4.3.4 Project List and Layout Plan

The project components are summarized in Table 4.15 and the layout plan is shown in Figure 4.11.

Table 4.15 Hoi An Tourism Promotion Zone Development Projects Proposals

Tourism	Development	Project			
Categ/Block	Zone	Code no.	Category	Description	Amount
Hoi An Historical Town Center	Tourism Infrastructure Development	DTF-09	Road sign	Tourism site traffic sign (I), Direction sign (III)	26
			Site Sign & Information	LEVEL (I) ,(II), (III)	30
		DTF-10	Tourist Information Center, parking area		1
	Town Infrastructure	HTPZF-1	Pedestrian Space Improvement	Pedestrian pavement, drainage	3,680 m
				Lighting, electricity laydown	3,680 m
		HTPZF-2	Wharf improvement	(Front river dredging)	1
		HTPZF-3	Japanese Bridge canal improvement		1
		HTPZR-1	Flood Protection	Embankment road	10.8 km
				Flood gate (lockage)	2.0
				River dredging	1
Town Expansion Development	Town Infrastructure	HTPZR-2	Road Improvement /Development	Arterial road (w=16)	2.8 km
				Distributor road (w=12)	6 km
				Access road (w=9)	2.8 km
				Service road (w=4)	62 km
		HTPZF-4	Water Supply System		1
		HTPZF-5	Sewerage System		1
		HTPZF-6	Public Beach Park	Rest House, service facilities	1
				landscaping, parking	1

Source: JICA Study Team

4.4 PROJECTS COST AND IMPLEMENTATION SCHEDULE

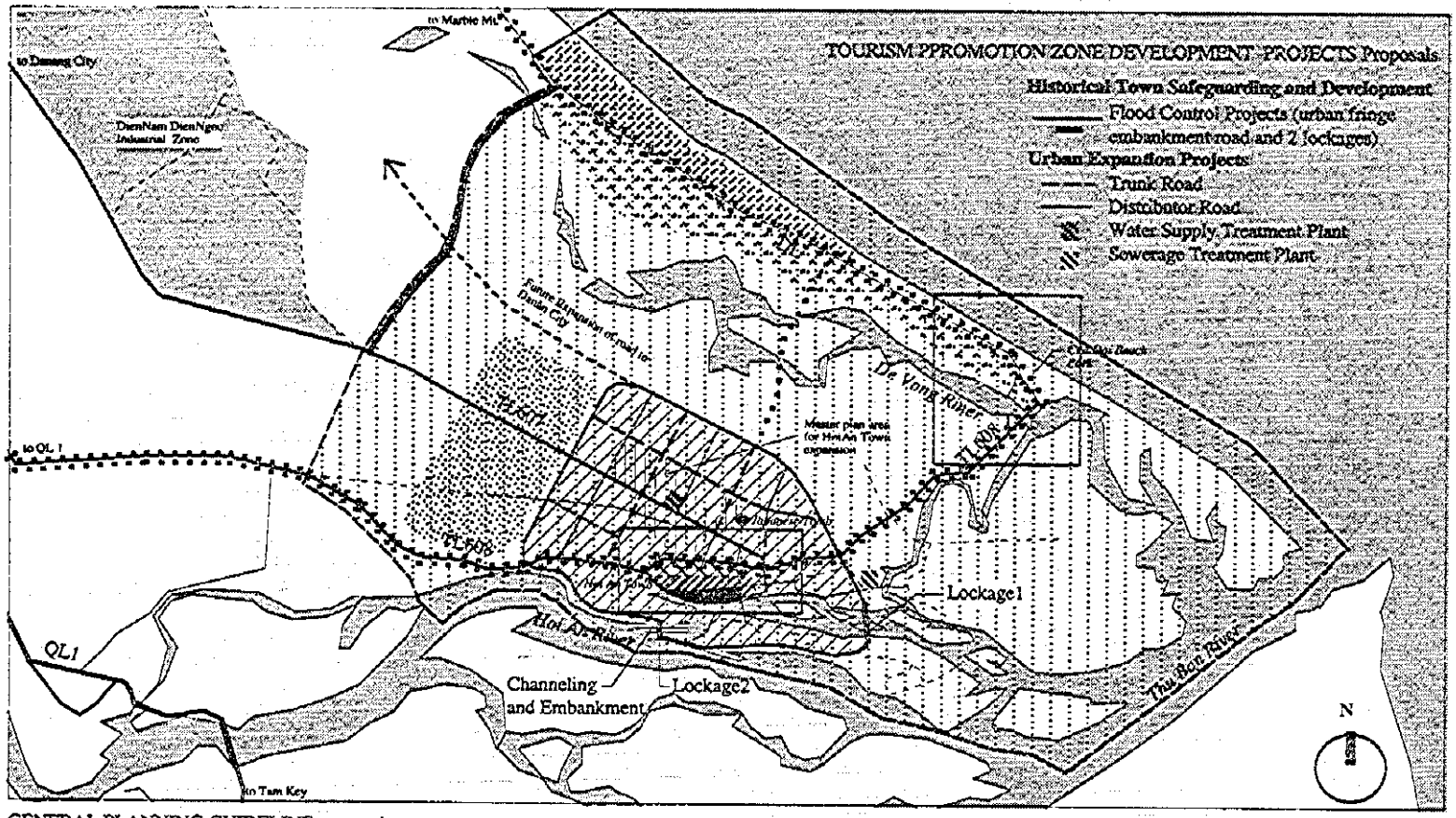
4.4.1 Project Cost Estimation

1) Premises

The project cost were estimated using the following premises:

- Cost components consisting of direct construction, design and supervision, overheads profits and contingency, excluding land acquisition costs and taxes
- Estimates are all in 1996 prices.
- For currency conversion, the average exchange rate in September 1996 was applied as follows:
  - US$ 1.00 = VDN 11,000.00.

Figure 4.11 Hoi An Tourism Promotion Zone Development Projects Proposals



GENERAL PLANNING GUIDELINE proposals

- HOI AN Tourism Promotion Zone
- Local Landscape Safeguarding Area

Existing Conservation Act Zoning

- Sanctuary Zone (LEVEL I)
- Development Control Zone (LEVEL II)
- Landscape Control Zone (LEVEL III)

TOURISM PPROMOTION ZONE DEVELOPMENT PROJECTS Proposals

Development Zoning

- Urban Development Area
- Coast Resort Development Area
- Buffer Green Area
- Village Improvement Area

Tourism Infrastructure Development

- Arterial Access Road Improvement
- Access Road Improvement
- Access Road Development
- Tourism Facilities Development Area

2) Projects cost estimate

The total project costs as a package of sub-projects amounts to 111.5 million US$, including the costs for consultant services. This total costs are divided into two phases as follows and in consideration of the scale, effect and other development program, and as described in Table 4.16.

- Phase I (First stage infrastructure development projects)	: 68.8 mil. us$ (62%)
- Phase II (Second stage infra-development projects)	: 42.7 mil. us$ (38%)
Total projects cost	: 111.5 mil. us$ (100%)

Reference: First stage infrastructure development projects indicate short-term to mid-term projects to be implemented within 7 - 8 years, and

: Second stage infra-development projects indicate long-term projects to be implemented within 9 - 15 years.

4.4.2 Project Implementation Schedule

The project implementation schedule is summarized in Figure 4.12.

Table 4.16 Project Cost Estimation for Hoi An Tourism Promotion Zone Development Projects

(unit : ,000 US$)

Tourism Development Zone	Tourism Block	Project Category	Code no.	Description	Cost ,000 US$	Short-term 1998	1999	2000	Mid-term 2001	2002	2003	2004	2005	Long-term 2006	2007	2008	2009	2010
Hoi An Tourism Promotion Zone	Hoi An Historical Town	Tourism Infrastructure	HTPZF1	Pedestrian improvement	530		53	239	239									
			HTPZF2	Wharf dredging	980				98	441	441							
			HTPZF3	Japanese Bridge canal Improvement	410		41	185	185									
			HTPZR1	Flood Protection	19,170				959	959	5,751	5,751	5,751					
	Town Expansion	Roads	HTPZR2	Subdivision road development	20,410										2,041	6,123	6,123	6,123
		Utilities	HTPZF4	Water Supply System	24,490		490	490	5,143	5,633	4,898				490	490	3,429	3,429
			HTPZF5	Sanitary System	45,320		906	906	9,517	10,424	9,064				906	906	6,345	6,345
	Hoi An Coast	Public Park	HTPZF6	Tourist facilities (rest house, and so on)	210				21	95	95							
				Total Projects Cost	111,520	0	1,490	1,819	16,161	17,550	20,249	5,751	5,751	0	3,437	7,519	15,896	15,896

Note: Total project cost includes contingency, engineering services, excluding land acquisition cost and every taxation.
Source: JICA Study Team

Figure 4.12 Implementation Schedule for Hoi An Tourism Promotion Zone Development Projects

Tourism Development Zone	Tourism Block	Project Category	Code no.	Description	Short-term 1998	1999	2000	Mid-term 2001	2002	2003	2004	2005	Long-term 2006	2007	2008	2009	2010
Hoi An Tourism Promotion Zone	Hoi An Historical Town	Tourism Infrastructure	HTPZF1	Pedestrian improvement													
			HTPZF2	Wharf dredging													
			HTPZF3	Japanese Bridge canal Improvement													
			HTPZR1	Flood Protection													
	Town Expansion	Infrastructure	HTPZR2	Subdivision road development													
		Utilities	HTPZF4	Water Supply System													
			HTPZF5	Sanitary System													
	Hoi An Coast	Public Park	HTPZF6	Tourist facilities (rest house, and so on)													

Note: ~~~~ Preparation Stage (survey, design, and so on.). ——— Construction Stage
Source: JICA Study Team

CHAPTER 5

LANG CO TOURISM PROMOTION ZONE DEVELOPMENT PROJECT

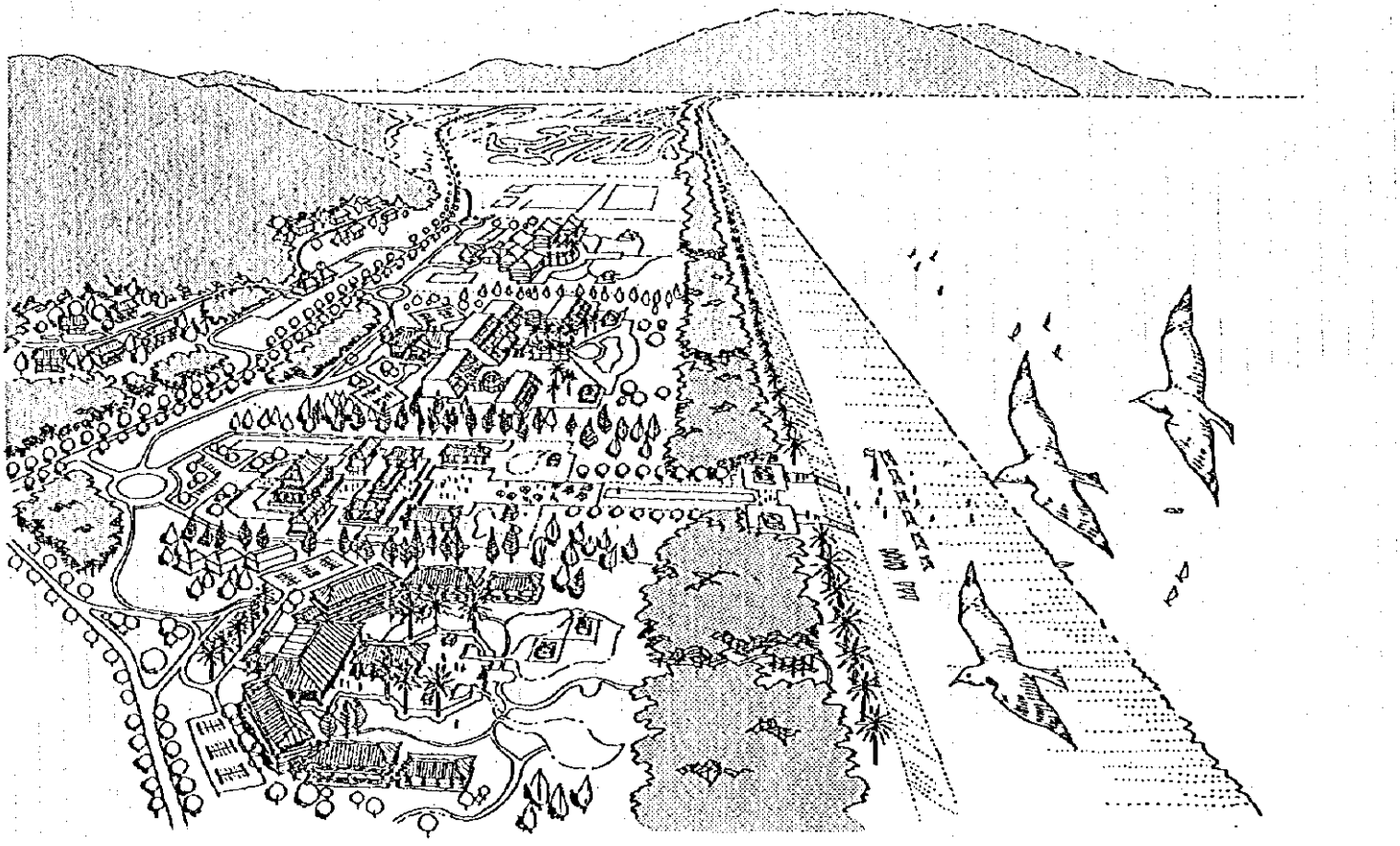


Image of Lang Co Tourism Promotion Zone

CHAPTER 5 LANG CO TOURISM PROMOTION ZONE DEVELOPMENT PROJECT

5.1 POTENTIALS AND CONSTRAINTS

5.1.1 General Background

Lang Co Beach is situated in the southern part of the coast of Thua Thien - Hue Province about 78 km from Hue City. The gateway city of Da Nang is located 35 km to the south. Hai Van pass lies between Lang Co Beach and Da Nang City that is also a famous tourism spot in the Central Region. Lang Co is in Loc Hai Commune that is a part of Phu Loc District. The total population of the commune was 9,380 people in the year 1994. Most of the population of the commune is living in the Lang Co Village.

The Lang Co Tourism Promotion Zone is planed as a part of Chan May New City Development. The Lang Co TPZ, New City and Da Nang City will be complementary to each other for attracting not only tourists, but also investments for development.

5.1.2 Tourism Resources in Lang Co Area

The primary tourism resource of Lang Co TPZ is a long stretch of beautiful beach that is one of the most picturesque landscapes in Central Viet Nam. The width of the beach area averages zone 100 meters, which is enough to accommodate any kind of beach activities.

The seafood restaurants along national highway No. 1, which runs along the beach, serve delicious sea food to the tourists and they are one of the major attractions in this area, since Lang Co is a fishing village.

Because of the effects of the monsoon, the sea condition of the beach is not favorable for tourists during the winter season. However, the lagoon side is calm all the year, it is protected by a sand bar. Windbreak is provided along the beach. It protects the sand dune from wind erosion. Attractions other than beach activities should be provided in order to attract tourists during all year.

An Cu lake provides a beautiful landscape and it creates a peaceful and tranquil atmosphere of the lagoon. The landscape from the road approaching from Hai Van Pass is one of the most picturesque scenery. A cathedral in the village is the land mark.

5.1.3 Visitors and Accommodations

Only one small cottage with restaurants and some service facilities for sea bathing exists now in this area. Many tourists come to this beach as day trippers from Da Nang or Hue City. The Lang Co TPZ will be an ideal location for a tourist base in the future, because of its proximity to both Da Nang and Hue City and many other tourist attractions in the surrounding area.

5.1.4 Accessibility

The national highway No. 1 (QL-1) goes through Lang Co village. From the accessibility point of view the Lang Co TPZ is ideal. However, it will be a big constraint in future, if the QL - 1 is to be used as the North - South national trunk road. Large number of heavy trucks and busses on the only one road in this area will damage the atmosphere of the area as an attractive tourism spot. Bypassing the main traffic from the sand bar is indispensable for future tourism development of this area. The existing QL-1 should be turned into a tourist road with a

pedestrian path and tourist service facilities as proposed in the previous chapter. The new Hue Dan Nang Highway project will solve this problem and at the same time provide better accessibility.

5.1.5 Utilities

A power supply line runs along the QL-1. It is easy to access the power source. However, the location of the power line at present is along the beach, which will be developed as the tourist activity area. Therefore, relocation of the existing power line should be considered in area to provide uninterrupted scenery and safety.

The water supply system to the existing village and facilities in the area is by individual wells. A new water supply project to the Lang Co area has been planned. It will provide piped water to the exiting community and some of the tourist facilities. However, the capacity of the planned water supply system is not enough for future expansion under the tourist base development. Water supply is one of the biggest constraints for the development of the Lang Co TPZ as well as the Chan May New City Development that will be described later.

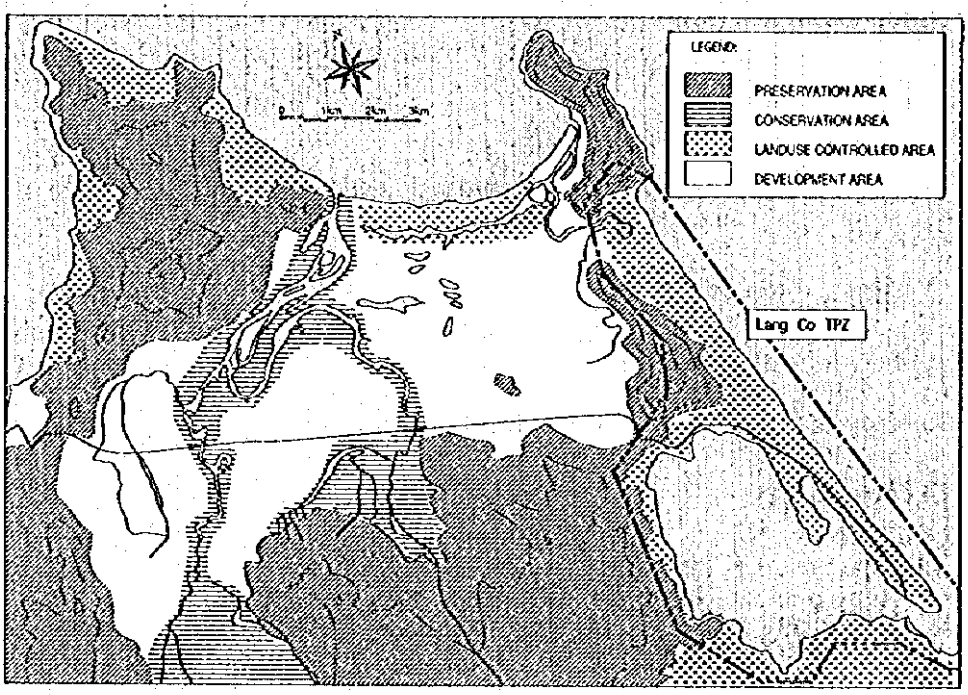
No sewerage system exists in the village. Solid waste collection and treatment is not carried out at present.

5.1.6 The Chan May New City Development

The Lang Co TPZ development plan is formulated taking into full account the Chan May New City Development plan, because the New City will be located just beside the Lang Co TPZ. The land use plan, utility development plan and environmental impact are taken into consideration for formulation of the TPZ development plan as well as the Hue - Da Nang Highway project. The plan is formulated as part of the area of the Lang Co - Chan May Priority Development Area.

The land use classifications are designated in the area based on the existing land use and the natural and social conditions. Figure 5.1 shows the land use classification of the Lang Co - Chan May area.

Figure 5.1 Land Use Classification

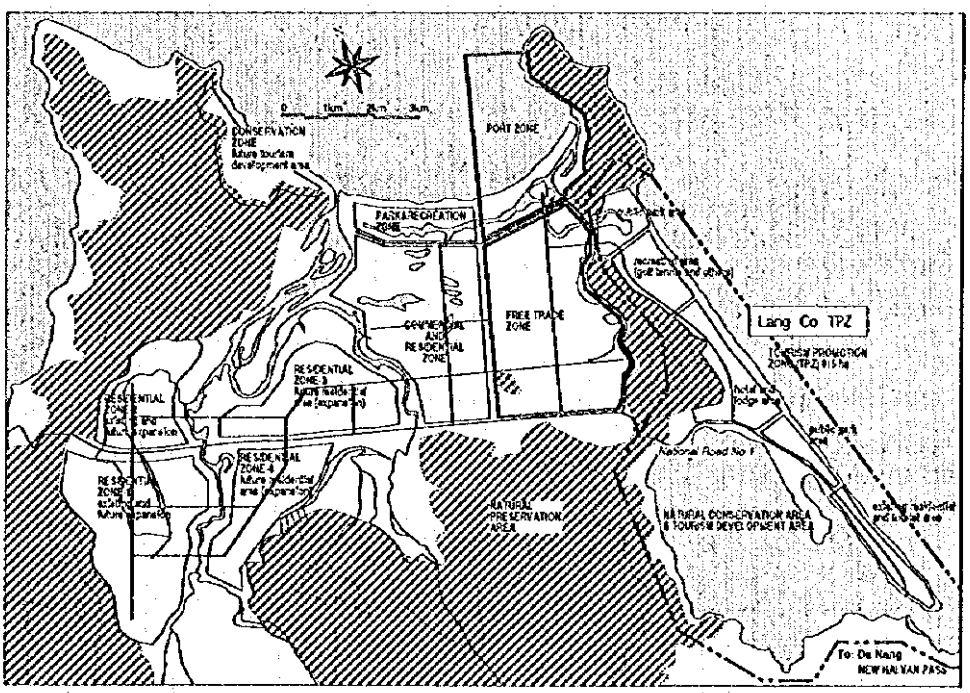


Source: JICA Study Team

The coast area and lagoon area are designated as land use controlled area in view of the necessity to protect the environmentally sensitive lagoon and beach area from wind and waves in the monsoon season. The Chan May New City area and Lang Co TPZ are separated by hills, which are designated as natural preservation zone, except for a small opening at the north end.

A free trade zone with a new seaport together with pollution free industries will be established. New commercial and residential zones are planning to be located in the development area and a park and recreational zone and another tourism development zone are to be located in the land use control area. Figure 5.2 shows the conceptual land use plan for the Chan May New City Development.

Figure 5.2 Chan May New City Development Plan 2020



Source: JICA Study Team

5.2 DEVELOPMENT SCHEME

The principles of development in the Lang Co Tourism Promotion Zone are:

- To formulate orderly development with a uniform atmosphere of the area as a whole
- To control the direction of the development by improvement and land use control of QL-1
- To formulate a resort type tourist base by providing the necessary utilities and designation of the accommodation zone,
- To protect the natural environment and its surroundings from environmental threat, and
- To coordinate development with the Chan May New City development.

5.2.1 Tourism Products Development Framework

The following number of rooms to accommodate the targeted visitors are distributed to this zone according to the regional framework of accommodation distribution of international standard hotel rooms. The target number of international class hotel rooms in the zone is estimated at 1,550 in the year 2010 as shown in Table 5.1. It should be noted that the preferable capacity of the designated hotel and cottage zone is 2,800 rooms. The zone will reach capacity after the year 2010.

Table 5.1 Room Requirement of Lang Co Tourism Promotion Zone

Class of Hotel	2000	2005	2010	Total
High	0	0	300	300
Middle	0	50	1,200	1,250
Low	0	0	0	0
Total	0	50	1,500	1,550

Source: JICA Study Team

The existing Lang Co village and other communities in Loc Hai Xa Commune are designated as a part of the TPZ. The village will be an attractive place for the tourists and local restaurants and shops will be established in the village. An estimation of the future population of the village is also carried out to estimate utilities' demand.

The following assumptions are used for the estimation and the results are summarized in Table 5.2.

- Natural increase will be 2.5 percent per annum
- Social increase will be 5 per cent per annum up to the year 2005 and it will be 10 per cent up to year 2010.

Table 5.2 Projection of Loc Hai Xa Area Population

	2000	2005	2010
Loc Hai Xa	11,000	13,000	15,300

Note: The natural increase rate is 2.5%, the same as the provincial average. The social increase rate is 5% up to 2005 and 10% afterwards up to 2010.

5.2.2 Tourism Products Development Scheme for Lang Co Tourism Promotion Zone

In order to achieve environmentally sound development of the Lang Co Tourism Promotion Zone, the following development scheme is proposed.

1) Land Use Zoning

The following land use is designated in the TPZ

- The area for development of the accommodation facilities with necessary tourist facilities, such as shops, restaurants, tour agent offices and so on
- The existing village area including tourism related commercial facilities' development
- The public area provided for the day trip and weekend visitor from surrounding cities and communities. Access to beach and recreational facilities to be provided
- An area for various types of active sports and recreational facility's area to attract the tourists staying in the TPZ and residents in the surrounding area, and
- An area for pubic utilities and reserved land for relocation of existing remains and other facilities

Table 5.3 summarizes the land allocation of the Lang Co TPZ.

Table 5.3 Land Allocation Plan of Lang Co TPZ

Zone	Land use	Area (ha)
Hotel Resort Zone	Hotel	120
	Amenity core	18
	Management & administration	10
	Open space & green area	52
	Total	200
Sports Recreation Park Zone	Golf course & others	105
	Sports recreation facilities	5
	Hotel	15
	Open space & green area	25
	Total	150
Public Park Zone	North-side park	100
	South-side park	65
	Total	165
Other zone	Sewerage	5
	Buffer area + cemetery	87
	Total	92
Village Improvement Zone	Commercial	24
	Residential	120
	Total	144
Total		928

Source: JICA Study Team

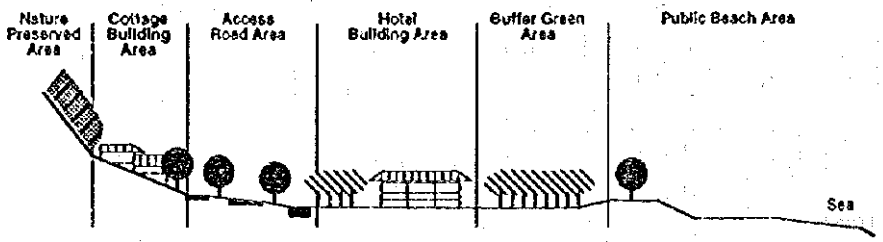
2) Planning Guideline for Tourism Facilities Development

(1) Accommodation facilities in the Hotel Resort Zone

The planing parameter are:

- Height of the buildings should be lower than three stories
- Low density development (less than 9 rooms per hectar and building area ratio less than 25 %)
- Hotels and lodges will be medium to high class (2 - 5 star's class), and
- Windbreak should be provided along the coast or existing windbreak to be preserved (typical layout of hotel and cottage area is shown in Figure 5.3).

Figure 5.3 Typical Section of Hotel and Cottage Area



(2) Circulation system

The highway No.1 (QL-1) should be designated as a tourist road, with the provision of sidewalks, green belt and landscaping along the highway. The through-traffic is expected to use the new Hue - Da Nang Highway.

The width of the sidewalk can be wider at any points of interest. The most important matter is land acquisition of the right of way (ROW) for future development. The present land owners and shop/ restaurant owners should be able to get the right to continue their business at the same location but behind the building setback line (provision of incentive). The water supply and the sewerage pipe line will be provided inside of the ROW and it will be available to the facilities along the QL-1.

The road for vehicles and pedestrian's way should be separated as much as possible inside of the TPZ.

The circulation system should take into account the development of the Chan May New City.

3) Environmentally Sound Facilities' Development in the TPZ

The principles are:

- To conserve the natural environment of the TPZ, especially the lagoon, and an above normal standard sewerage treatment system is required, and
- To protect the zone from the effect of monsoon, a windbreak should be provided and managed properly. Table 5.4 summarizes the development regulation or guideline.

Table 5.4 Required Development Guideline and Control Measures

Development Control Measure and Guideline		Development Zone & Area						
		HOTEL RESORT	SPORTS PARK	PUBLIC PARK	OTHER	VILLAGE	ROAD SIDE	AN CU LAKE
Building	Height	☆	☆	☆	☆	★	☆	▲
	Usage	☆	▲	▲	▲	◆	☆	▲
	Coverage	☆	☆	★	☆	◆	☆	▲
	Setback	☆	▲	▲	▲	▲	☆	▲
Facilities	Design Standard	☆	☆	☆	◆	▲	◆	▲
	Bill Boards & Signs	☆	☆	☆		☆	☆	▲
	Planting Guide	☆	▲	▲	▲	◆	★	▲
Traffic	Access Control	★	◆	☆	▲	◆	★	▲
Control	Packing Design Standard	☆	☆	☆	▲	▲	★	▲
Environment	Beach Beautification	☆	☆	☆	▲	☆	▲	▲
Control	Waste Disposal Measure	☆	★	☆	▲	★	★	☆
	Noise	☆	▲	★	▲	▲	★	▲
	Sanitary Equipment	☆	☆	☆	▲	★	▲	☆

Note: ☆ = Compulsory, ★ = necessary, ◆ = desirable, ▲ = not applicable
Source: JICA Study Team

4) Participation of Local Residents in Tourism Development

The tourism development should provide benefits to the local residents, the formulation of an organization to develop their own plan and train the personnel to meet the demand should be considered. The provision of incentives for local residents is also considered, such as specially designated land plots for tourism business operated by the local residents and formulation of a training system for the residents.

5) Coordination with the New Chan May City Development Project

Water supply is the biggest issue for the development of the Lang Co - Chan May area. The Water resource development and allocation of the water should be coordinated. Other utility and infrastructure development should also be coordinated.

The tourism facilities in the Lang Co TPZ will also serve the residents of the New City.

The New City will be attractive for business people in the city, because of the proximity to international standard recreational facilities and accommodations. It also attracts foreign investors into the New City.

5.3 PROJECT COMPONENTS

5.3.1 Tourism Products Development Projects

The following projects are proposed to be implemented by public and semi-public development agencies.

1) Road Improvement and Development

The road projects consist of two projects as described below.

(1) Road improvement of QL-1

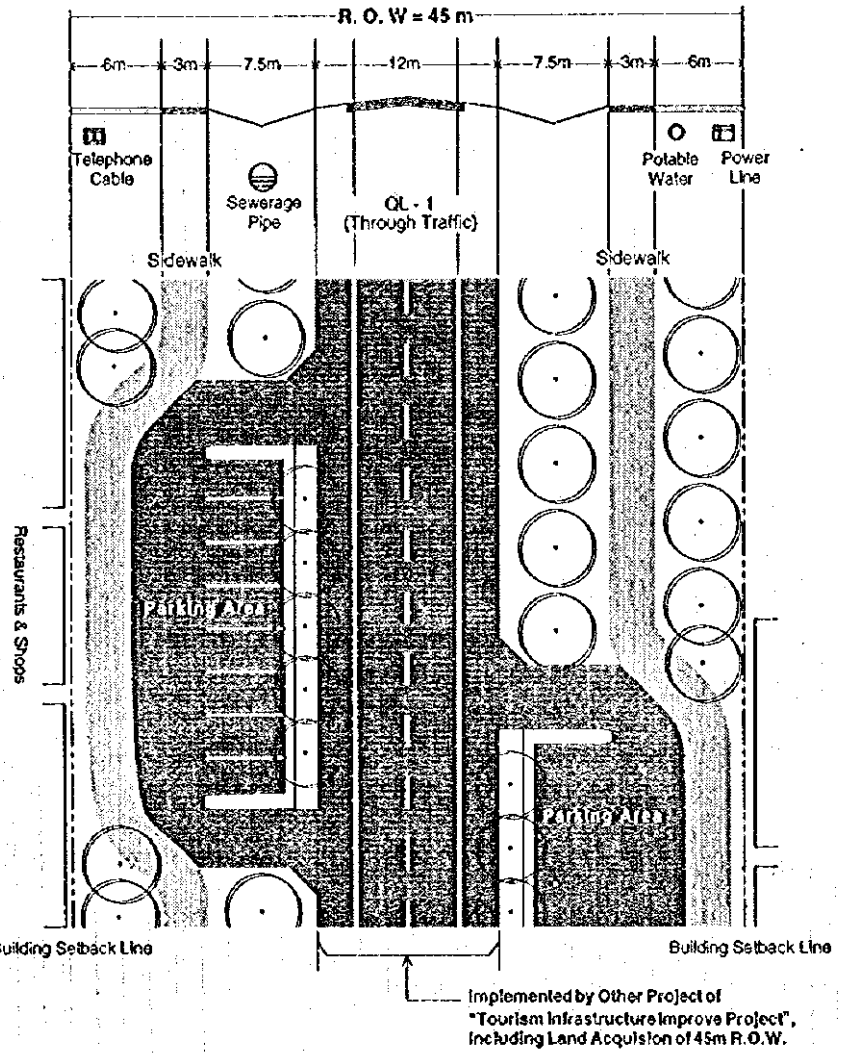
The road improvement of QL-1 itself is implemented under the Tourism Infrastructure Improvement Project described in the previous chapter. It includes the road signs and information along the QL-1. The roadside development will be carried out by the public sector and private sector together with the utility development of water supply, sewerage, power supply and telecommunication.

Parking lots for the tourist facilities, sidewalk and landscaping will be implemented by private sector investors of the facilities development along the roadside. A part of parking lots and sidewalk will be provided by the public sector or development corporation, if the facilities are for public use.

The 45 meter right of way (ROW) should be acquired in the earliest stage by the public sector and/ or proposed semi-public development corporation.

The proposed layout plan of QL-1 in the Lang Co TPZ is shown in Figure 5.4. The width of sidewalk can be wider at points of interest. The most important matter is land acquisition of the right of way (ROW) for future development. The present land owners and shop or restaurant owners should be able to get the right to continue their business at the same location, but behind the building setback line (provision of incentive). The water supply and the sewerage pipe line will be provided inside of the ROW and available to the facilities along the QL-1.

Figure 5.4 QL-1 Improvement Plan at the Lang Co TPZ Section.



(2) The Intra-zonal distribution road development

The main distribution roads connecting the designated development zones will be provided.

(3) Village road improvement

The Lang Co village will be included as part of the TPZ. To create an attractive atmosphere for the tourists and promote tourism related activities, village roads are to be improved together with the utility development.

The road development and improvement projects are summarized in Table 5.5.

Table 5.5 Road Development and Improvement Projects

Development Zone	Project Code No.	Project description	Pavement Width (m)	Class	Length (km) Up-grade	Length (km) New
Road Development	LTPZR 1	Access road (arterial)	12.0	D	--	6.0
		Service road (1)	9.0	D	--	12.3
		Service road (2)	7.0	D/C	--	6.8
		Sub-total			0.0	25.1
Village road Improvement	LTPZR 2	Village roads	7.0	C	3.5	--
		sub-total			3.5	--
Total					3.5	25.1

Source: JICA Study Team

2) Tourism Facilities Development Projects

The following tourism facilities are to be developed. Most of the commercial facilities will be developed by the private sector, such as hotels, shops, restaurants and the golf course.

- Hotels and Cottages (1,550 rooms)
- Construction of the "Amenity Core", that is tourism related commercial area with large public open space
- Operation and Maintenance Facilities, that include the operation center for the agency that manage the whole TPZ, staff housing and training facilities for tourism related activities
- The sports recreation park that includes, Golf Course, tennis courts and other sports facilities
- Construction of the Public Park that includes rest houses, parking area, shower and changing rooms, camp sites and the park O/M office, and
- Construction of the feeder pipelines for water supply and sewerage in the TPZ. The treatment plant and service main will be provided by the TPZ operation and management agency.

Table 5.6 shows the list of the tourism facilities development projects.

Table 5.6 Tourism Facilities Development Projects

Zone/Block	Project code No.	Facilities	Description	Unit	Amount
Hotel resort	LTPZF-1	High class hotel	- Hotel construction	room	300
	LTPZF-2	Middle class hotel	- Hotel construction	room	1,250
	LTPZF-3	Amenity core area	- Theater, shops, and so on		1
	LTPZF-4	Operation facilities	Management office		1
	LTPZF-5	Open space, green area		ha	87
Sports recreation park	LTPZF-6	Golf course, sports facilities,			1
		Open space, green area		ha	25
Public park	LTPZF-7	Rest house, Park office, camp site, parking		ha	1
Other	LTPZF-8	Water supply facilities			1
	LTPZF-9	Sanitation facilities			1
	LTPZF-10	Open space and green area		ha	92

Source: JICA Study Team

5.3.2 Village Improvement Scheme

1) Participation of Local Residents in Tourism Development

Tourism development should provide benefits to the local residents and the formulation of an organization to develop their own plan and train personnel to meet the demand should be considered, therefor. The provision of incentives for local residents is also considered, such as specially designated land plots for tourism business operated by the local residents and formulation of a training system for the residents.

2) Environmental Sanitation Facilities Development

Some of the tourism activities, such as shops for tourists, restaurants, and other service facilities will be located in the village, and this will cause sanitation problems, since the existing community will be part of the TPZ. Therefore, the environmental sanitation facilities and services should include the existing villages area.

3) Land Acquisition and Relocation of Existing Assets

Land acquisition for public facilities, such as roads, utilities, public park and recreation areas should be carried out in the earliest stage of the project. It will require relocation of existing assets that belong to the villagers. Co-operation by the villagers to achieve the realization of orderly development of the TPZ is indispensable. The TPZ development should provide benefit to the villagers too. Provision of incentives to the villagers for the TPZ development, such as provision of a special area for tourism related commercial activities for local residents with preferable financial support and provision of a training program will be required.

5.3.3 Water Supply and Sanitation Facilities

1) General

A series of water supply and sanitation facilities are proposed in order to preserve the natural and human environment and support tourism development in this service area. At present, this area is not endowed with safe living water depending mainly on unprotected shallow well, and there are no reliable sanitation facilities. In the course of tourism development, the following development schemes for water supply and sanitation facilities are proposed:

(1) Water supply facilities

The service area will be served with safe water for potable, living and other purposes by a centralized water supply system with a central water production station purifying surface water from rivers. Water for fire fighting will be also supplied through this system.

(2) Sewage disposal facilities

The service area will be covered by sewage disposal facilities to which a sewage treatment plant in the shape of either centralized or individual treatment will be attached. Waste water will be discharged to the East Sea after having been purified to specified standards.

(3) Storm water drainage

The service area will be equipped with open channels and/or pipes to drain out storm water and to prevent submersion in the area.

(4) Solid waste disposal facilities

The service area will be served by periodical garbage collection undertaken by the solid waste disposal facilities and collected waste will be disposed of in a sanitary landfill site.

2) Design Policy

(1) Water supply facilities

The water demand in 2010 for living water in the service area comprising the Public Beach Park Block, Hotel Resort Block, Sport Park Block and Village Block is projected to be some

4,400 m³ per day*1 in total and on a daily average base as referred to in Table 5.7. Besides living water, the service area is planned to use irrigation water of some 35,000 m³ per day for landscape and green keeping.

Table 5.7 Water Demand Projection in 2010

Items	Water Demand (cu-m/day)	Remarks
1. Living Water in Hotel Resort Block	2,350	for hotel guest(1500rooms),facilities
2. Living Water in Sports Park Block	117	for cultural amusement, restaurant, etc.
3. Living Water in Village Block	1,938	for residential area(11400people),
4. Irrigation Water	34,925	for hotel landscape, golf course, etc.
Total	4,405	except irrigation water

Source : JICA Study Team

The water production plant will be designed with a capacity of some 9,200 m³ per day on the daily maximum basis as referred to in Table 5.8. Apart from living water, irrigation water will be directly distributed from the raw water reservoir without any purification.

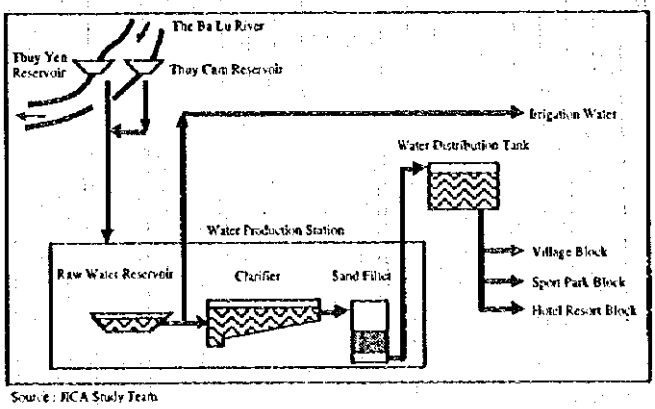
Table 5.8 Design Basis of Water Supply Facilities

Parameters		Design Basis
Daily Average Consumption	(cu-m/d)	4,405
Daily Max Consumption	(cu-m/d)	7,048
Hourly Max Consumption	(cu-m/h)	411
Daily Maximum Water Production	(cu-m/d)	9,153
Water Intake	(cu-m/d)	9,153

Note : 1.6, 1.4 , 15% and 8% are applied as daily max. coefficient, hourly max. coefficient, leakage loss and production loss, respectively.
Source : JICA Study Team

Water will be purified in the central water production facility by sedimentation with coagulation and rapid sand filtration as shown in Figure 5.5 and it will be transferred to the distribution tanks and then be distributed to each points in each block of the service area with the residual pressure some 1.5 kg per çm². The qualities specified in the drinking water standards in Viet Nam will be attained through purification at the water production station. Raw water for water supply is planned to be taken from Thuy Cam and Thuy Yen Reservoir to be newly constructed under another project*1. Raw water will be transported to the water production station by conveyance pipe of some 13 km length.

Figure 5.5 Conceptual Flow Diagram of the Proposed Water Supply Facilities



Source : JICA Study Team

*1 : The water demands are calculated based on the unit average water consumption such as 1,500 lit/room/day for hotel guest, 30 lit/cap/day for restaurant, 120 lit/cap/day for living water in residential area, 150 lit/cap/day for commercial area.

*1 : The construction plan for the Thuy Cam Reservoir and Thuy Yen Reservoir is described in detail in the Water Resources Development Sector Report of this Study.

(2) Sewage disposal facilities

The Resort Block, Beach Park Block and Village Block will be covered by centralized sewage disposal facilities. The Golf Course Block and Public Beach Park Block are planned to be equipped with individual sewage treatment systems from the viewpoint of economic implementation, since they are remote from the central sewage treatment plant and the discharge sources of sewage in the block are anticipated to be dispersed.

In terms of sewage collection and transportation, the proposed sewage disposal system will apply the "Separated Type" system, giving more priority to the qualities of discharged sewage to the water course*1. Sewage treatment capacity including infiltrated ground water is projected to be some 7,000 m³ per day on a daily maximum base as shown in Table 5.9 and its influent characteristics will be BOD 250 to 300 mg/l and SS 200 to 300 mg/l.

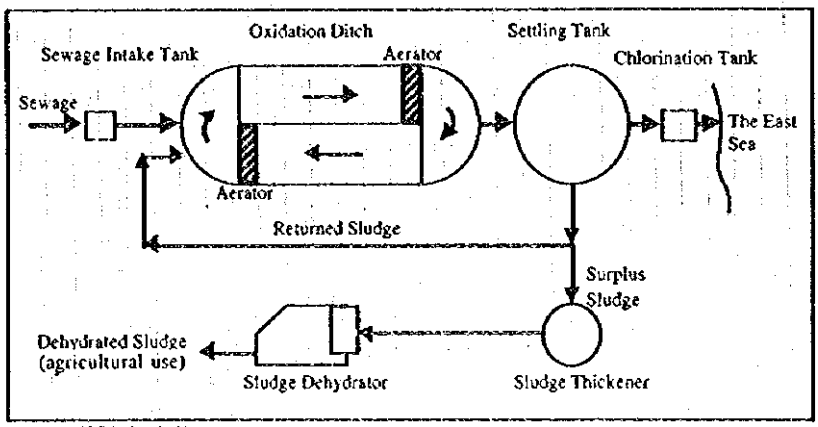
Table 5.9 Design Basis of Sewage Disposal Facilities

Parameters		Design basis
Sewage discharge	(cu-m/d)	4,391
Daily Average Discharge	(cu-m/d)	5,049
Daily Max Discharge	(cu-m/d)	7,025
Hourly Max Discharge	(cu-m/h)	410

Note : Ground water infiltration ratio, daily maximum coefficient, hourly maximum coefficient are assumed to be 15%, 1.6 and 1.4, respectively.
Source : JICA Study Team

Sewage purified by the treatment plant with less than BOD 30 mg/l and SS 30 mg/l, which meet the effluent standard in Viet Nam, will be discharged to the East Sea by using pumps. The "Oxidation Ditch Process" as shown in Figure 5.6 employing an aerobic biological purification principle is recommended for the following reasons: (1) strong durability against low temperature in January to March in this region, (2) lower construction cost including land acquisition expense, (3) easier operation and maintenance.

Figure 5.6 Conceptual Flow Diagram of the Proposed Sewage Disposal Facilities



Source : JICA Study Team

(3) Storm water drainage

Open channels and/or pipes will be constructed in the service area to prevent submersion during rain. The following equation in five (5) year-probability and based on the rainfall intensity graph used in Hue City will be applied to the calculation of design rainfall:

---

*1 : The " Separated Type" sewage facilities does not collect rain water. Unlike the separated type sewage disposal facilities, in the combined type facilities some portions of pollutant is inevitably discharged to the water courses at the beginning stage of rainfall. Thus, the separated type sewerage is recommended in this section.

- Rainfall intensity to be applied:

$$I = 22{,}305/(t + 48.7)$$

where, I : Rainfall intensity(mm/h)

t : Duration(min).

(4) Solid waste disposal facilities

The solid waste discharge in the service area is projected to reach some 22 ton per day as of 2010. Waste packer vehicles for garbage collection service will be provided, and collected garbage will be transported and disposed to the landfill site as shown in Figure 4.8 in the Hoi An TPZ development section. To prevent from reverse influence exerted from the landfill site, the sanitary landfill will be executed by the method of : (1) provision of shield resin sheet to isolate deposit layer from ground soil, (2) application of soil cover to prevent from ill odor, (3) attachment of leachate treatment plant*1 to prevent from outflow of polluted and/or toxic waste water.

The location of the landfill site should be selected in light of such criteria as: (1) the surrounding area is dispersedly populated, (2) the location is easily accessible from the service area, (3) there is no possibility for a negative impact on the natural environment and landscapes, and (4) the site is not closed to the waterway leading to the intake source for water supply.

3) Outline of the Proposed Facilities

(1) Water supply facilities

The proposed water supply facilities will consist of a raw water intake and conveyance system, water production system and water distribution system. Table 5.10 lists the main specifications for the proposed water supply facilities.

Table 5.10 Outline of the Proposed Water Supply Facilities

Work items	Quantities		Description
1. Raw water intake and conveyance system			(from Thuy Cam and Thuy Yen Reservoir of the Ba Lu River)
Max intake capacity			45,000 cu-m/d
Intake pump	3	units	including 1 standby, 0.3cu-m/sec
Conveyance pipe	13	km	carbon steel pipe, 600mmDia (installed along the Rail Way)
2. Water production system			
2.1 Raw water reservoir	1	lot	reinforced concrete, volume 100,000cu-m
2.2 Water purification facilities			
Purification plant	2	units	coagulation sedimentation + sand filtration type 4,600 cu-m/d x 2 units, total 9,200 cu-m/d
Component equipment			coagulation basin, clarifier, sand filter disinfection basin, engine generator
Site area			1.3 ha
Appurtenances			operation room, laboratory, electrical room, workshop, storage room
3. Water distribution system			
3.1 Transfer pump	2	units	including 1 standby, 0.12cu-m/sec
3.2 Distribution tank	1	lots	volume 1,000cu-m
3.3 Distribution pipes			
Trunk pipes	15	km	cast iron pipe, 200 to 300mmDia
Branch pipes	72	km	cast iron pipe, 100 to 200mmDia
Fire hydrant	1	lot	cast iron
3.4 Irrigation water distribution pump and pipes			(supply raw water without treatment)
Pumps	2	units	including 1 standby, 0.4u-m/sec
Trunk pipes	15	km	cast iron pipe, 300 to 500mmDia

Notes : The quantities and the capacities in this table are at the final construction stage.
Source : JICA Study Team

*1 : The word "Leachate" stands for waste water generated from landfill site resulting from decomposition of solid waste and rainfall.

(2) Sanitation facilities

The main specifications for the proposed sanitation facilities, which accommodates the sewage disposal facilities, the storm water drainage and the solid waste disposal facilities are shown in Table 5.11.

Table 5.11 Outline of the Proposed Sanitation Facilities

Work items	Quantities		Description
1. Sewage disposal facilities			
1.1 Sewage collection system			
Trunk pipes	14	km	concrete pipe, 300 to 400mmDia
Branch pipes	90	km	concrete pipe, 150mmDia
Sewage relay pump	5	sets	centrifugal
1.2 Sewage treatment facilities			
Treatment plant	2	units	biological oxidation ditch type 3,600cu-m/d x 2units, total 7,200cu-m/d
Component equipment			grit chamber, oxidation ditch, settling basin chlorination basin, treated sewage discharge mouth sludge thickener, sludge dehydrator
Treated sewage discharge pump	2	units	including 1 standby
Site area			1.2 ha
Appurtenances			operation room, laboratory, electrical room, workshop, storage room, sludge dehydration room
2. Storm water drainage			
Open channel	1	lot	concrete
Embedded pipe	1	lot	concrete
Retention pond	1	lot	brick or stone
3. Solid waste disposal facilities			
3.1 Waste haulage vehicle			
Packer car(2ton)	3	units	
Packer car(4ton)	3	units	
Workshop	1	lot	
3.2 Landfill facilities			
Landfill site	2.5	ha	sanitary landfill type
Appurtenances			access road, weighing gate, bulldozer workshop, administration office leachate treatment plant

Notes : The Quantities and the capacities in this table are at the final construction stage.
Source : JICA Study Team

4) Cost Estimation Base

The estimated cost for the construction works of the proposed water supply and sanitation facilities are based on the following:

- Direct construction cost covers preparatory works, purchase of equipment and material, shop manufacturing, ocean and inland transportation, site installation works
- Equipment and material necessary for construction works are purchased on the local market in Viet Nam, if reliable and competitive ones are available. Otherwise, they are imported from foreign countries
- Indirect construction cost covers expense for engineering services and land acquisition, and price and physical contingency. Any taxation, such as import tax, V.A.T. (Value Added Tax) and I.D.C. (Interest During Construction) are excluded from construction cost
- All prices of equipment/material and labor are on basis of 1996 prices
- Individual sewage treatment systems necessary for the Public Beach Park Block and the Golf Course Block are excluded from this estimated cost, and
- Only trunk pipes for water supply and sewage collection main are counted in the estimated cost, that is excluding feeder pipes except for the Village Zone.

Figure 5.7 Layout of the Proposed Water Supply Facilities and Sewage Disposal Facilities

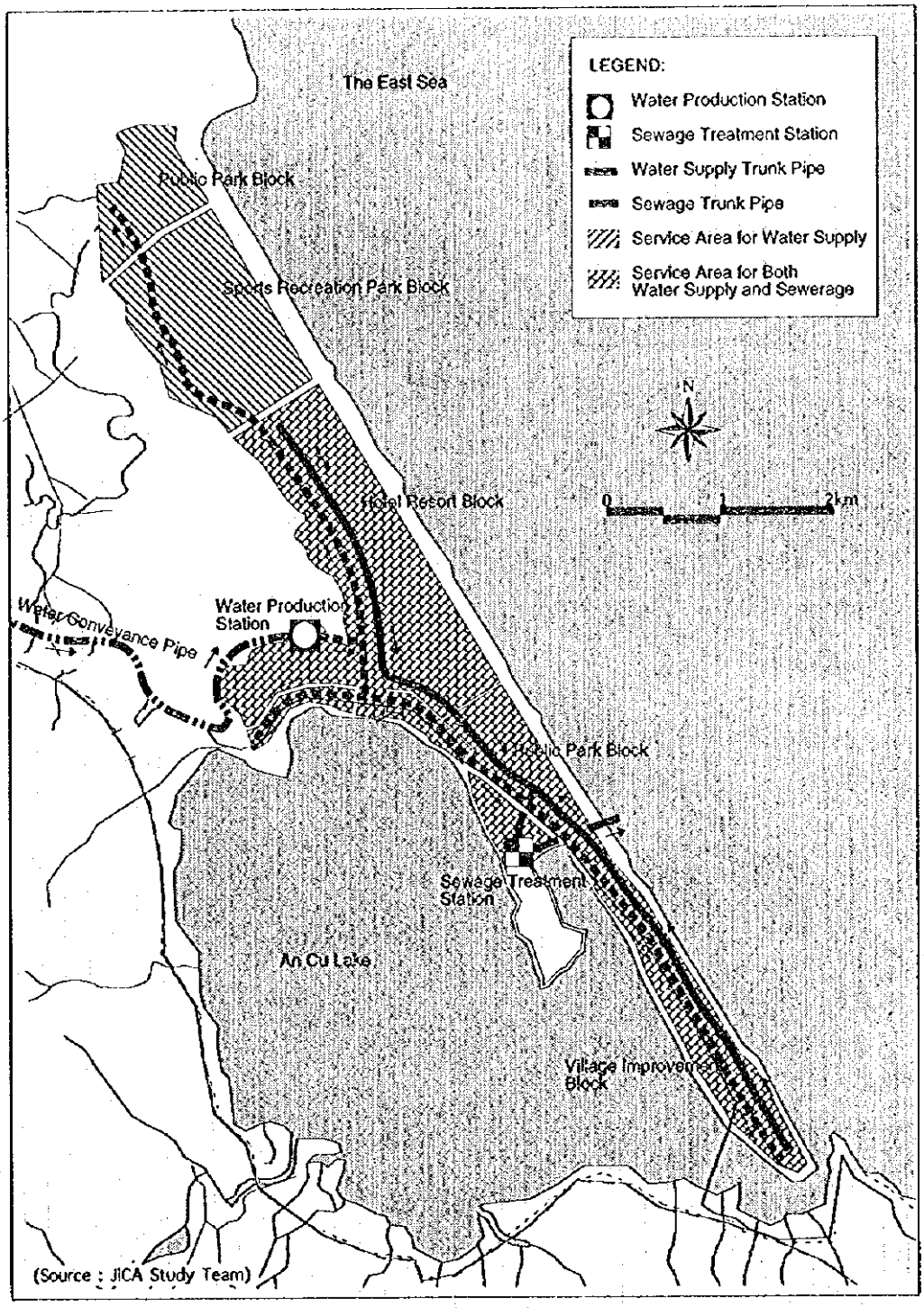
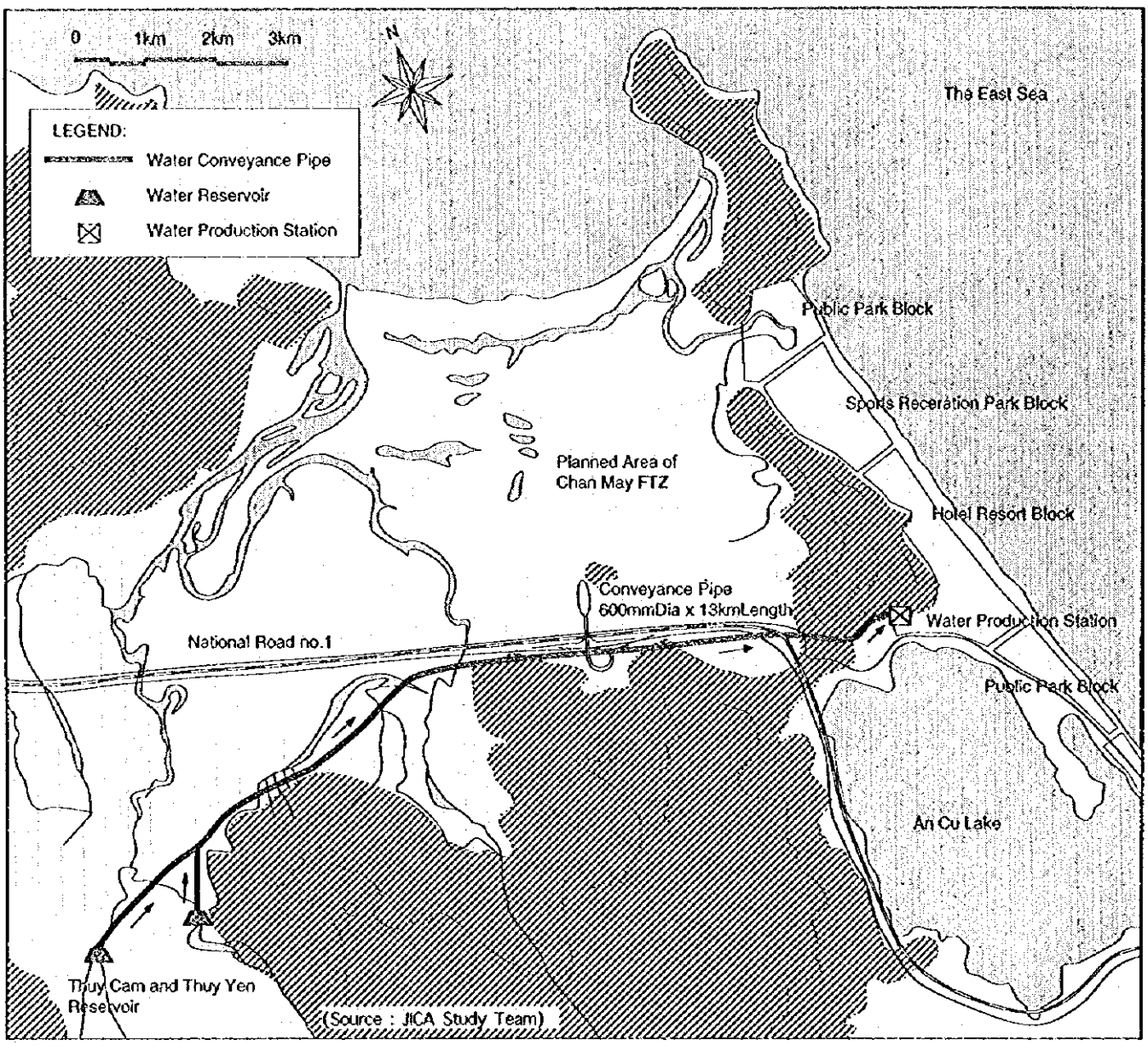


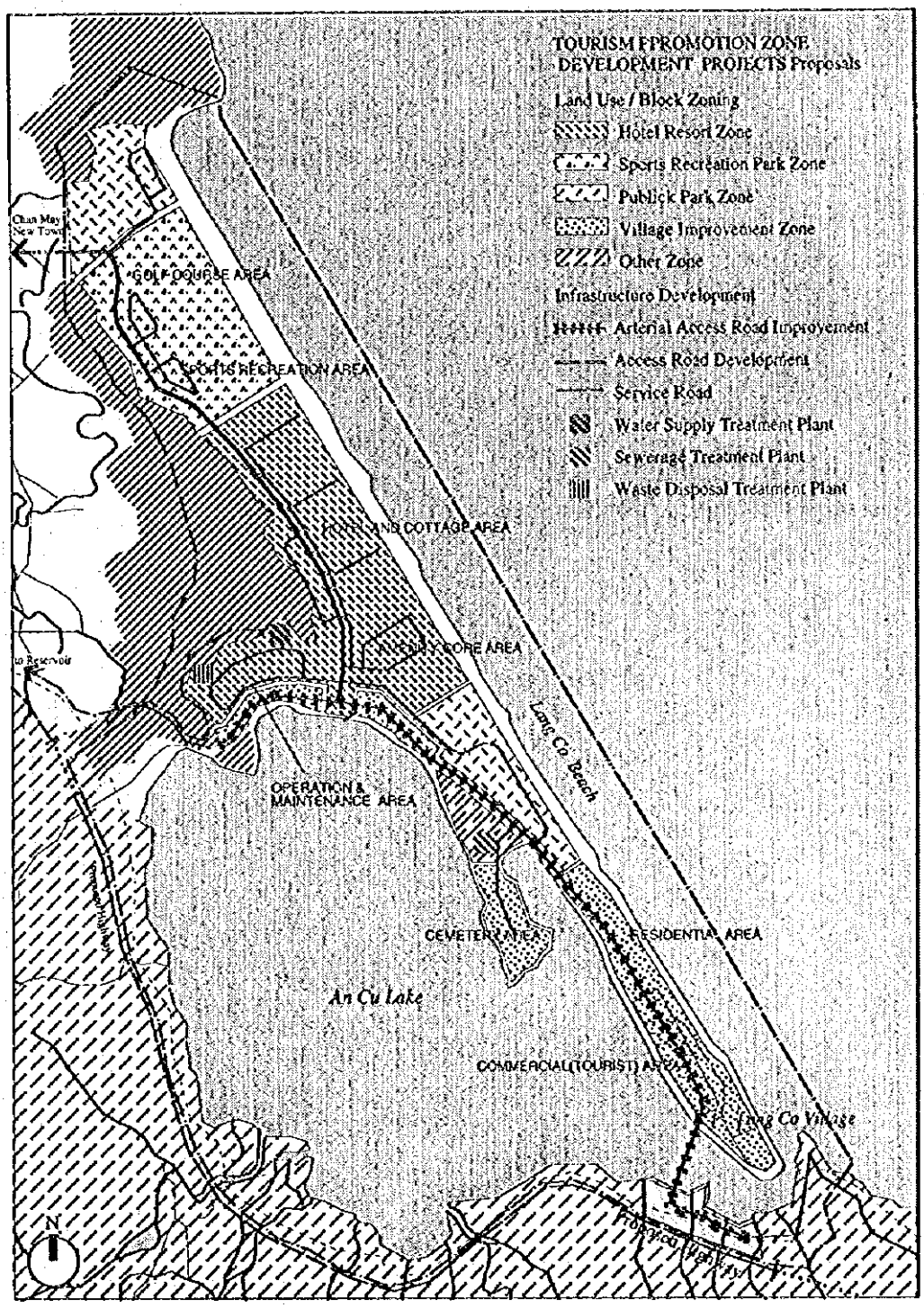
Figure 5.8 Route Plan of Raw Water Conveyance Pipes



5.3.4 Layout Plan

The layout plan is shown in Figure 5.9.

Figure 5.9 Lang Co Tourism Promotion Zone Development Project



5.4 PROJECT COST AND IMPLEMENTATION SCHEDULE

5.4.1 Project Cost Estimation

The total project costs as a package of sub-projects amounts to 121.6 million US$, including the costs for the consultant services. This total costs are divided into two phase as follows in consideration of the scale, effect and other development program, and as described in Table 5.12.

- Phase I (First stage infrastructure development projects)	: 84.8 mil. US$ (70%)
- Phase II (Second stage infra-development projects)	: 36.8 mil. US$ (30%)
Total projects cost	: 121.6 mil. US$ (100%)

Reference : First stage infrastructure development projects indicate short-term to mid-term projects to be implemented within 7 - 8 years, and

: Second stage infra-development projects indicate long-term projects to be implemented within 9 - 15 years.

The project cost are detailed in Table 5.12.

5.4.2 Project Implementation Schedule

The project implementation schedule is summarized in Figure 5.10.

Table 5.12 Projects Cost Estimation for Lang Co Tourism Promotion Zone Development Projects

(unit : ,000 US$)

Tourism Development Zone	Tourism Block	Project Category	Code no.	Description	Cost ,000 US$	Short-term 1998	1999	2000	Mid-term 2001	2002	2003	2004	2005	2006	Long-term 2007	2008	2009	2010
Lang Co Tourism Promotion Zone	Hotel Resort Block	Hotel	LTPZF1*	High class (300 rooms)	(41,100)											(4,110)	(18,495)	(18,495)
			LTPZF2*	Medium class (1,250rooms)	(85,630)						(428)	(1,927)	(1,927)		(8,135)	(24,405)	(24,405)	(24,405)
		Amenity Core	LTPZF3*	Information, souvenir shop, and so on	(3,650)											(365)	(1,643)	(1,643)
		Operation Factory	LTPZF4	Management, staff housing, and so on	1,450				73	326	326					73	326	326
		Landscape, and so on	LTPZF5	tree planting, land preparation	24,340			1,460	4,381	4,381	4,381					974	4,381	4,381
	Sports Park	Golf and Sport	LTPZF6*	18 holes, clubhouse, sportsclub	(27,740)										(2,774)	(8,322)	(8,322)	(8,322)
	Road	Roads develop	LTPZF7	distributor roads, and so on.	4,840			1,058	3,174	3,174	484							
	Public Park	Tourist Facility	LTPZR1	Rest house, service facilities	10,580						3,174	2,178	2,178					
	Village imp	Road improve	LTPZR2	road upgrading	500			30	135	135								
	Other Block	Utilities	LTPZF8	Water supply system	28,940		579	579	6,077	6,656	5,788				579	579	4,052	4,052
			LTPZF9	Sanitary system	38,320		766	766	8,047	8,814	7,664				766	766	5,365	5,365
			LTPZF10	Area landscaping	12,600			756	3,402	3,402					202	4,838		
Total Projects Cost					121,570	0	1,345	4,650	25,289	27,372	21,055	2,178	2,178	0	1,547	7,230	14,124	14,124

Note: Total project cost includes contingency, engineering services, excluding land acquisition cost and every taxation.

: * This project is responsible to private sector for implementing

: Total Cost does not include private sector's projects.

Source: JICA Study Team

Figure 5.10 Implementation Schedule for Lang Co Tourism Promotion Zone Development Projects

Tourism Development Zone	Tourism Block	Project Category	Code no.	Description	Short-term 1998	1999	2000	Mid-term 2001	2002	2003	2004	2005	Long-term 2006	2007	2008	2009	2010
Lang Co Tourism Promotion Zone	Hotel Resort Block	Hotel	LTPZF1	High class (300 rooms)											———	———	———
			LTPZF2	Medium class (1,250rooms)						———	———	———		———	———	———	———
		Amenity Core	LTPZF3	Information, souvenir shop, and so on											———	———	———
		Operation Factory	LTPZF4	Management, staff housing, and so on				———	———	———					———	———	———
		Landscape, and so on	LTPZ5	Tree planting, land preparation			———	———	———	———					———	———	———
	Sports Park	Golfcountry C	LTPZ6	18 holes, clubhouse, sportsclub										———	———	———	———
	Road	Roads develop	LTPZ7	Distributor roads, and so on.			———	———	———	———							
	Public Park	Tourist Facilities	LTPR1	Rest service facilities, landscape						———	———	———					
	Village imp	Road improve	LTPR2	Road upgrading		———	———	———									
	Other Block	Utilities	LTPZ8	Water Supply system			———	———	———	———				———	———	———	———
			LTPZ9	Sanitary system			———	———	———	———				———	———	———	———
			LTPZ10	Area landscaping			———	———	———					———			

Note: ——— Preparation Stage (survey, design, and so on). ——— Construction Stage

Source: JICA Study Team

CHAPTER 6

INITIAL ENVIRONMENTAL EXAMINATION

CHAPTER 6 INITIAL ENVIRONMENTAL EXAMINATION

6.1 INITIAL ENVIRONMENTAL EXAMINATION FOR TOURISM INFRASTRUCTURE IMPROVEMENT PROJECT

6.1.1 The Study Items on Initial Environmental Examination for Tourism Infrastructure Improvement Project

The initial environmental examination (IEE) examines the environmental items that may be affected by project implementation not only in the project area, but also in the surrounding area that may be directly or indirectly affected during the construction and operation stages. The screening and scoping for the environmental items of IEE for Tourism Infrastructure Improvement Project (TII) have been carried out. The results are shown in Table 6.1.

Table 6.1 The Relationship of Activities and Environmental Items for TII

	Major Facilities / Activities	Tourism Development					
		Construction Stage		Operation Stage			
	Activities which may cause impacts	Land Acquisition and Reclamation	Operation of Construction Equipment	Spatial Occupancy	Operation of Vehicles	Operation and Maintenance of Facilities	Accumulation of People and Goods
	Social Environment						
1	Resettlement	O					
2	Economic Activities						O
3	Traffic and Public Facilities				O		
4	Split of Communities						
5	Cultural Properties						O
6	Water Rights /Rights of Common						
7	Public Health Condition						
8	Waste					O	
9	Hazards (Risk)						
	Natural Environment						
10	Topography and Geology						
11	Soil Erosion						
12	Groundwater						
13	Hydrological Situation	O					
14	Coastal Zone						
15	Flora and Fauna	O					
16	Meteorology						
17	Aesthetics			O			
	Pollution						
18	Air Pollution				O		
19	Water Pollution	O				O	
20	Soil Contamination						
21	Noise and Vibration				O		
22	Land Subsidence						
23	Offensive Odor						

Note: ⊙: The environmental items to which special attention has to be paid. They might cause serious impacts that may affect the project formulation depending on the magnitude of the impacts and the possibility of the measures.

O: The environmental items which may have a significant impact depending on the scale of the project and site conditions.

No mark: The environmental items requiring no impact assessment since the anticipated impacts are, in general, not significant.

The 11 environmental items were selected for the initial environmental examination by taking into consideration those environmental items and activities, which may cause impacts. In the case of TII, twelve other environmental items do not need to be examined, because of the reasons as shown in Table 6.2.

Table 6.2 Reason not to be Examined as Environmental Item for TII

Environmental Item	Reason to be not examined
Split of Communities	This project is mainly a rehabilitation one, so that it is not expected that the split of communities may occur newly.
Water Rights and Rights of Common	This project is mainly a rehabilitation one and it has a small amount of land acquisition, so that it is not expected that the obstruction of fishing rights, water rights, rights of common may occur newly.
Public Health Condition	This is a road project, so that it is not expected that the generation of garbage and the increase of vermin may affect the deterioration of public health and sanitary conditions.
Hazards (Risk)	This project has no large-scale reclamation, so it is not expected that it will increase the risk of landslides, cave-ins and accidents.
Topography and Geology	This project has no large-scale reclamation, so it is not expected that it will changes valuable topography and geology.
Soil Erosion	This project is mainly a rehabilitation one, so it is not expected that topsoil erosion by rainfall after reclamation and vegetation removal may occur.
Groundwater	This project has no large-scale reclamation, so it is not expected that it will change distribution of groundwater.
Coastal Zone	The project site is not located at the coastal area, so that the landfill or change in marine condition may not affect the coastal erosion and sedimentation.
Meteorology	This project has no large-scale reclamation and building construction, so that the changes of temperature, precipitation, wind and so on are not expected.
Soil Contamination	This is a road project, so that soil contamination is not expected.
Land Subsidence	This project has no large-scale reclamation, so it is not expected that it will cause deformation of land and land subsidence may not occur.
Offensive Odor	This is a road project, so it is not expected that the road construction and operation may generate offensive odor.

6.1.2 The Forecast and Evaluation for Tourism Infrastructure Improvement Project

The detailed location of route and design and the construction plan will be conducted at the Feasibility Study (F/S) or Detail Design (D/D) stage. Therefore, only a general description of the forecast and evaluation will be carried out in this section and the examination of the necessity for an Environmental Impact Assessment (EIA).

1) Impact at Construction Stage

(1) Impact by land acquisition and reclamation

a) Impact on the social environment

(a) Impact by resettlement

The land acquisition for this project will be small, because this project is mainly rehabilitation of roads and construction of small-scale facilities. However, it is expected that problems of resettlement may become significant. Therefore, the establishment of countermeasures in an adequate resettlement plan, such as compensation, are required. The implementation of these countermeasures should address the problem of resettlement, so that the implementation of an

EIA on the impact by resettlement due to land acquisition at the construction stage is not required.

b) Impact on the natural environment

(a) Impact on the hydrological situation

The changes of river discharge and riverbed condition may be caused by the construction of a bridge across the Han River in Da Nang. There may be impacts, such as an increase in peak discharge during flood, a decrease in flood discharge capacity, due to the cross sectional change of the river, and the shortening of the flood peak reaching time, which will increase flood damage. Therefore, the establishment of countermeasures for an adequate construction plan, such as an examination of the location of piers and construction method is required. The implementation of these countermeasures shuld prevent any problems in the hydrological situation, because the construction term is temporary, so that the implementation of an EIA on the impact to the hydrological situation due to reclamation at the construction stage is not required.

(b) Impact on flora and fauna

The obstruction of breeding and extinction of species may be caused by a change of habitat conditions, which may be caused by the removal of vegetation and extinction of habitats of animals, due to the construction of roads, bridges and facilities. At the point of bridge construction at the Han River in Da Nang, some impact on aquatic lives is expected. Therefore, detailed studies and some countermeasures are required. The implementation of these countermeasures should prevent problems to flora and fauna, so that the implementation of an EIA on the impact to flora and fauna due to reclamation at construction the stage is not required.

c) Pollution impact

(a) Water pollution impact

The water pollution by inflow of silt, sand and effluent into rivers may be caused by erosion, in ??? caused by the change of vegetation and topography. There may be impacts, such as the effect on aquatic life by turbid water, especially suspended solids (SS). At the point of bridge construction at the Han River in Da Nang, it is expected that water pollution by turbid water will occur. However, the construction term is temporary, and an adequate construction management can prevent the impact. Therefore, the implementation of an EIA on the impact by water pollution due to reclamation at the construction stage is not required.

2) Impact at the Operation Stage

(1) Impact by spatial occupancy

a) Impact on the natural environment

(a) Impact on Aesthetics

The change of topography and vegetation by land reclamation, and the deterioration of aesthetic harmony may be caused by the appearance of new and different facilities and structures, such as tourism facilities, road and the operation vehicles, and air pollution, especially by dust, and water pollution. There may be impacts such as: 1) the damage to the value of the scenery by the change of landscape, which may have cultural values or close relationship with the life of local people, especially religious importance, and 2) the damage to tourism and local people's life. This project has no large-scale reclamation and no capabilities for air and water pollution, which will give some unpleasant feeling to tourists. However, careful consideration of the design of the new bridge across the Han River at Da Nang and tourism facilities, such as signs,

information boards and tourist service facilities is required. Implementation of an EIA on the impact on aesthetics, due to spatial occupancy at the operational stage, is required.

(2) Impact by operation of vehicles

a) Impact on the social environment

(a) Impact on traffic and public facilities

Impacts on schools, hospitals and present traffic conditions, such as increased traffic congestion and accidents may be caused by the emergence and increase of vehicular traffic. Therefore, countermeasures such as: 1) the rehabilitation of the existing traffic system, 2) the installation of traffic safety facilities, and 3) the environmental protection measures for public facilities, and traffic safety education and training for local people, are required. The implementation of these countermeasures can prevent the impact on traffic and public facilities. Therefore, the implementation of an EIA on the impact on traffic and public facilities due to the operation of vehicles at the operation stage is not required.

b) Pollution impact

(a) Air pollution impact

Air pollution may be caused by exhaust gas, toxic gas and dust from running vehicles. The impact will be greater during the dry season. There may be impacts, such as the impacts to the health of people, plants and animals along the route. It may have a significant impact at the large gradient of slope where the concentration of exhaust gas from running vehicles will be higher. A not significant impact by this project is expected, because the traffic volume will be not so large. However, the roads of this project will pass some high populated area, especially Hue, Da Nang and Hoi An. Therefore, detailed studies on air quality, the implementation of some countermeasures, such as traffic control, area required. Implementation of an EIA on the impact to air pollution due to operation of vehicles at the operation stage is required.

(b) Impact on noise and vibration

Noise and vibration may be caused by the operation of vehicles. There may be impacts such as: 1) the effect on hospitals and schools by noise, and the disturbance of sleep by vehicles operating at night in a high populated area, and 2) the obstruction of breeding of cattle and valuable wildlife and dispersion of wildlife, and 3) the effect by vibration at weak grounds, such as filled land or clay soil layer. It is expected that the impact caused by noise and vibration has the possibility to become significant. Therefore, detailed studies and the establishment of countermeasures are required. Implementation of an EIA on the impact, caused by noise and vibration due to the operation of vehicles at the operation stage is required.

(3) Impact by operation and maintenance of facilities

a) Impact on the social environment

(a) Impact by waste

The generation of general waste may be caused by the operation of the facilities and the increase in economic activities. There may be impacts such as the diminution of aesthetic values, the change of vegetation, and soil contamination and water pollution caused by exposed waste. This project will not generate some waste, because the facilities of this project are small-scale. Therefore, the implementation of an EIA on the impact caused by waste due to the operation and maintenance of facilities at the operation stage is not required.

b) Impact on the natural environment

(a) Impact by Water Pollution

Water pollution may not be caused by inflow of effluent from facilities into rivers, groundwater and the sea, and sewage discharge. Therefore, implementation of an EIA on the impact by water pollution due to the operation and maintenance of the facilities at the operation stage is not required.

(4) Impact by accumulation of people and goods

a) Impact on the social environment

(a) Impact on economic activities

The loss of bases of economic activities, such as land, and change to the economic structure are not caused by the inflow and outflow of population and goods resulting from the road and facilities' construction. Therefore, implementation of an EIA on the impact on economic activities due to the accumulation of people and goods at the operation stage is not required.

(b) Impact on cultural properties

The damage to and loss of the value of cultural properties such as churches, temples, shrines and archaeological remains and other cultural assets may be caused by the increase in traffic of people due to the operation of the facilities. There may be impacts such as: 1) the increased possibility of theft due to damage to and vanishing of a unique culture by the flow of different cultures and the loss of opportunity for academic research, 2) the damage to tourism business opportunities, which depend on cultural properties, and 3) the aggravation of inhabitants' feeling caused by the loss of precious cultural properties in the area. The cultural properties are the fundamental base of tourism development. Therefore, detailed studies and the implementation of countermeasures are required. Implementation of an EIA on the impact on cultural properties due to the accumulation of people and goods at the operation stage is required.

6.1.3 Recommendations

1) Implementation of EIA

An EIA is required for the environmental items listed in Table 6.3.

Table 6.3 Environmental Items to be Implemented EIA for TII

Stage	Cause	Category	Environmental Item
Operation Stage	Spatial Occupancy	Natural Environment	Aesthetics
	Operation of Vehicles	Pollution	Air pollution
			Noise and vibration
	Operation and Maintenance of Facilities	Social Environment	Waste
	Accumulation of People and Goods	Social Environment	Cultural properties

2) Examination of Environmental Countermeasures

The following environmental countermeasures must be discussed at the next stage, such as F/S or D/D (Table 6.4 refers).

Table 6.4 Items for Environmental Countermeasures for TII

Environmental Item	Reason to be not examined
Resettlement programme	Provisions of meetings with resettlers
	Provisions of necessary information system
	Careful resettlement site selection
	Improvement of living and economic conditions of the resettlement site
	Sufficient compensation system
	Provisions on the job training and guidance
Careful Detail Design	Examination of project components
Construction and maintenance plan	Establishment of a careful construction and maintenance plan
	Establishment of a traffic safety system
Land use plan	Restriction of land use in the surrounding area

6.2 INITIAL ENVIRONMENTAL EXAMINATION FOR HOI AN TOURISM PROMOTION ZONE DEVELOPMENT PROJECT

6.2.1 The Study Items on Initial Environmental Examination for Hoi An Tourism Promotion Zone Development Project

The screening and scoping for the environmental items of IEE for the Hoi An Tourism Promotion Zone Development Project (Hoi An TPZ) have been carried out. The results are shown in Table 6.5.

Table 6.5 The Relationship of Activities and Environmental Items for Hoi An TPZ

	Major Facilities / Activities	Tourism Development					
		Construction Stage		Operation Stage			
	Activities which may cause impacts	Land Acquisition and Reclamation	Operation of Construction Equipment	Spatial Occupancy	Operation of Vehicles	Operation and Maintenance of Facilities	Accumulation of People and Goods
	Social Environment						
1	Resettlement	O					
2	Economic Activities						O
3	Traffic and Public Facilities				O		
4	Split of Communities			O			
5	Cultural Properties	O					O
6	Water Rights /Rights of Common	O					
7	Public Health Condition						
8	Waste	O				O	
9	Hazards (Risk)						
	Natural Environment						
10	Topography and Geology	O					
11	Soil Erosion						
12	Groundwater						
13	Hydrological Situation	O					
14	Coastal Zone						
15	Flora and Fauna	O	O				
16	Meteorology						
17	Aesthetics			O			
	Pollution						
18	Air Pollution				O		
19	Water Pollution	O				O	
20	Soil Contamination						
21	Noise and Vibration		O		O		
22	Land Subsidence						
23	Offensive Odor						

Note: ⊙: The environmental items to which special attention has to be paid. They might cause serious impacts that may affect the project formulation depending on the magnitude of the impacts and the possibility of the measures.

O: The environmental items which may have a significant impact depending on the scale of the project and site conditions.

No mark: The environmental items requiring no impact assessment since the anticipated impacts are, in general, not significant.

Fourteen environmental items are selected for the initial environmental examination by taking into consideration the environmental items and activities, which may cause impacts. In the case of Hoi An TPZ, nine environmental items are not necessary to be examined, because of the same reasons as already discussed in the previous Table 6.2.

6.2.2 The Forecast and Evaluation for Hoi An Tourism Promotion Zone Development Project

1) Impact at the Construction Stage

(1) Impact by land acquisition and reclamation

a) Impact on the social environment

(a) Impact on resettlement

Resettlement may be caused by land acquisition for the construction of roads and tourism facilities in some areas. However, this project has only small-scale land acquisition caused by the construction of access roads, the sewerage treatment plant, and the expansion of the water treatment plant. Therefore, implementation of an EIA on the impact on resettlement due to land acquisition at the construction stage is not required.

(b)Impact on cultural properties, water rights and rights of common, and waste

The damage to and loss of the value of cultural properties, such as churches, temples, shrines and archaeological remains and other cultural properties may be caused by land acquisition. The obstruction of fishing rights in rivers, water rights and land use rights may be caused by: 1) the occupancy of arable land and forests for this project, and 2) the obstruction or alteration of fishing grounds. The generation of demolition waste, debris, and logs may be caused by reclamation. There may be impacts such as the diminution of aesthetic values, the change of vegetation, and soil contamination and water pollution by exposed waste. However, this project has only small-scale land acquisition. Therefore, implementation of an EIA on the impact on cultural properties, water rights and rights of common, and waste due to land acquisition at the construction stage is not required.

b) Impact on the natural environment

(a) Impact on topography and geology

The change of valuable topography and geology may be caused by excavation and land reclamation. There may be impacts such as the occurrence of landslides or soil erosion. It may have a significant impact in case of: 1) the existence of important topography and or geology, 2) the existence of fishing industry, 3) the existence of steep hills of soft soil with high porosity, and 4) the existence of areas, which have rainfall of high intensity. Therefore, detailed studies on 1) topography and geology, 2) meteorology, and 3) land use are required. Implementation of an EIA on the impact to topography and geology due to reclamation at the construction stage is required.

(b) Impact on the hydrological situation

The changes of river discharge and riverbed condition may be caused by the construction of lockages across Thu Bon River. There may be impacts such as the increase in peak discharge during flood, a decrease in flood discharge capacity due to the cross sectional change of the river, and the shortening of the flood peak reaching time, which will increase flood damage. There may be significant impact on housing and public facilities facing rivers. Therefore, the establishment of countermeasures for adequate construction plans, such as an examination on the location of lockages and construction method is required. Implementation of an EIA on the impact on the hydrological situation due to reclamation at the construction stage is required.

(c) Impact on flora and fauna

The obstruction of breeding and extinction of species caused by a change of habitat conditions may be caused by the removal of vegetation and extinction of habitats of animals due to the

construction of roads and tourism facilities. There may be impacts such as: 1) a decrease in useful creatures for human activities or extinction of valuable species, and 2) a decrease of the recreational value. There may be significant impact in case of: 1) the existence of a vulnerable ecosystem, and 2) the existence of the species peculiar to the region, and 3) the existence of endangered or rare species. This project has a possibility of impact on flora and fauna, especially to aquatic lives by the construction of lockages. Therefore, detailed studies and some countermeasures are required. Implementation of an EIA on the impact on flora and fauna due to reclamation at the construction stage is required.

c) Impact on pollution

(a) Water pollution impact

At the points of lockage construction, water pollution is expected by turbid water. However, the construction term is temporary, and an adequate construction management can prevent such impact. Therefore, implementation of an EIA on the impact by water pollution due to reclamation at the construction stage is not required.

(2) Impact by operation of construction equipment

a) Impact on the natural environment

(a) Impact on flora and fauna

The obstruction of breeding and extinction of species caused by a change of habitat conditions may be caused by the generation of exhaust gas and noise from construction equipment and vehicles. However, the construction term is temporary, and an adequate construction management can prevent such impact. Therefore, implementation of an EIA on the impact on flora and fauna due to operation of construction equipment at the construction stage is not required.

b) Impact on pollution

(a) Impact by noise and vibration

Noise and vibration may be caused by the operation of construction equipment and vehicles for construction and detonations. There may be impacts such as: 1) the effect on hospitals and schools by noise, and the disturbance of sleep by vehicles operating at night in high populated areas, 2) the obstruction of breeding of cattle and dispersion of wildlife, and 3) the cracks in buildings on soft ground caused by vibration. There may be significant impact in case of: 1) the existence of the facilities, which require calm circumstance, or densely populated areas, 2) the existence of an important cattle industry, 3) the existence of the habitats of valuable wildlife, and 4) the existence of a weak ground, such as filled land or clayey soil layer. Therefore, countermeasures are required. Implementation of an EIA on the impact by noise and vibration due to the operation of construction equipment at the construction stage is required.

2) Impact at Operation Stage

(1) Impact by spatial occupancy

a) Impact on the social environment

(a) Split of Communities

The split of communities may be caused by: 1) the interruption of existing routes by the construction of facilities, and 2) the interruption of traffic of inhabitants and commercial distribution. This project has no development of new main roads. Therefore, implementation

of an EIA on the split of communities due to spatial occupation at the operation stage is not required.

b) Impact on the natural environment

(a) Impact on aesthetics

This project has construction of two lockages, which are located in the main tourism area in Hoi An. This will disturb the most valuable scenery from the viewpoint of the center of Hoi An. And also this project has the possibility for air and water pollution which will give some unpleasant feelings to tourists. Therefore, careful consideration of design of new lockages and management of aesthetics are required. Implementation of an EIA on the impact on aesthetics due to spatial occupancy at the operation stage is required.

(2) Impact by operation of vehicles

a) Impact on the social environment

(a) Impact on traffic and public facilities

Implementation of an EIA on the impact on traffic and public facilities due to the operation of vehicles at the operation stage is not required.

b) Impact by pollution

(a) Air pollution impact

The roads of this project will pass some high populated area, especially in Hoi An. Therefore, detailed studies on air quality, the implementation of some countermeasures, such as traffic control, are required. Implementation of an EIA on the impact by air pollution due to operation of vehicles at the operation stage is required.

(b) Impact by Noise and Vibration

Implementation of an EIA on the impact by noise and vibration due to the operation of vehicles at the operation stage is required.

(3) Impact by operation and maintenance of facilities

a) Impact on the social environment

(a) Impact by waste

The generation of general waste may be caused by the operation of the facilities and the increase of economic activities. There may be impacts such as the diminution of aesthetic values, the change of vegetation, soil contamination and water pollution by exposed waste. The waste will cause impacts on aquatic life and birds affected by water pollution caused by inflow of waste into the rivers, canals, and so on and the aggravation of environmental impacts due to inadequate and illegal disposal. This project will generate some waste. Therefore, counter-measures such as 1) the establishment of an adequate waste collection system, waste treatment facilities and disposal facilities, the securing of disposal sites for waste dumps and construction waste, and 2) the publicity and promotional activities to reduce industrial waste are required, and the implementation of detailed studies on: 1) physical and chemical characteristics of the waste, 2) land ownership and land use conditions for obtaining disposal sites, and 3) laws and regulations related to solid waste management are required. Implementation of an EIA on the impact by waste due to operation and maintenance of facilities at the operation stage is required.

b) Impact on the natural environment

(a) Water pollution impact

Water pollution may be caused by inflow of effluent from tourism facilities into rivers, and sewage discharge. There may be impacts such as: 1) the contamination of water would affect the aquatic life and the health of inhabitants who use the water, 2) the deterioration of the water quality in the rivers brought about by the drainage produced by the facility operation and maintenance work, and the settlement of people, and 3) the effects on the water use by inhabitants, fishery, fish cultivation, and recreational use. There may be significant impact in case of: 1) the existence of the water used by habitants or businesses in the downstream area, 2) the existence of important aquatic species, and 3) the existence of closed water systems, such as lakes and ponds. This project has a plan for a sewerage treatment plant, but no plan for a waste treatment plant. Therefore, the establishment of countermeasures, such as: 1) adequate waste management planning, 2) compensation to the inhabitants and industries, and 3) creation of habitats for valuable aquatic life is required. Implementation of an EIA on the impact by water pollution due to operation and maintenance of the facilities at the operation stage is required.

(4) Impact by accumulation of people and goods

a) Impact on the social environment

(a) Impact on economic activities

The impact on economic activities caused by this project will be a positive rather than a negative one. Therefore, implementation of an EIA on the impact on economic activities due to the accumulation of people and goods at the operation stage is not required.

(b) Impact on cultural properties

Implementation of an EIA on the impact on cultural properties due to accumulation of people and goods at the operation stage is required.

6.2.3 Recommendations

1) Implementation of EIA

The environmental items listed in Table 6.6 require the implementation of an EIA.

Table 6.6 Environmental Items to be Implemented EIA for Hoi An TPZ

Stage	Cause	Category	Environmental Item
Construction Stage	Land Acquisition and Reclamation	Natural Environment	Topography
			Hydrological situation
			Flora and fauna
	Operation of Construction Equipment	Pollution	Noise
Operation Stage	Spatial Occupancy	Natural Environment	Aesthetics
	Operation of Vehicles	Pollution	Air pollution
			Noise and vibration
	Operation and Maintenance of Facilities	Social Environment	Waste
		Pollution	Water pollution
	Accumulation of People and Goods	Social Environment	Cultural properties

2) Examination of Environmental Countermeasures

The following environmental countermeasures must be discussed at the next stage, such as F/S or D/D.

Table 6.7 Items for Environmental Countermeasures for Hoi An TPZ

Environmental Item	Reason to be not examined
Resettlement programme	Provisions of meetings with resettlers and necessary information
	Careful resettlement site selection
	Improvement of living and economic conditions of the resettlement site
	Sufficient compensation system
	Provisions of sufficient compensation system and on the job training and guidance
Careful detailed design	Careful site selection
	Examination of project components
	Establishment of a proper waste collection system and disposal system
	Establishment of an adequate drainage system
	Establishment of water supply and sewerage systems
	Establishment of a traffic safety system
Construction and maintenance plan	Establishment of a careful construction and maintenance plan
	Examination of the construction and maintenance method and schedule
	Establishment of temporary flood control ponds and fence to protect against the muddy water
	Establishment of low noise and vibration construction equipment
	Establishment of temporary acoustic walls and buffer zone
	Establishment of sprinkling water system
	Establishment of monitoring system
Pollution control plan	Air pollution and offensive odor control plan
	Water pollution, soil contamination and hazardous substances control plan
	Noise and vibration control plan
Land use plan	Restriction of land use in the surrounding area
	Examination of regional development plan and city planning
	Water resource use plan

6.3 INITIAL ENVIRONMENTAL EXAMINATION FOR LANG CO TOURISM PROMOTION ZONE DEVELOPMENT PROJECT

6.3.1 The Study Items on Initial Environmental Examination for Lang Co Tourism Promotion Zone Development Project

The screening and scoping for the environmental items of IEE for the Lang Co Tourism Promotion Zone Development Project (Lang Co TPZ) have been carried out. The results are shown in Table 6.8.

Table 6.8 The Relationship of Activities and Environmental Items for Lang Co TPZ

	Major Facilities / Activities	Tourism Development					
		Construction Stage		Operation Stage			
	Activities which may cause impacts	Land Acquisition and Reclamation	Operation of Construction Equipment	Spatial Occupancy	Operation of Vehicles	Operation and Maintenance of Facilities	Accumulation of People and Goods
	Social Environment						
1	Resettlement	O					
2	Economic Activities						O
3	Traffic and Public Facilities				O		
4	Split of Communities			O			
5	Cultural Properties	O					O
6	Water Rights /Rights of Common	O					
7	Public Health Condition						
8	Waste	O				O	
9	Hazards (Risk)						
	Natural Environment						
10	Topography and Geology	O					
11	Soil Erosion						
12	Groundwater						
13	Hydrological Situation	O					
14	Coastal Zone	O					
15	Flora and Fauna	O	O				
16	Meteorology						
17	Aesthetics			O			
	Pollution						
18	Air Pollution				O		
19	Water Pollution	O				O	
20	Soil Contamination						
21	Noise and Vibration		O		O		
22	Land Subsidence						
23	Offensive Odor						

Note: ⊙: The environmental items to which special attention has to be paid. They might cause serious impacts that may affect the project formulation depending on the magnitude of the impacts and the possibility of the measures.

O: The environmental items which may have a significant impact depending on the scale of the project and site conditions.

No mark: The environmental items requiring no impact assessment since the anticipated impacts are, in general, not significant.

Fifteen environmental items are selected for the initial environmental examination by taking into consideration the environmental items and activities, which may cause impacts. In the case of Lang Co TPZ, eight environmental items are not necessary to be examined because of the same reasons already discussed in the pevious Table 6.2.

6.3.2 The Forecast and Evaluation for Lang Co Tourism Promotion Zone Development Project

1) Impact at Construction Stage

(1) Impact by land acquisition and reclamation

a) Impact on the social environment

(a) Resettlement impact

Resettlement may be caused by land acquisition and transfer of rights of residence and land ownership for this project. There may be impacts such as: 1) the loss of living foundation of inhabitants to be resettled, 2) the social and cultural inadaptability to the new resettlement site, 3) the conflict between permanent residents and resettlers over social and economic burdens, and 4) the deterioration of living standard after resettlement in case of the poor compensation system or the status of illegal occupants. There may be significant impact in case of: 1) the existence of the inhabitants, who live on the special environmental resources of the project site, such as the fishery ground at An Cu lake and Lang Co beach and agricultural land, 2) the existence of inhabitants, who are currently well-off, such as retail shops along the existing roads, 3) no favorable resettlement site in the surrounding area, and 4) the existence of the racial or tribal problems. It is expected that resettlement problems may become significant. Therefore, establishment of countermeasures and the implementation of an EIA on the resettlement impact due to land acquisition at the construction stage are required.

(b) Impact on cultural properties

The damage to and loss of the value of cultural properties such as churches, temples, shrines and archaeological remains and other cultural properties may be caused by land acquisition. There may be impacts such as: 1) the damage to tourism business opportunities, which depend on cultural properties, and 2) the aggravation of inhabitants' feeling caused by the loss of precious cultural properties in the area. At present, it is not clear whether there are some cultural properties in and around the site. If some cultural properties will be confirmed, it is required to implement some countermeasures. Implementation of an EIA on the impact on cultural properties due to land acquisition at the construction stage is required.

(c) Impact on water rights and rights of common

The obstruction of fishing rights in rivers, water rights and land use rights may be caused by: 1) the occupancy of arable land and forests for this project, and 2) the obstruction or alteration of fishing grounds. The magnitude of the impact depends on the scale of change of the water system. There may be significant impact in case of: 1) the existence of old communities likely to have common forests or land, and 2) the existence of the water intake facilities, navigation facilities and charcoal-burner sheds, which are water rights or land use rights. This project site is a relatively large area. Therefore, countermeasures, such as the establishment of sufficient compensation are required. Implementation of an EIA on the impact on water rights and rights of common due to land acquisition at the construction stage is required.

(b) Impact by Waste

The generation of demolition waste, debris, and logs may be caused by reclamation. There may be impacts such as the diminution of aesthetic values, the change of vegetation, and soil contamination and water pollution by exposed waste. The waste will cause impacts on aquatic life and birds affected by water pollution caused by inflow of waste into the rivers, lakes, ponds, canals, and sea, and the aggravation of environmental impacts due to inadequate and illegal disposal. This project will result in some waste. Therefore, countermeasures, such as

an adequate management plan, and implementation of an EIA on the impact by waste due to reclamation at the construction stage are required.

b) Impact on the natural environment

(a) Impact on topography and geology

The change of valuable topography and geology may be caused by excavation and land reclamation. There may be impacts such as the occurrence of landslides or soil erosion. There may be significant impact in case of: 1) the existence of important topography and or geology, 2) the existence of fishing industry, 3) the existence of steep hills of soft soil with high porosity, and 4) the existence of areas, which have rainfall of high intensity. Therefore, detailed studies on 1) topography and geology, 2) meteorology, and 3) land use are required. Implementation of an EIA on the impact on topography and geology due to reclamation at the construction stage is required.

(b) Impact on the hydrological situation

The changes of river discharge and riverbed condition may be caused by the change of runoff coefficient caused by the facility construction and decrease of vegetation due to land reclamation work, and the effects on lake and river systems may be increased by drainage due to increased amount of water use. There may be impacts such as: 1) the increase in peak discharge of flood, a decrease in flood discharge capacity due to the cross sectional change of the river, and the shortening of the flood peak reaching time, which will increase flood damage, and 2) the inundation of the lake shore due to the rise of the lake water level, which may affect the inhabitants' living, and the fishery and tourism industries. There may be significant impact in case of: 1) housing and public facilities facing lakes and rivers tend to receive more serious effects, 2) areas that use the lakes and rivers for tourism or fishery, and 3) the effect to valuable aquatic life. Therefore, detailed studies on 1) water supply and sewerage improvement plan, 2) water use and watershed use in the surrounding area, and 3) valuable aquatic life are required. Implementation of an EIA on the impact on the hydrological situation due to reclamation at the construction stage is required.

(c) Impact on the coastal zone

The coastal erosion and change of vegetation may be caused by: 1) the change of the littoral current and coastline as a result of reclamation work in the coastal zone, and 2) the change of sediment transportation and flow conditions due to reclamation. There may be impacts such as loss of coastal vegetation and marine resources, and the change of water depths and receded coastlines caused by coastal erosion and sand deposition zones.

Fishery and tourism may be affected significantly. There may be significant impact in case of: 1) the existence of valuable natural environment, such as mangrove forests and coral reefs, 2) the existence of favorable industrial conditions, such as good fishing grounds, 3) the existence of tourism that uses the coastal zone as a tourist attraction, and 4) the existence of the area tends to suffer from natural disasters, such as high waves. The coastal area has a vulnerable ecosystem, and many typhoon attack this area every year. It is expected that the impact to coastal zone may become significant. Therefore, the establishment of countermeasures, such as: 1) the examination of the contents of the plan, 2) the construction of breakwaters, 3) the provision of beach nourishment, 4) the compensation for fishery, and detailed studies on: 1) valuable natural environment, such as mangroves and coral reefs, 2) fisheries, 3) industries that utilize the coastal zone, and 4) disasters such as high waves are required. Implementation of an EIA on the impact on the coastal zone due to reclamation at the construction stage is required.

(d) Impact on flora and fauna

This project has a possibility of impacts on flora and fauna, especially on aquatic lives. Therefore, detailed studies and some countermeasures are required. Implementation of an EIA on the impact on flora and fauna due to reclamation at the construction stage is required.

c) Impact by pollution

(a) Water pollution impact

Water pollution by turbid water will occur, especially in the An Cu lake. However, the construction term is temporary, and an adequate construction management can prevent the impact. Therefore, implementation of an EIA on the impact by water pollution due to reclamation at the construction stage is not required.

The pollution by inflow of silt , sand and effluent into rivers, groundwater and sea may be caused by the erosion caused by the change of vegetation and topography. There may be impacts such as the effect on aquatic life by turbid water, especially SS. There may be significant impact at the water used area by habitants or businesses such as An Cu lake. Turbid water will cause significant impact, especially during heavy rains in the rainy season. Therefore, establishment of countermeasures and implementation of an EIA on the impact by water pollution due to reclamation at the construction stage are required.

(2) Impact by operation of construction equipment

a) Impact on the natural environment

(a) Impact on flora and fauna

The obstruction of breeding and extinction of species caused by change of habitat condition may be caused by the generation of exhaust gas and noise from construction equipment and vehicles. The potential significant impacts are the same as for flora and fauna due to reclamation at the construction stage. It is expected that the impact on flora and fauna may become significant, because the coastal area and lake has a vulnerable ecosystem. Therefore, detailed studies are required, and also the establishment of countermeasures and the implementation of an EIA on the impact on flora and fauna due to operation of construction equipment at the construction stage are required.

b) Impact by Pollution

(a) Impact by noise and vibration

Countermeasures and the implementation of an EIA on the impact by noise and vibration due to the operation of construction equipment at the construction stage are required.

2) Impact at Operation Stage

(1) Impact by spatial occupancy

a) Impact on the social environment

(a) Split of communities

The split of communities may be caused by: 1) the interruption of existing routes by the construction of facilities, and 2) the interruption of traffic of inhabitants and commercial distribution. There may be impacts such as: 1) the inconvenience in daily activities of inhabitants and effect on economic activities, and 2) the creation of detached territories or isolated areas. There may be significant impact in case of: 1) the appearance of isolated, and 2) the existence of the communities having long existing customs or traditions and tightly united in their social activities. Therefore, countermeasures are required. Implementation of an EIA on the split of communities due to spatial occupation at the operation stage is required.

b) Impact on the natural environment

(a) Impact on aesthetics

The change of the topography and vegetation by land reclamation, and the deterioration of aesthetic harmony may be caused by the appearance of new and different facilities and structures, such as tourism facilities such as hotels, road and the operation vehicles, and air pollution, especially by dust, and water pollution. There may be impacts such as: 1) the damage to the value of the scenery by the change of landscape, which may have cultural values or close relationship with the life of local people, especially religious importance, and 2) the damage to tourism and local people's life. Therefore, detailed studies are required and also the establishment of countermeasures. Implementation of an EIA on the impact on aesthetics due to spatial occupation at the operation stage is required.

(2) Impact by operation of vehicles

a) Impact on the social environment

(a) Impact on traffic and public facilities

Impacts on schools, hospitals and present traffic conditions, such as increased traffic congestion and accidents may be caused by: 1) the replacement of transport means, and 2) the emergence and increase of vehicular traffic. There may be impacts such as: 1) the depression or extinction of the existing traffic and transport facilities owing to the emergence of mass transport introduced by the facilities, 2) the increase in traffic accidents, traffic jams and other traffic problems caused by an increase in traffic, and 3) the effect of noise caused by vehicles on schools, hospitals, religious spots and other public facilities. There may be significant impact in case of: 1) the effects on the local traffic and transport facility conditions along the access roads to the existing route, and 2) the existence of schools, hospitals, religious spots and other public facilities in the area. Therefore, countermeasures such as: 1) the examination of the project contents, 2) the rehabilitation of the existing traffic system, 3) the installation of traffic safety facilities, and 4) the environmental protection measures for public facilities, and traffic safety education and training for local people, are required. Implementation of an EIA on the impact on traffic and public facilities due to operation of vehicles at the operation stage is required.

b) Impact by Pollution

(a) Air pollution impact

The traffic volumes introduced by this project will become large. Therefore, detailed studies on air quality, the implementation of some countermeasures, such as traffic control, are required. Implementation of an EIA on the impact caused by air pollution due to the operation of vehicles at the operation stage is required.

(b) Impact by noise and vibration

Implementation of an EIA on the impact by noise and vibration due to the operation of vehicles at the operation stage is required.

(3) Impact by operation and maintenance of facilities

a) Impact on the social environment

(a) Impact by waste

This project will produce some waste. Therefore, countermeasures, the implementation of detailed studies, and the implementation of an EIA on the impact by waste due to the operation and maintenance of facilities at the operation stage are required.

b) Impact on the natural environment

(a) Water pollution impact

Water pollution may be caused by inflow of effluent from tourism facilities into rivers, and sewage discharge. This project has a plan for a sewerage treatment plant and waste treatment plant. However, it is expected that the impact by water pollution may become significant, because water quality is an important factor for protecting vulnerable ecosystems and developing tourism in Lang Co. Therefore, detailed studies, the establishment of countermeasures, and the implementation of an EIA on the impact by water pollution due to the operation and maintenance of facilities at the operation stage are required.

(4) Impact by accumulation of people and goods

a) Impact on the social environment

(a) Impact on economic activities

The impact on economic activities caused by this project will be a positive rather than negative one. Therefore, implementation of an EIA on the impact on economic activities due to the accumulation of people and goods at the operation stage is not required.

(b) Impact on cultural properties

Implementation of an EIA on the impact on cultural properties due to accumulation of people and goods at the operation stage is required.

6.3.3 Recommendations

1) Implementation of EIA

The environmental items listed in Table 6.9 are required for an EIA.

Table 6.9 Environmental Items to be Implemented EIA for Lang Co TPZ

Stage	Cause	Category	Environmental Item
Construction Stage	Land Acquisition and Reclamation	Social Environment	Resettlement
			Cultural properties
			Water rights and rights of common
			Waste
		Natural Environment	Topography
			Hydrological Situation
			Coastal Zone
			Flora and fauna
		Pollution	Water pollution
	Operation of Construction Equipment	Natural Environment	Flora and fauna
		Pollution	Noise and vibration
Operation Stage	Spatial Occupancy	Social Environment	Split of communities
		Natural Environment	Aesthetics
	Operation of Vehicles	Social Environment	Traffic and public facilities
		Pollution	Air pollution
			Noise and vibration
	Operation and Maintenance of Facilities	Social Environment	Waste
		Pollution	Water pollution
	Accumulation of People and Goods	Social Environment	Cultural properties

2) Examination of Environmental Countermeasures

The environmental countermeasures which are required to be discussed at the next stage, such as F/S or D/D, are the same as in the previous Table 6.7.

CHAPTER 7

PROJECT JUSTIFICATION

CHAPTER 7 PROJECT JUSTIFICATION

7.1 INTRODUCTION

The investment effects on the nation are evaluated from the socio-economic viewpoint. Tourism promotion has a wide range of influences on the nation as well as the project areas, since tourism development requires investments in multiple sectors, such as hotels, restaurants, recreation facilities, water supply, sewerage and waste disposal system, roads and bridges. In terms of economic impact, the back and forward linkage of tourism industry incur a wide variety of benefits to the regional economy. Such influences are not limited to economic effects, but they frequently have significant social impacts on the community of the residents in the area.

7.2 DEVELOPMENT EFFECTS

Effects from tourism development projects are classified into direct (or primary) economic effects, indirect (or secondary) economic effects and social effects. Economic effects are examined at the end of three stages of the development implementation plan, namely 2000 (short-term), 2005 (mid-term), and 2010 (long-term).

Economic effects start from the expenses of tourist arrivals. Estimated numbers of tourist arrivals are presented in Table 7.1.

Table 7.1 Expected Tourist Arrivals

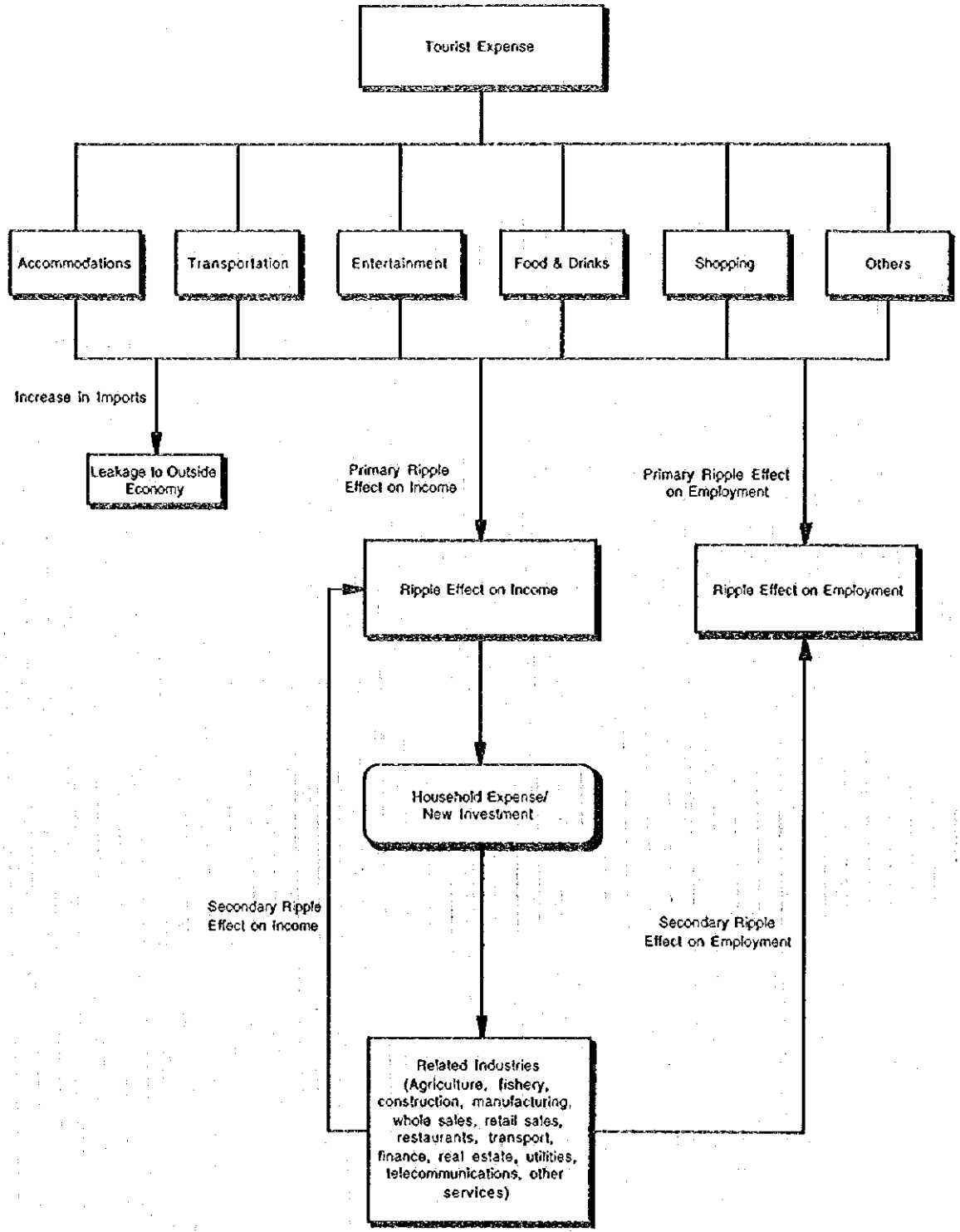
[unit: 1,000 visitors]

		1994	2000	2005	2010
Study Area	Foreign	211	995	1,518	2,361
	Domestic	404	1,271	2,080	2,889
	Total	615	2,266	3,598	5,250
Quang Tri	Foreign	8	35	87	217
	Domestic	10	31	51	71
	Total	18	66	138	288
TT Hue	Foreign	128	560	750	1,000
	Domestic	159	500	818	1,137
	Total	287	1,060	1,568	2,137
QN Danang	Foreign	70	380	620	870
	Domestic	227	712	1,165	1,618
	Total	297	1,092	1,785	2,488
Qang Ngai	Foreign	5	20	61	274
	Domestic	8	28	45	63
	Total	13	48	106	337

Source: JICA Study Team

Tourists spend money usually for accommodation, transportation, entertainment, food and drinks, shopping and others. They increase the income of households and companies engaging in those tourism businesses. At the same time employment is increased to facilitate the increased business markets. These are the direct effects. In turn, receiving those impacts, industries related to tourism businesses are activated and increase their production, investment and employment. Those related industries include agriculture, fishery, construction, manufacturing, whole sales, retail sales, restaurants, transport, finance, real estate, utilities, telecommunications, other services. They are the indirect effects. This relationship is illustratedillustrated in Figure 7.1.

Figure 7.1 Economic Effects



Source: JICA Study Team

7.2.1 Direct Economic Effects

1) Increase in Tourist Expenditures

Increase in foreign exchange earnings, employment and Government revenues are the major direct economic impacts. The primary input for these impacts are tourist expenditures. The tourism authority estimates that a foreign tourist spends for accommodation about US$40 dollars per day in 1995 during the visit in the study area. According to the tourism survey in Okinawa, Japan, tourists spend 35% of total expenditure for hotels. So we can make an inference that foreign tourist spends about US$114 in all per day and on average. In addition, it is expected that the expenditure would increase 3 - 3.5% annually for the next 15 years based on the international tourism survey in Thailand by the OECF study team. Then, the daily expense of foreigners would be approximately US$178 in 2010. On the other hand, UNESCO's tourism study in Hue estimates that domestic tourists spend 30 - 50% of the foreigners. So we can estimate that domestic tourists spend US$45.6 in 1995 and it would be US$71.2 in 2010, if we employ the 40% assumption. With introducing the forecast on visitors about their numbers and average length of stay, we can get the total expenditure of tourists in the study area as is summarized in Table 7.2.

Table 7.2 Expected Tourist Expenditures

unit: US$1,000

		2000	2005	2010
Central Region	Foreign	369,028	644,093	1,102,540
	Domestic	168,806	332,782	542,663
	Total	537,834	976,875	1,645,203
Quang Tri	Foreign	6,862	17,057	50,163
	Domestic	2,460	4,026	6,609
	Total	9,322	21,083	56,772
TT Hue	Foreign	229,562	360,919	570,341
	Domestic	67,738	134,180	218,772
	Total	297,300	495,099	789,112
QN Danang	Foreign	128,683	254,158	418,666
	Domestic	96,427	191,008	311,427
	Total	225,110	445,167	730,093
Qang Ngai	Foreign	3,921	11,959	63,370
	Domestic	2,180	3,567	5,856
	Total	6,101	15,527	69,226

Source: JICA Study Team

2) Increase in Income

The total income increase of households and enterprises amounts to 30 - 40% of the tourist expenditures according to the tourism study in Okinawa, Japan, and 37.8% in Thai case in the OECF study. The application of a 35% ratio in this study is shown in Table 7.3.

Table 7.3 Expected Increase in Income by Tourist Expenditure

unit: US$1,000

	2000	2005	2010
Central Region	188,242	341,906	575,821
Quang Tri	3,263	7,379	19,870
TT Hue	104,055	173,285	276,189
QN Danang	78,789	155,808	255,532
Qang Ngai	2,135	5,434	24,229

Source: JICA Study Team

3) Increase in Foreign Exchange Earnings

Foreign tourists' expenditure contributes to increase foreign exchange earnings. If the expenditure increases, however, also the imports increase in order to meet the increased demand for those products, which are not produced domestically. The import represents foreign currency directly lost from the local economy. The amount of imports or "leakage" depends on the import share of tourist spending. The UNESCO's study estimates that current imports use only 20 - 30% of the tourism receipts, but this may be assumed to double by the year 2000 if the planned number of international standard hotels are developed. Thus, the total foreign exchange earnings can be estimated for the case of 40% leakage after 2000 as presented in Table 7.4.

Table 7.4 Expected Increase in Foreign Exchange by Tourist Expenditure

unit: US$1,000

	2000	2005	2010
Central Region	221,417	386,456	661,524
Quang Tri	4,117	10,234	30,098
TT Hue	137,737	216,551	342,204
QN Danang	77,210	152,495	251,199
Qang Ngai	2,353	7,176	38,022

Source: JICA Study Team

4) Generate Employment

Tourism is a remarkable industry, which generates' large employment, since it requires labor-intensive services. Therefore, one of the significant impacts on the economy is considered job creation. Its direct impact on the labor market reaches those of hotels, transport, entertainment, restaurants, souvenir shops and so on.

At first, the hotel business generally demands employees in proportion to the number of rooms and in accordance with the hotel classes. Table 7.5 shows the planning parameter of the ratio of employees per room.

Table 7.5 Planning Parameter for Hotel Employment Creation

(unit: employee/room)

Hotel class	Employment
Hotel de luxe	2.0
****	1.2 - 1.8
***	0.8 - 1.2
**	0.6 - 0.8
*	0.4 - 0.6

Source: JICA Study Team

This study employs 1.6 for high class hotels, 1.0 for mid class ones, and 0.6 for low class ones, considering wages in the region.

Job creation in other tourism industries was estimated in the tourism study in Okinawa, Japan. This study shows that the other industries require jobs in proportion to the hotel employees. The ratios are 0.5 for transportation, 0.15 for entertainment, 0.45 for food & drink, 0.35 for shopping, 0.1 for others. Thus, 1.55 times of the number of hotel employees would be created in other tourism industries. The application of this result in this study is shown in Table 7.6.

Table 7.6 Expected Direct Job Creation

unit: jobs

	2000	2005	2010
Central Region	3,000	10,300	23,000
Quang Tri	200	500	1,400
TT Hue	1,900	6,100	12,000
QN Danang	800	3,300	7,800
Qang Ngai	100	400	1,800

Source: JICA Study Team

7.2.2 Indirect Economic Effects

1) Effect on Income

Indirect economic effect or secondary ripple effects of tourist expenditures is nothing but a multiplier effect in the economy. That is, income increase of households and enterprises triggers additional investments and jobs since the enterprises expect the additional demand. The multiplier effect on income of households and enterprises totals some 40 - 50% of the tourist expenditure in Okinawa's case. The application of 40% in this study is shown in Table 7.7.

Table 7.7 Indirect Effect on Income Increase

unit: US$1,000

	2000	2005	2010
Central Region	215,134	390,750	658,081
Quang Tri	3,729	8,433	22,709
TT Hue	118,920	198,039	315,645
QN Danang	90,044	178,067	292,037
Qang Ngai	2,440	6,211	27,690

Source: JICA Study Team

2) Effect on Employment

On the other hand, indirect economic effects or secondary ripple effects on employment are estimated at 195% of the hotel employees. The application of this result in this study is shown in Table 7.8.

Table 7.8 Indirect Job Creation

unit: jobs

	2000	2005	2010
Central Region	3,900	12,900	29,100
Quang Tri	300	600	1,800
TT Hue	2,400	7,700	15,100
QN Danang	1,000	4,200	9,900
Qang Ngai	200	400	2,300

Source: JICA Study Team

7.2.3 Social Effects

These effects include those, which are difficult to estimate in monetary terms, or those which can not necessarily be justified from the economic point of view, but are accepted from the other, so to speak, social purposes.

1) Increase in the Government Revenue

Economically speaking, the Government revenues including taxes, tariffs and other charges are just transfer items. However, improvement of the budget allows the Government to spend more funds for other important items such as welfare. It strengthens the confidence of the people in the Government activities and stabilizes the nation.

2) Improve Social Infrastructures

The projects include improvement or construction of social infrastructures such as roads, bridges, water supply, sewerage, flood protection, and other facilities. Not only tourists but also the residents can enjoy the benefits from such infrastructures such as convenience, comfort, sanitation, and safety. These facilities improve the life of the area and increase the real income of the people measured in "utility" (in the usage of theoretical economics). In addition, improvement of infrastructures has an effect to decrease regional economic disparities with a large number of people utilizing those facilities without restrictions.

3) Other Benefits from the Facility Construction

In addition to infrastructures, many other facilities for tourism are planned to be build. Some of them have effects to conserve historical assets and to conserve the natural environment. Constructing facilities for attracting many tourist to the region can be consistent with keeping "treasuries" of the nation, if the tourism development is carried out with a deliberated plan.

4) Improve Reputation in Larger People

As the larger number of people come to know the region through tourism, it is expected not only that investments of other sectors are attracted, but that the residents have confidence in their region. Sharing such confidence by the residents is very important for improving the region in the future.

5) Mitigate Opposite Effects

Without a well-coordinated plan, tourism development would bring about conflicts between tourists and residents in the region. For example:

- Insolent behavior of tourists in historical and/or religious places, especially through inappropriate dresses
- Illegal trade and exportation of antiques
- Vandalism and graffiti
- Communication problems between tourists and tourism employees
- Commercialization of culture, and
- Unorganized tourism flows creating overcrowding and spoiling the tranquil atmosphere.

Some of these opposite effects could be mitigated through a development plan, especially preparing tourist information center, and signs as well as training program for employees.

CHAPTER 8

INSTITUTIONAL ARRANGEMENT

CHAPTER 8 INSTITUTIONAL ARRANGEMENT

8.1 BASIC ORGANIZATION STRUCTURE

The study recommends that the proposed three projects be under the control of the Central Region Development Committee (CRDC). The CRDC will have a Project Management Unit (PMU) for tourism development in the central region, which will be organized by responsible representatives from provincial governments and professional management consultants. The main functions of the PMU may include coordinating the central, provincial and district/commune governments, taking budgetary measures and identifying fund sources for the projects, improving human resource development in tourism related industries, monitoring the progress/results of the proposed projects. The CRDC can receive foreign loans/grants through the central government and distribute them to implementing organizations. The CRDC will be supervised by a Central Steering Committee for tourism development at the central level, which assumes the function of important policy making. The responsible line ministry in the central government level will be the Vietnam National Administration of Tourism. Actual project's implementation will be carried out by organizations, which are responsible for operation and maintenance of the activities or facilities.

Figure 8.1 Implementing Agencies

SUB-PROJECT NAME	IMPLEMENTATION AGENCIES				
	Line Ministry	CRDC	Local Government	Development Corporation	Private Invester
Tourism Infrastructure Improvement	□	□■	□▨	□	(■▨)
Hoi An TPZ Development	□	□■	□▨	□▨	■▨
Lang Co TPZ Development	□	□■	□	□▨	■▨

LEGEND: □ Coordination/Administration ▨ Operation and Maintenance ■ Construction

NOTE: ( ) shows private investment to a part of tourist facilities such as restaurants and shops.

Source: JICA Study Team

8.2 INSTITUTIONAL ARRANGEMENT FOR THE TOURISM INFRASTRUCTURE IMPROVEMENT PROJECT

Due to the characteristics of tourism products, the proposed projects involve many kinds and levels of governmental agencies. Therefore, clear assignment of implementation agencies and coordinating organizations should be realized.

With respect to the tourism infrastructure improvement projects, road projects for tourist accessibility improvement involve national highways, provincial roads, and district roads. The responsible line ministry for road development is MOT, but actual construction will be carried out by different administration levels in accordance with road classification. On the other hand, many of tourism related projects such as water supply and sewerage works, which are usually managed by local government, should be implemented in coordination with the road projects.

VNAT (Vietnam National Administration of Tourism) will act as the responsible line agency at the central government level. The responsibilities for actual implementation of each sub-project will rest with relevant line-agencies of the local government concerned.

A Project Steering Committee (PSC) will be established as a coordinating body at the central government level as well as the final decision maker regarding project implementation. The PSC will be organized by members dispatched from relevant agencies, such as the Ministry of Finance, Ministry of Planning and Investment, Ministry of Transportation, Ministry of Construction, Ministry of Culture and Information. The VNAT will play the role of secretariat.

Relevant line-agencies of local governments will be responsible for actual implementation of each sub-project of the Tourism Infrastructure Improvement Project. Those agencies will play the following roles in the project implementation such as:

- Planning and design,
- Tendering and contract,
- Site supervision,
- Arrange and confirmation of the budget from Viet Nam's Government for the Dong portion for the sub-project implementation, and
- Payment to the contractor.

8.3 ESTABLISHMENT OF NEW IMPLEMENTING CORPORATIONS FOR TOURISM PROMOTION ZONE DEVELOPMENT PROJECTS

In the case of the tourism promotion zone development projects, the boundary of the project area is clear. It is desirable to establish new implementation organizations, such as Lang Co Tourism Development Corporation and Hoi An Tourism Development Corporation as co-ordinating bodies, which will carry out and manage all tourism related projects in coordination with the various agencies concerned. The main functions of the proposed corporation may include:

- To carry out land preparation and subdivide the land in the zone area
- To carry out building control in the zone area
- To provide environment and sanitary infrastructure in the zone
- To carry out cost allocation of development, and
- To provide preferential institutions for investment in the Zone area, such as preferential taxation, and so on.

One of their important roles is to promote close cooperation with local residents for smooth and effective implementation of the projects. The newly established bodies should also be able to implement tourism related administration functions, such as tourism resource management, development planning, marketing and promotion. The establishment of this kind of implementation organizations under the CRDC is recommended in order to ensure effective implementation, operation and management of the proposed TPZ projects.

1) Hoi An TPZ Development Project

The provincial government will act primarily responsible for the project as an executing agency under the proposed CRDC.

The main management and coordination functions are assumed by the Project Steering Committee (PSC) and the Project Management Unit (PMU). A Project Steering Committee (PSC) will be established as a coordinating body at the provincial government level. The PSC

will be organized by members dispatched from relevant agencies, such as the Department of Construction, Department of Transportation, Department of Culture and Information, Planning Committee, VNAT regional office, representatives of Da Nang City and Hoi An Town, and others. The PMU is composed of the representatives of the provincial government and consultants, which are responsible mainly for the overall and site management of the project. A PMU will be also established at Da Nang City and Hoi An Town. The PSC makes decisions with respect to substantial aspects, such as changes of the sub-projects, annual budget provision, and other crucial matters. However, ordinary and day-by-day decisions will be made by the PMUs in coordination with the related implementing agencies.

2) Lang Co TPZ Development Project

A corporation tentatively called Lang Co Tourism Development Corporation will be established as the executing and operating body of the Lang Co TPZ area development and management. The corporation will be executing and operating the area under the supervision of the CRDC with four divisions of commercial, financial, maintenance, and general affairs as shown at Bali Tourism Development Corporation (BTDC) Organization Chart in Figure 8.2.

Figure 8.2 BTDC Organization Chart