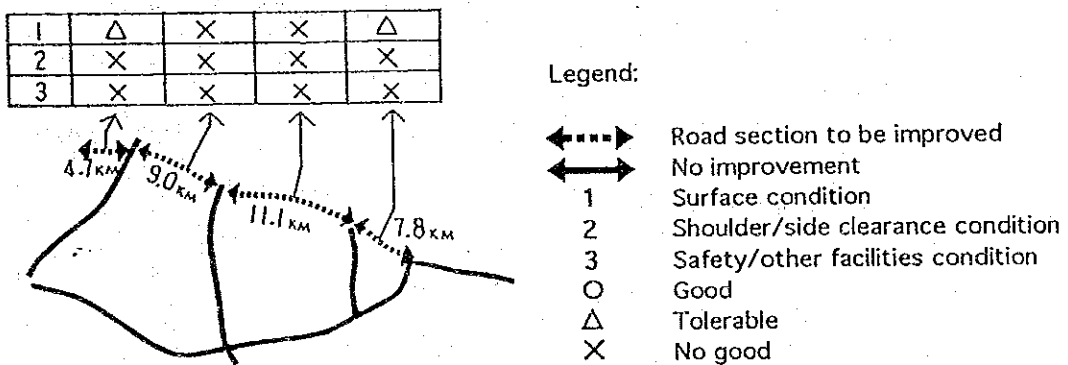


Figure 6-10 Existing Road Condition and Improvement Plan of Phetchaburi Coastal Road

6.4 Water Supply Development Projects

(1) Cha-Am Water Supply Development

In addition to ongoing improvements of the municipal water supply distribution system the project includes rooping and replacement of distribution pipes, construction of distribution facilities, boosting of the distribution pressure, water leakage protection, etc. Figure 6-11 shows the proposed plan for expansion and improvement of the water distribution network in Cha-Am.

Details of the Project and an estimation of the development cost of the project is shown in Table 6-7. The project shall be implemented by Cha-Am Municipality and is scheduled to be completed by 1996.

Table 6-7 Development Cost of Cha-Am Municipal Water Supply Development

unit: 1,000 baht	
	Cost Cha-Am Water Supply Development
Installation of Water Distribution Pipes (pipe size 100-200 mm diam., 12.3 km long)	13,794
Detail Design for Expansion/Improvement of Water Distribution Network	1,500
Total Development Cost	15,294

source: Study Team

(2) Hua Hin Water Supply Development

In addition to ongoing improvements of the municipal water supply distribution system the project includes rooping and replacement of distribution pipes, construction of distribution facilities, boosting of the distribution pressure, water leakage protection, etc. The required facilities are illustrated in Figure 6-12.

Details of the Project and an estimation of the development cost is shown in Table 6-7. The project shall be implemented by Cha-Am Municipality and is scheduled to be completed by 1996.

Table 6-7 Development Cost of Hua Hin Municipal Water Supply Development

unit: 1,000 baht	
Hua Hin Water Supply Development	Cost
Installation of Water Distribution Pipes (pipe size 150-200 mm diam., 14.8 km long)	18,584
Construction of Elevated Tank (25 m high) and Installation of In-line Booster Pump (cap. 50 cum)	3,100
Total Construction Cost	21,684
Detail Design for Expansion/Improvement of Water Distribution Network	2,000
Total Development Cost	23,684

source: Study Team

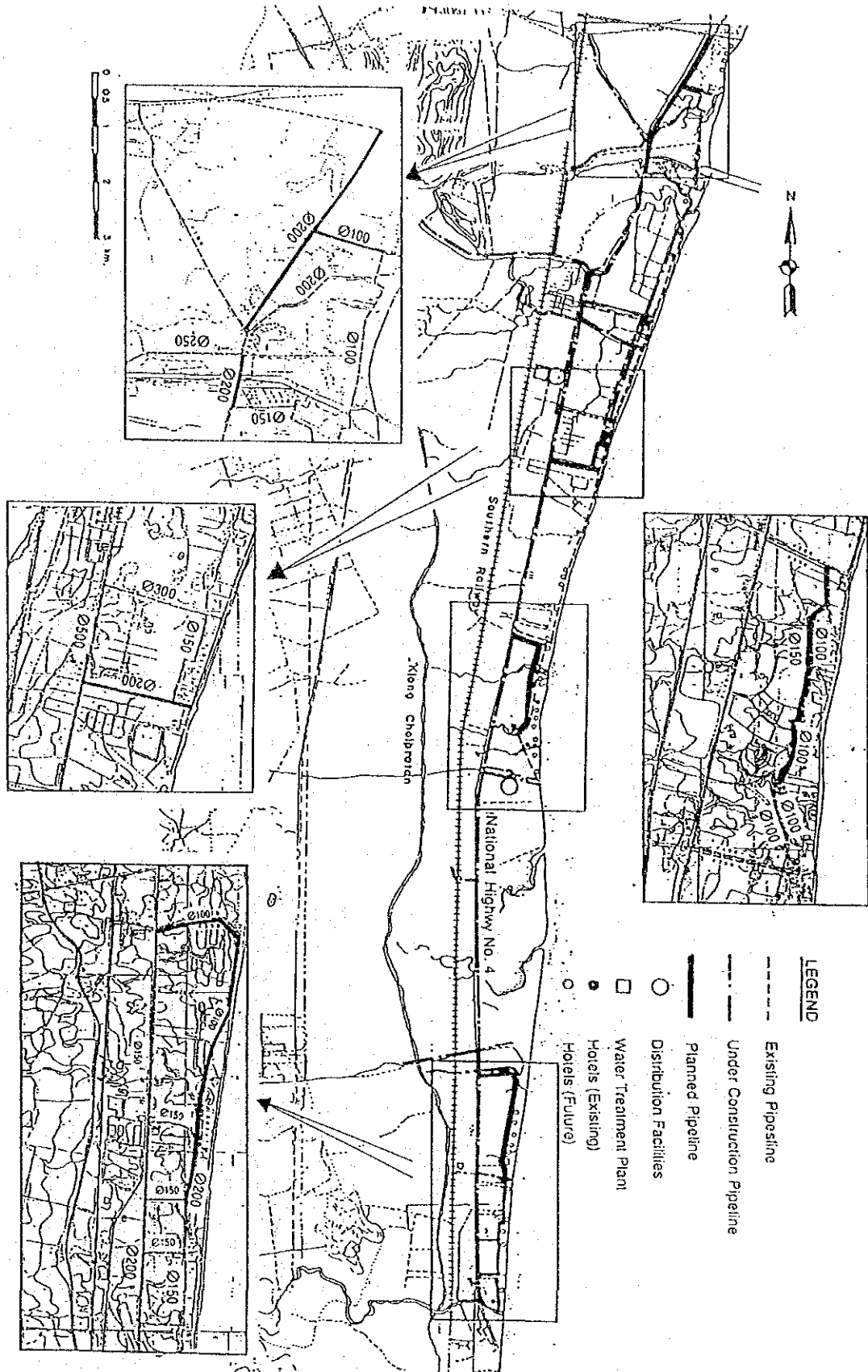


Figure 6-11 Expansion and Improvement Plan of Water Distribution Network of Cha-Am

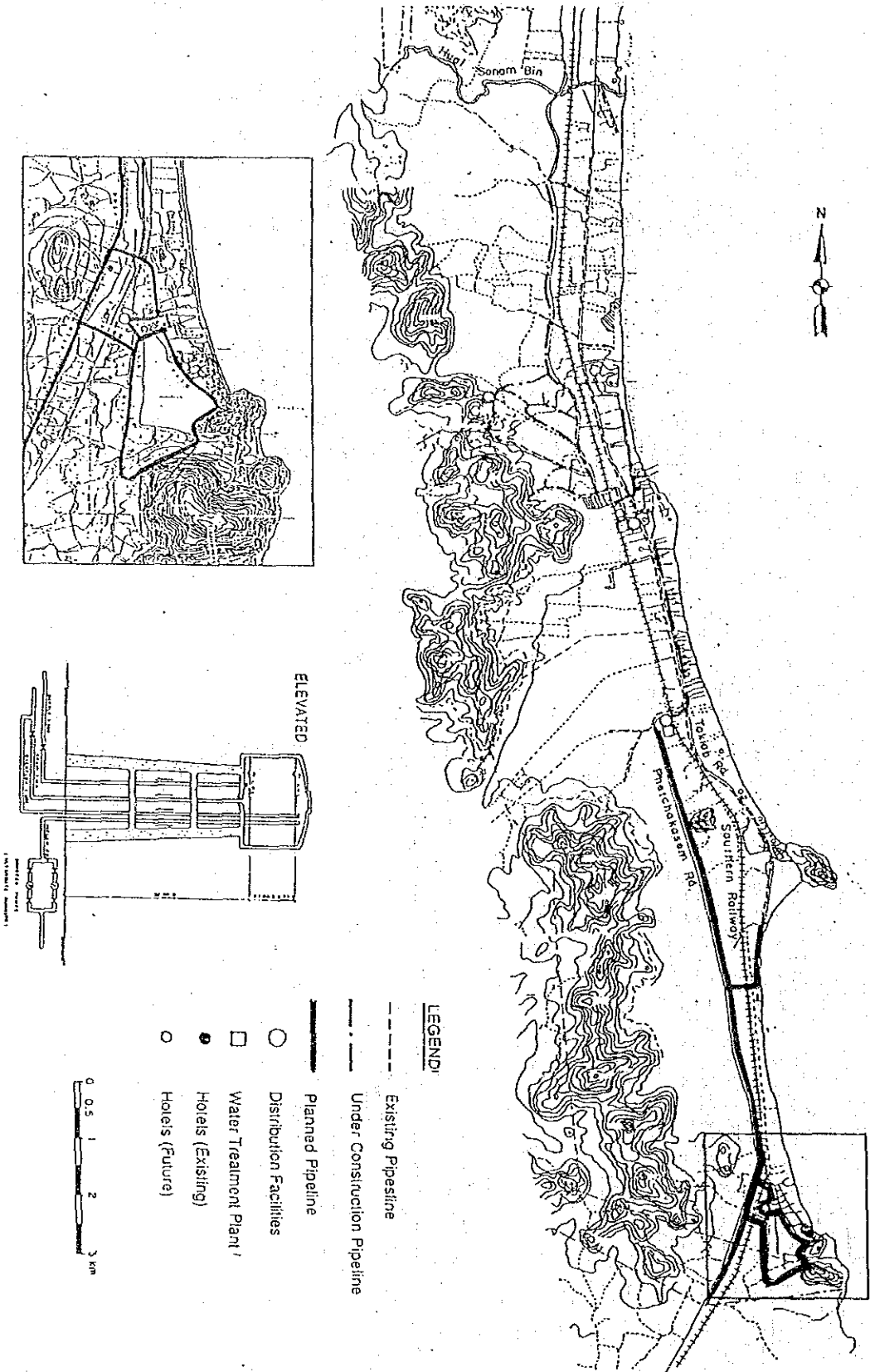


Figure 6-12 Expansion and Improvement Plan of the Water Distribution Network of Hua Hin

(3) Financial Feasibility of the Water Supply Development Projects

FIRR for the Cha-Am water supply network improvement and Hua Hin water supply network improvement is 14.2 % and -3.8 % respectively. Although water supply improvement, which is a public works by nature, may obtain low interest rate loans from international institutes, the evaluation of the Hua Hin water supply network improvement work does not show a good result. However, if the two works are regarded as one, FIRR becomes 5.4 %, which can support their financial viability.

Up until today Cha-Am and Hua Hin have had their own plans of sightseeing resources development, but they have to be integrally developed as a major tourist center in the western district of Thailand in the future. That is when the growth in tourist trade as envisaged in the master plan can be realized for the first time.

Thus, the water supply network improvement works for Cha-Am and Hua Hin must be taken as one Project.

6.5 Cha-Am Sewerage System Development Project

(1) Outline of the Project

The project aims to protect the coastal environment by developing a proper sewerage system in Cha-Am Municipality. The project includes the installation of combined sewers and the construction of a sewage treatment plant on a 9 ha site close to Khlong Tian north of Takad Phlee. The capacity of the plant, which uses the aerated lagoon treatment process, will be 11,000 cum/day. Details of the project are shown in Figure 6-13 and Table 6-8 together with an estimation of the development cost of the project. The project shall be implemented by PWD of Cha-Am, and is scheduled to be completed by 1996.

Table 6-8 Development Cost of Cha-Am Municipal Sewage System Development

unit: 1,000 baht	
Cha-Am Sewage System Development	Cost
Installation/Construction of:	
Combined sewers	52,800
Lift pump station and overflow facilities	6,000
Interceptor sewers	26,900
Construction of Sewage Treatment Plant	25,470
Total Construction Cost	111,170
Detail Design of Municipal Sewage System	20,000
Total Development Cost	131,170

source: Study Team

On completion of the project, the system covers the sewage discharge in 2006. The project will require coordination with the feasibility study which is being prepared by PWD.

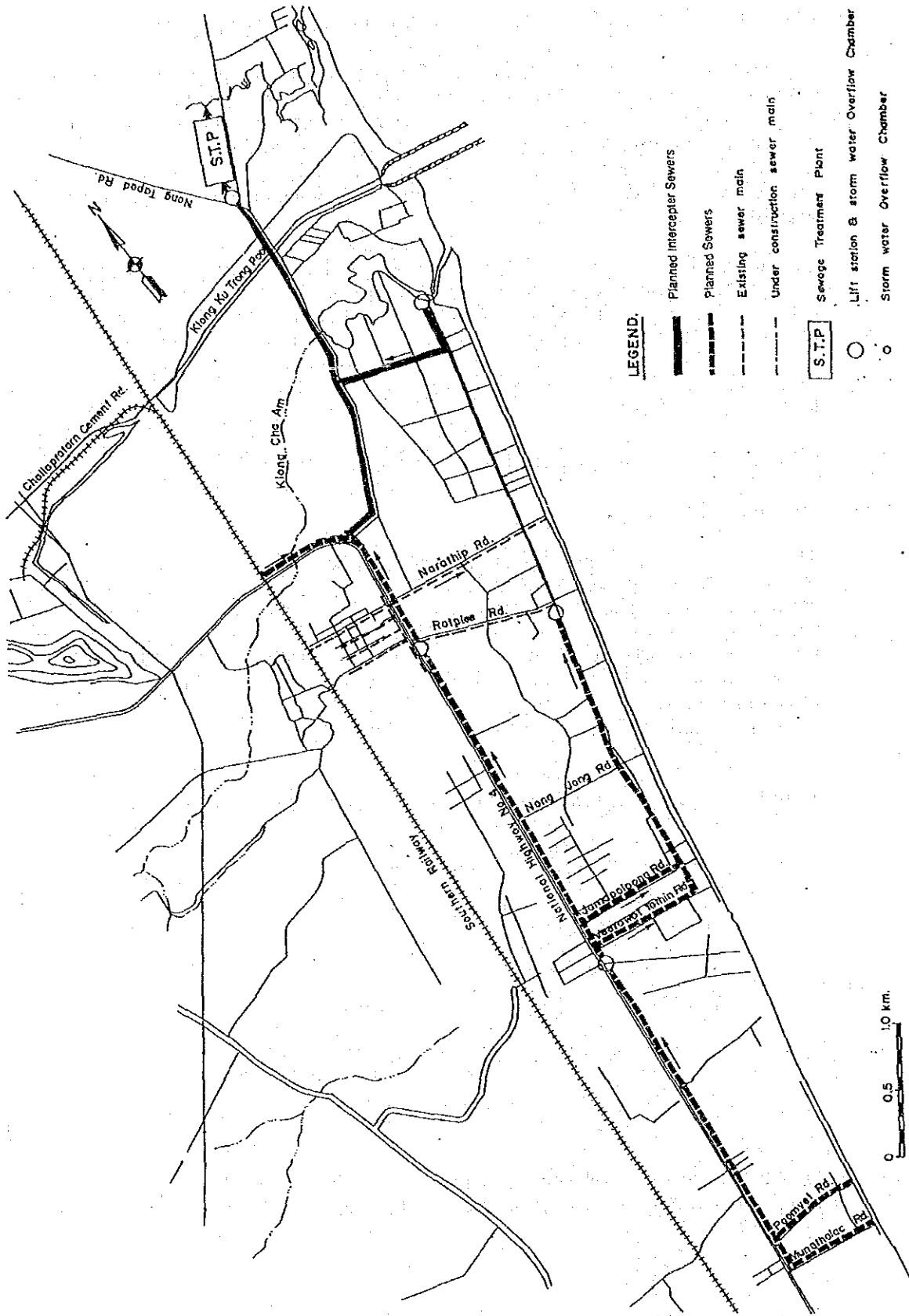


Figure 6-13 Combined Sewers and Interceptor Sewers Plan for Cha-Am

(2) Financial Feasibility of the Cha-Am Sewerage System Development Project

FIRR for this project is -2.1 %, which is not sufficient to confirm financial feasibility of the sewage system improvement work. However, the purpose of the sewage system work is to create or preserve a "beautiful sea" as a sightseeing resource, and its financial barrier to its implementation will not stop the realization of the work itself. The creation of preservation of the beautiful sea will be the core of tourist attraction for the subject area, which means that without the sea, there is not tourist value. Other than tourist benefits, the following secondary benefits may be considered:

- Reduction of disease occurrence,
- Improvement of living environment (scenery preservation, prevention of foul smell, etc.),
- Reduction of flooding damages,
- Increased possibility of bringing other development plans (such as housing and industrial complex),
- Prevention of ground water pollution, and
- Rise of land price due to improved sewage.

Since sewer system improvement is an extremely public conscious project, it is more proper to be judged in terms of its necessity with the local society and economy than from a financial viewpoint. No ordinary people may cast a doubt to a project which benefits the local community and economy. Therefore, the sewer system improvement project is judged highly essential.

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