CHAPTER 4
COASTAL ZONE USE CONCEPT

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The Bay of Batangas is blessed with favorable natural conditions. The Bay is central to regional development and also functions as:

- A shipping route for domestic and foreign trade, which is one of the most import activities of the national economy;
- A terminal connecting Luzon Island, the main island of the nation, with Mindoro, Visaya and Palawan Islands and supporting the development of these islands;
- An industrial base which leads the national and regional economy;
- A fishing activity area which provides local residents with food; and
- A window of cultural exhcnage between the main island and the surrounding islands.

In this chapter, the Coastal Zone Use Concept is studied in order to pursue the rational development of the Bay of Batangas from the point of view of coastal zone allocation.

4.1 Present Conditions of the Coastal Region

There are one city and three municipalities located around the Bay of Batangas. They are Batangas City, Bauan Municipality, San Pascual Municipality and Mabini Municipality. In this Chapter, the area which consists of these one city and three municipalities is called the Coastal Region for convenience.

4.1.1 Natural Conditions

The Bay of Batangas is surrounded by land on three sides, and protected by Mindoro, Maricaban and Verde Islands on the south side. The area of the Bay is about 180 sq. km. The width at the entrance is about 16 km. The deepest depth is MLLW-432 m at the entrance of the Bay.

The topography of the inland area north of the Bay is flat and vast. Sea topography of the Bay is steep. Thus, it may well be said that the Bay is a natural harbour blessed with calm and deep water (refer to Fig. 4.1.1).

Other natural conditions concerning the Bay of Batangas are discussed in Chapter 3.

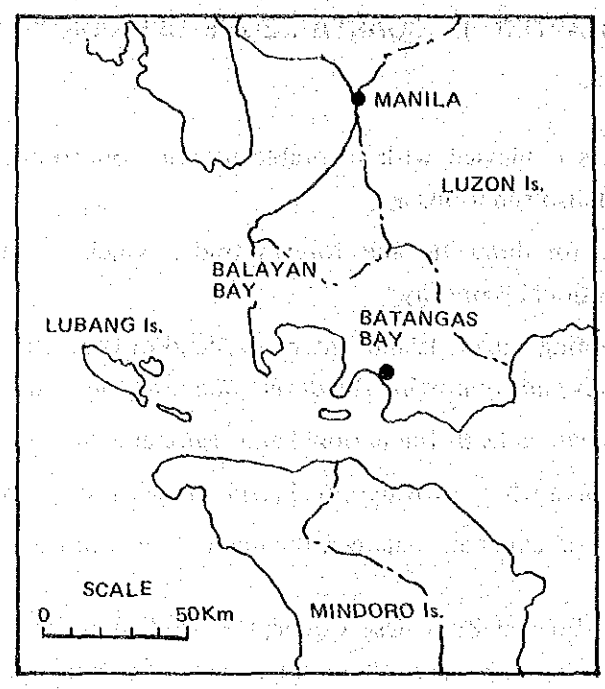

Fig. 4.1.1 Location of Batangas Bay

4.1.2 Socio-economics

The coastal city and municipalities have a total population of 236,948 which constitutes 20.2 percent of the total population of Batangas Province in 1980.

The population density of the Coastal Region is 554 persons/KM^2, which is higher than that of Batangas Province. The population composition of the Coastal Region is shown in Table 4.1.1.

Employment Distribution by Industry in the Coastal Region is shown in Table 4.1.2. The primary sector accounts for half the employment, while the secondary and tertiary sectors each constitute a quarter of the total employment in 1980.

4.1.3 Land Use

The land area of the Coastal Region is 42,971 ha. which comprises 13.6 percent of the land of Batangas Province. The land is classified into urban, agricultural, and "other" categories which are 5,557 ha., 28,879 ha., and 8,535 ha., respectively. The industrial land area is 1,076 ha., 72 percent of which is located within Batangas City.

The present conditions of land use in the coastal area which has a width of about 2 km are shown in Fig. 4.1.2. According to this figure, urban, industrial and agricultural activities are all concentrated in the inner area of the Bay.

Table 4.1.1 Population and Population Density in the Coastal Region

	Population			Land Area (Sq.km)	Population Density (Persons/sq.km)			Population Growth (%)	
	1980	1975	1970		1980	1975	1970	1980~75	1975~70
Batangas	143,554	125,363	108,868	382.96	507	443	385	14.51	15.15
San Pascual	26,202	21,761	19,377	34.95	750	622	554	20.41	12.30
Bauan	43,543	38,200	36,862	66.60	654	573	553	13.99	3.63
Mabini	23,649	21,694	19,522	42.96	550	502	454	9.01	11.13
Total	236,948	207,018	184,629	427.47	554	484	432	14.46	12.13
Province	1,173,767	1,032,009	926,308	3,165.81	371	325	292	13.74	11.41

Source: Provincial Development Staff of Batangas Province

Table 4.1.2 Employment Distribution by Industry in the Coastal City/Municipalities (1980)

	Batangas*1	San Pascual*1	Bauan*1	(Mabini)	Total*2
Primary Sector	20,532	1,041	8,620	N.A.	30,193
Secondary Sector	12,517	1,141	3,210	N.A.	16,868
(Manufacturing)	(7,801)		(2,050)		
Tertiary Sector	9,816	689	5,594	N.A.	16,099
Total	42,865	2,871	17,424	N.A.	63,160

Aource: *1 PASTORA City/Municipality Framework Plan, 1982

Remark: *2 Excluding Mabini Municipality

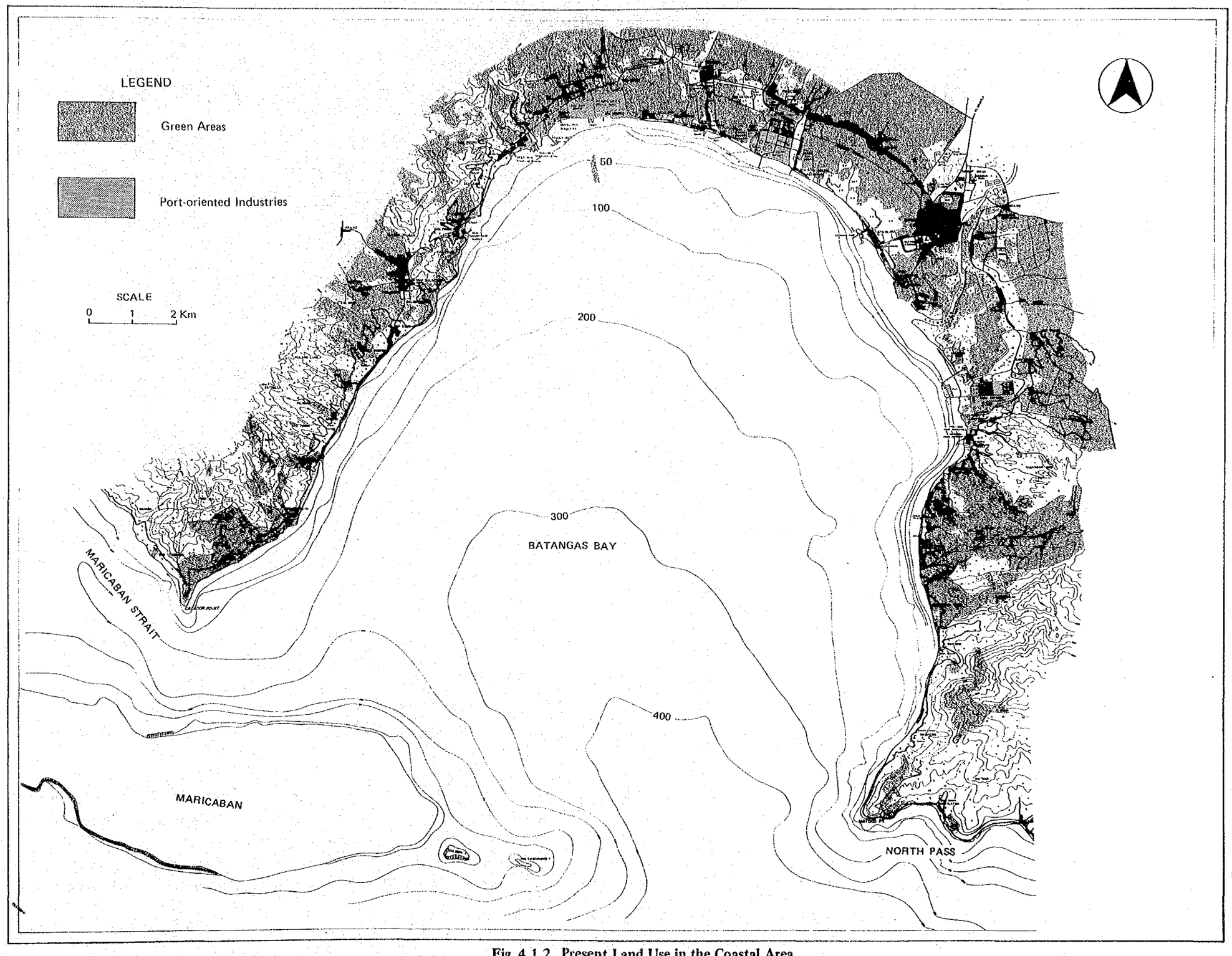

Fig. 4.1.2 Present Land Use in the Coastal Area

The land area of the port-oriented industries which have their own port facilities is 487 ha., 45.3 percent of the total industrial area of 1,076 ha. Land use is summarized in Table 4.1.3.

Table 4.1.3 Land Use in the Coastal Region (1982)

(in hectares)

	Batangas*1	San Pascula*1	Bauan*1	Mabini*2	Total	Province*3
Built-up	1,877	608	1,541	1,531	5,557	
(Industrial)	(780)	(132)	(140)	(24)	(1,076)	
(Port-oriented)*4	((211))	((120))	((136))	((20))	((487))	
Agricultural	19,419	2,712	4,224	2,524	28,879	
Others	7,000	502	835	198	8,535	
(Pasture)	(1,844)		(150)			
(Forest)	(4,956)		(600)			
(Rivers)	(100)		(75)			
(Swamps/ fishponds)	(100)		(10)			
Total	28,296	3,822	6,600	4,253	42,971	316,581

Source: *1 PASTORA City/Minicipality Framework Plan, 1982
*2 Mabini Municipality Development Plan
*3 Provincial Development Staff of Batangas Province
*4 Interview Survey at Private Ports in the Bay of Batangas

Remarks: 1) "Port-oriented" means the large-scale industrial estates with port facilities.

4.1.4 Water Area Use

(1) Shipping Routes

There are many deep seaports along the Bay of Batangas. The Bay is indispensable as an arterial shipping route for foreign and domestic vessels. There are three main routes in the Bay as shown in Fig. 4.1.3. There were about 6,500 port calls at the major ports representing commercial vessels with a total gross tonnage of about eight million tons in total voyage and cargoes of about eight million M.T. in the Bay of Batangas in 1983.

(2) Anchorage and Refuge Areas

Anchorage and refuge areas for use during monsoons are also necessary for shipping activities. In the Bay there are one quarantine anchorage, three anchorages for the base port, seven anchorages for private ports and two refuge areas for use during monsoons. These anchorages are located in shallow water near deep seaports along the Bay.

(3) Fisheries

Fishing activities are also predominant in the Bay of Batangas. Fishing activity areas are shown in Fig. 4.1.3. The total number of vessels and bancas amounts to more than 937, and total production volume amounts to more than 4,751 M.T. Fishing activities are summarized in Table 4.1.4. Such fish species as tuna, round scad, sardines, mackerel, striped tuna, lapu-lapu grouper and red snapper are caught in the Bay.

Marine fish catches in the sea neighboring the Bay of Batangas are landed on its coast by commercial fishing vessels. These are shown in Table 4.1.5. The total fish catch amounts to 7,589 M.T. in 1981.

Table 4.1.4 Fishing Activities in the Bay of Batangas

	Number of Vessels/Bancas			Volume of Production (M.T.)			Value of Production (Thousand Pesos)		
	Batangas	Bauan	Total	Batangas	Bauan	Total	Batangas	Bauan	Total
1) Municipal Fishing									
- Motorized Bancas	603	200	803	2,412	1,119	3,531	24,120	12,952	37,072
- Non-Motorized	-	100	100	-	140	140	-	1,680	1,680
2) Commercial Fishing	34	-	34	989	-	989	9,881	-	9,881
3) Inland Fisheries	-	-	-	91	-	91	914	-	914
Total	637	300	937	3,492	1,259	4,751	31,915	14,632	49,547

Source: PASTORA City/Municipality Framework Plan, 1982

Note: 1) Data of San Pascual and Mabini Municipalities are not available. However, fishing in these municipalities is not regarded as so active.

2) The number of fishermen can be regarded as the same as the number of vessels/bancas.

Table 4.1.5 Quantity of Marine Fish Landed by Commercial Fishing Vessels

Unit: M.T.

	1978	1979	1980	1981	1982
Batangas City	6,764	8,231	8,028	7,589	1,750
Batangas Province	6,764	13,489	15,743	13,604	2,692
Region IV	64,240	65,680	63,380	57,084	58,517

Source: Fisheries Statistics of the Philippines, 1982

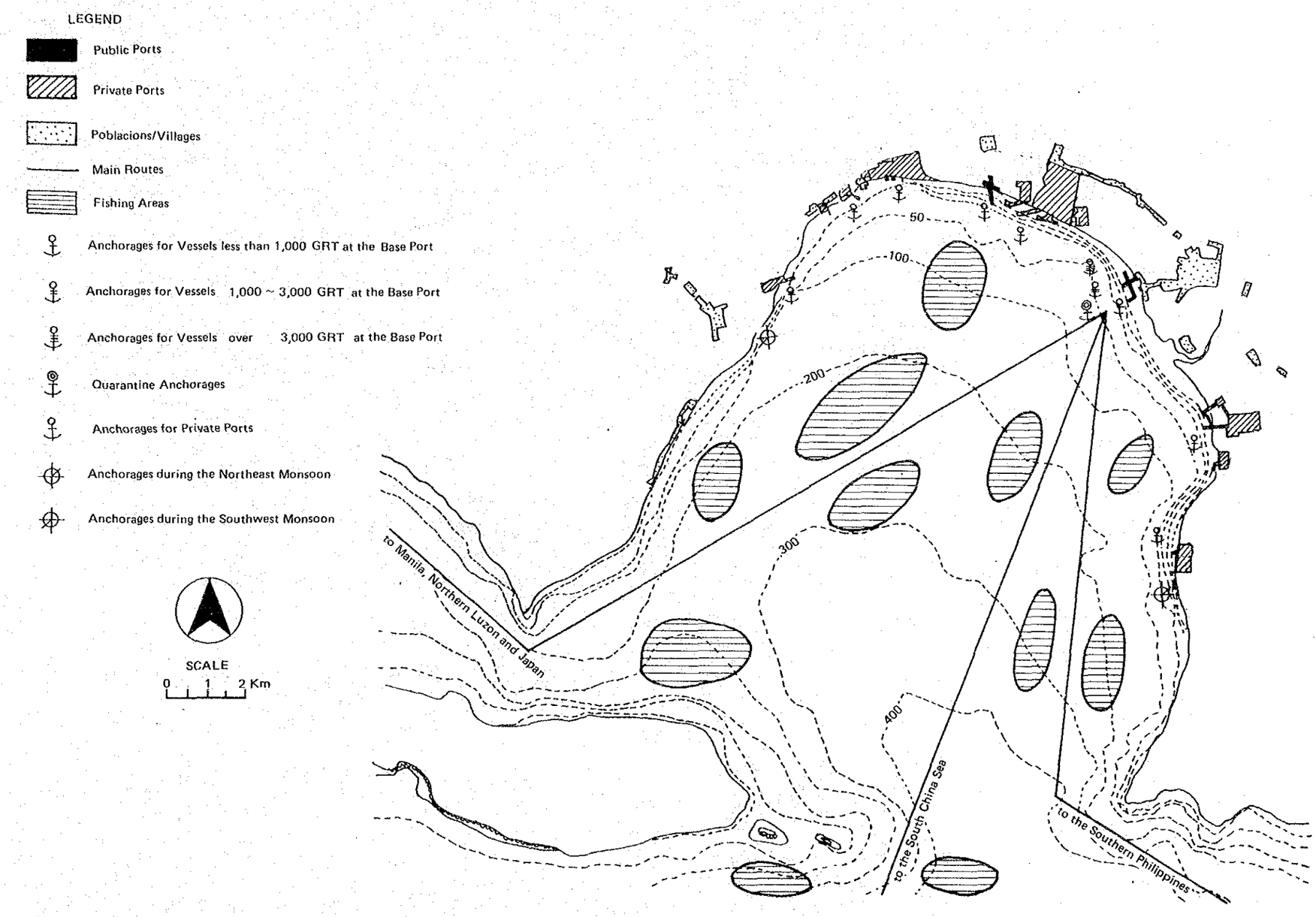

Fig. 4.1.3 Present Conditions of Water Area Use

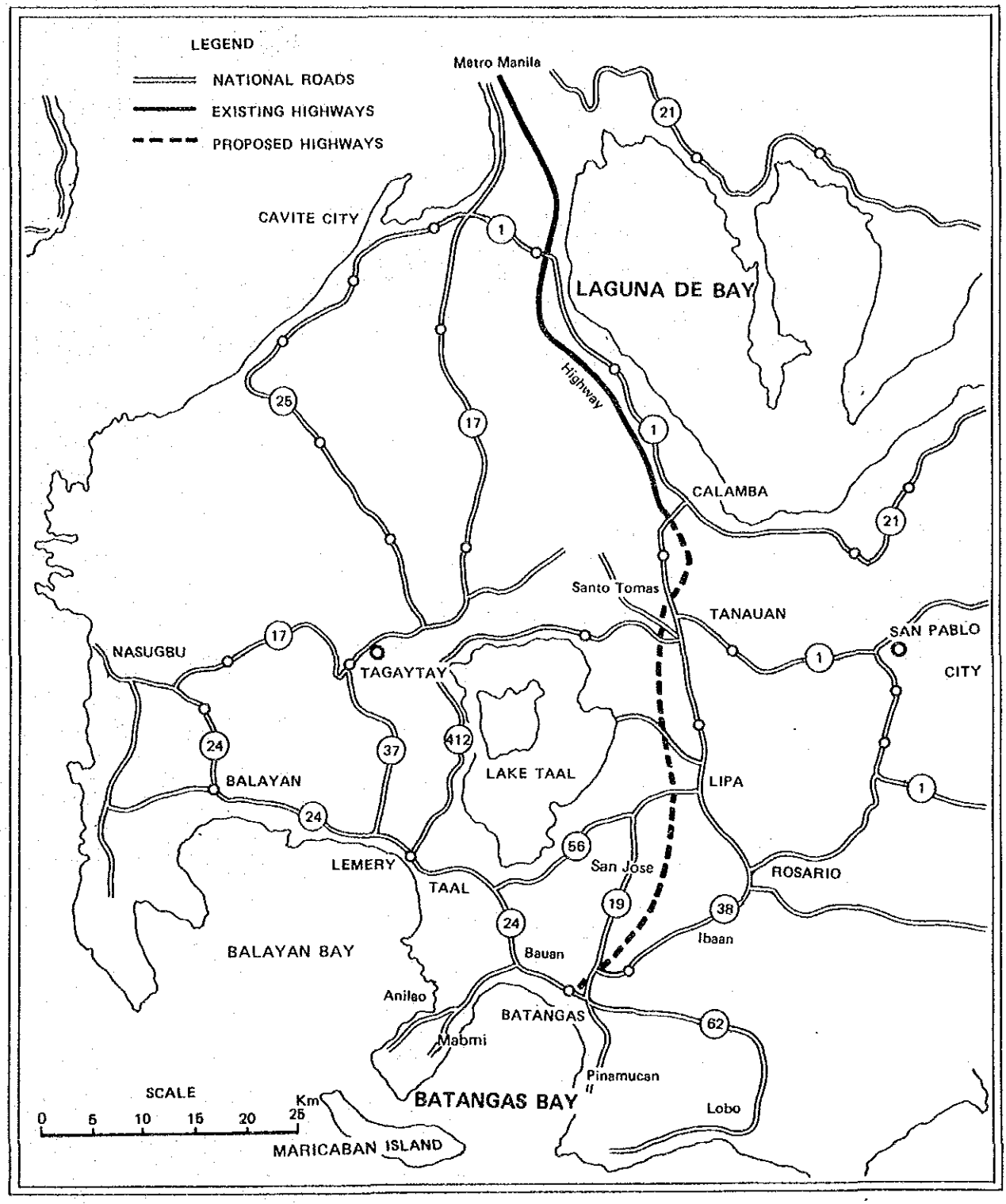

Fig. 4.1.4 Network of Major Roads in the Hinterland

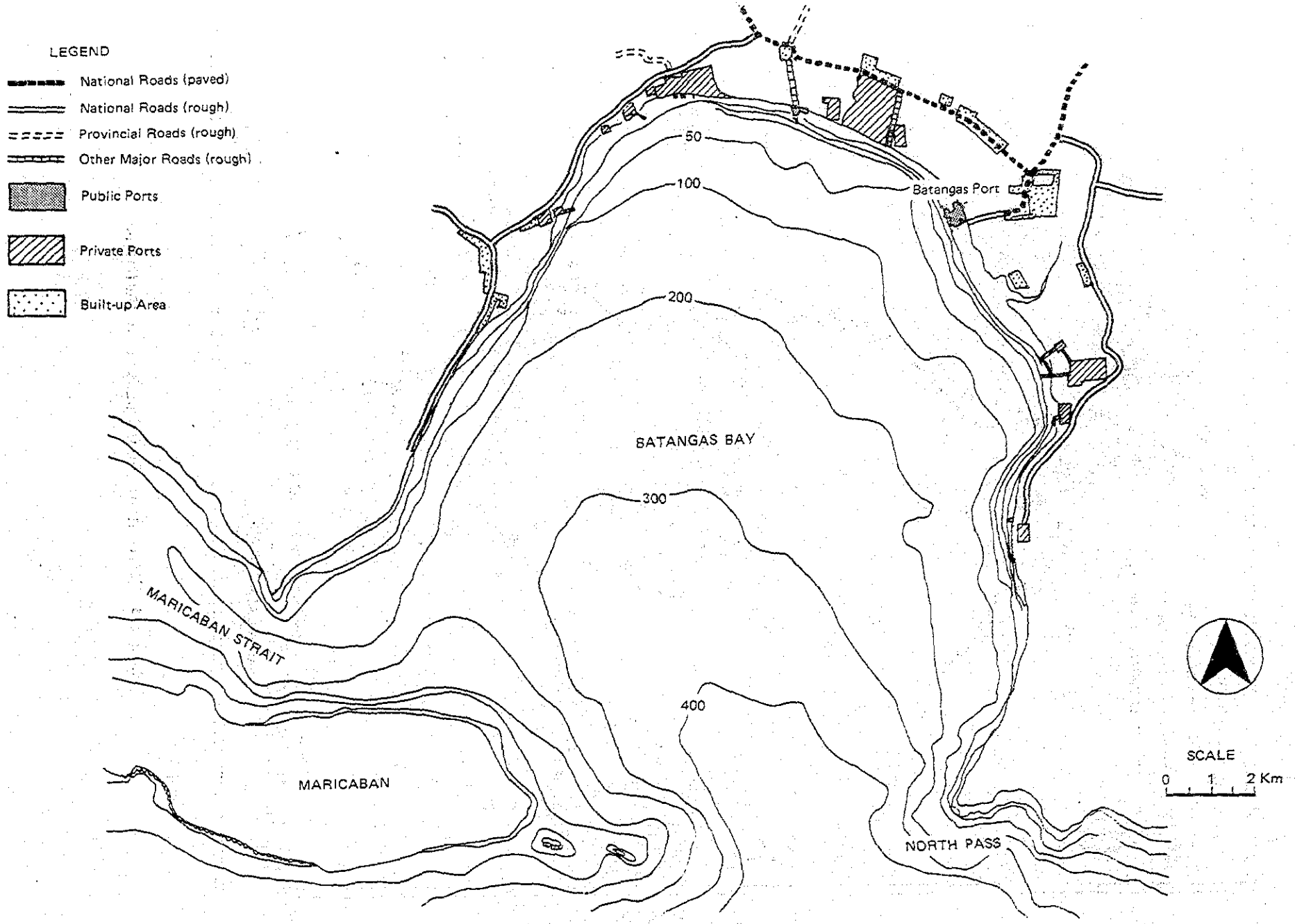

Fig. 4.1.5 Present Road Network Along the Bay

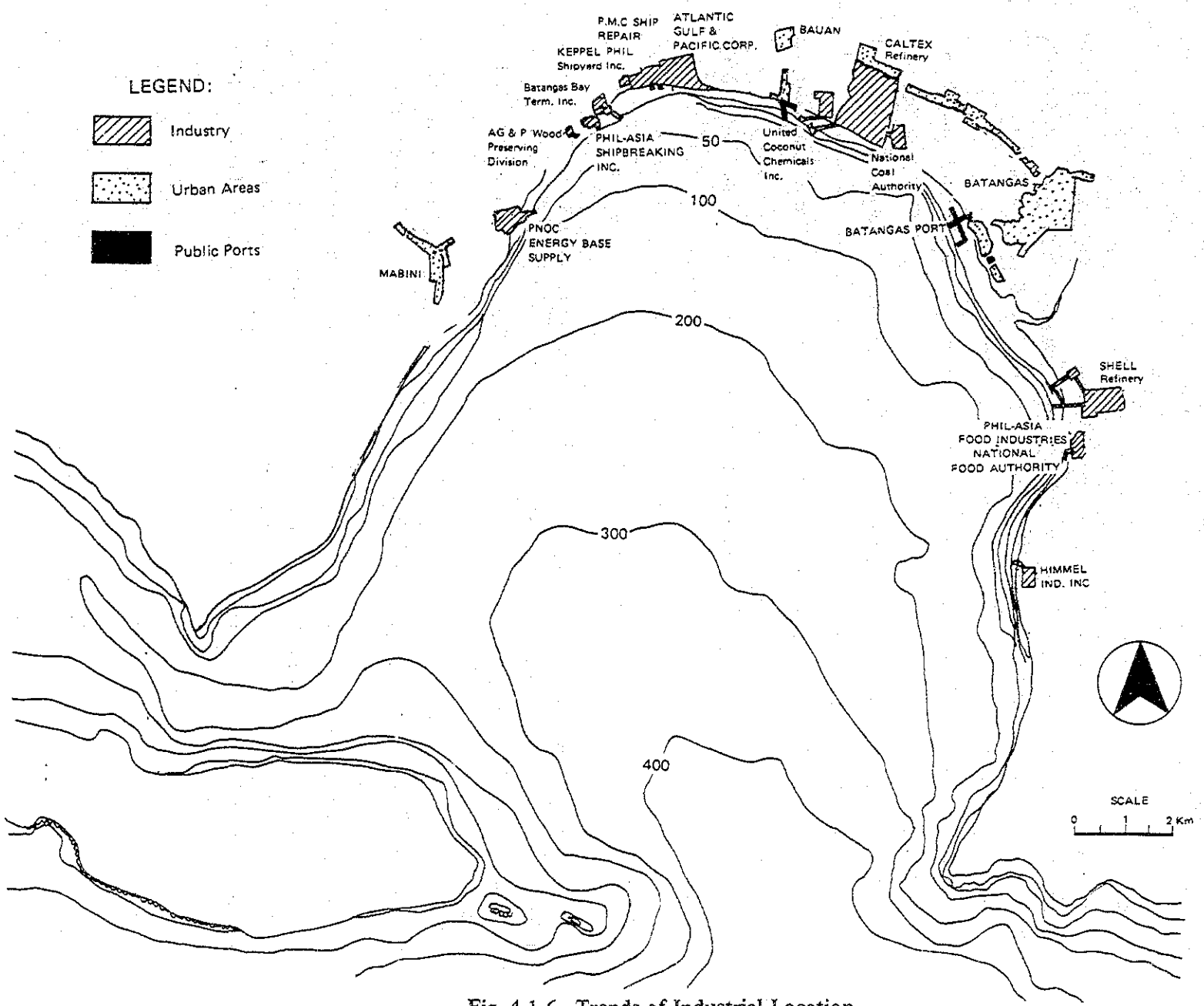

Fig. 4.1.6 Trends of Industrial Location

4.1.5 Transportation Facilities

(1) Ports

There are currently one base port, one municipal port and thirteen private ports in the Bay of Batangas. The details of these ports are described in Chapter 2.

(2) Roads

The road network in the hinterland of the Bay of Batangas is shown in Fig. 4.1.4. The road network along the Bay is also shown in Fig. 4.1.5. Among major roads, national roads Route No. 19 and No. 24 are paved. They sustain the regional transport, industry and economy.

However, there are serious transportation problems as follows:

- The condition of the road connecting Batangas Base Port with major routes is rough and traffic is congested;
- Secondary roads connecting industrial estates with major roads between Batangas and Bauan are very rough;
- The national roads between Bauan and Mabini and between Batangas and Pinamucan are also very rough; and
- Secondary roads connecting agricultural land with major roads are not sufficiently developed.

4.1.6 Industrial Location

The industrial facilities located along the Bay of Batangas are listed in Table 2.2.2. Some of the industries which maintain these facilities are important to the national economy; others function as regional suppliers of basic commodities. All of them enjoy the advantages of the Bay of Batangas.

The total land area used by industrial firms is shown in Table 4.1.6. According to this table, the number of new establishments has been constant, but the land area used by new firms has increased gradually.

Interviews weere conducted by the study team at these existing industrial firms. According to members of these firms, they have no intention to expand land areas by the year 2,000, except for BBTI. The team concluded that by improving production facilities and efficiency, it is possible to expand production capacity by the year 2,000 without using more land at the existing sites.

Table 4.1.6 Trends of Industrial Location

Operational Year	~1975	1976~1980	1981~1984	1985~*2
Total number of newly-established firms*1	6	2	2	2
Total land area of newly-established firms (ha.)*1	406	22	57	96

Source: The Study Team
Note *1: Excluding firms for which data are not available.
*2: under construction

4.1.7 Present Problems

Analyzing present conditions, the present problems of the Coastal Region are summarized as follows:

- Large-scale industries, which presently locate in the region, have little effect on the regional economy other than providing employment.
- Waterfront-oriented industries have located disorderly along the Bay. Consequently, the available waterfront area has become limited.
- Port facilities at the Batangas Base Port, which is a gateway to the southern islands, are insufficient and inefficient.
- Arterial roads other than Route No. 24 are not paved and rough. Major roads connecting industrial estates with arterial roads are also rough. The highway has not yet been extended to Batangas. It presently extends only between Manila and Calamba.
- Mutually beneficial interrelationships (linkages) among industries, between industries and other entities located in urban areas (e.g. banks, universities), and between urban and agricultural areas are not well developed.
- Consideration for the natural environment and urban amenities are lacking.
- There is no fishing development program in the Bay. Thus, the present conditions of fisheries in the Bay have not been adequately researched.

4.2 Trends of Regional Development

At present there are regional development plans and programs concerning the coastal zone of the Bay of Batangas such as the Five Year Regional Development Plan in Region IV, Development Planning Strategy 1980 ~ 2000 A.D. and the City/Municipality Framework Plans.

4.2.1 Related Regional Development Plans

The essence of the present regional development plans concerning the coastal zone can be extracted from these development plans respectively as follows:

(1) Five Year Regional Development Plan in Region IV, 1984 ~ 1987

The region will be confronted with such critical economic and social problems as insufficient and irrational use of resources, imbalanced population distribution, inappropriate use of technology, inadequate infrastructure and gross income inequality. The Corridor Development Strategy was devised to respond to these problems.

The strategy for growth is based on the principle of urban corridor "municipality/city chains" built on main communication axes extending south and southwest from Metro Manila. This will develop and expand new urban/agro-industrial centers that will attract and hold population.

With respect to the Batangas Urban Corridor, the area is endowed with a deep natural harbor which serves industries like petroleum refining and shipbuilding. The strategy for the area calls for the establishment of a Batangas Bay industrial complex based on the petrochemical and coconut processing industries, and shipbreaking, shipbuilding and ship repairs. The Urban Corridor's central role will be strengthened through the establishment of a strong business/commercial center in Batangas City.

(2) Development Planning Strategy, 1980 ~ 2000 A.D.

The development strategy for the Batangas Urban Corridor places emphasis on the expansion of port facilities and the development of port-oriented industries. The past development of the area has been slow, but the potential for growth is there and should be explored. Several large industries have been established in the area such as petroleum refineries, flour mills and shipbuilding and repair facilities. Given the proper impetus through concerted and deliberate action, there is a possibility that the rate of development in the area will accelerate in the near future.

This concerted action would include major public infrastructural investments in the area; provision or improvement of public utilities and social facilities; development of an industrial center, housing communities and shipping facilities; and conservation of the Bay's natural resources for occupational fishing, recreation and tourism.

The separate local units which comprise the Corridor have each written development plans. Batangas City and San Pascual and Bauan Municipalities have formulated framework plans, "PASTORA" (Planning Assistance Service to Rural Areas) which include land use zoning, based on the regional plan of the area.

(3) PASTORA: City of Batangas Framework Plan, 1982

The main thrust of urban development in the city is the expansion and improvement of its international port and harbor facilities, and encouraging the development of port-oriented industries (oil refineries, ship repair, shipbuilding, etc.) around the Bay area which is an ideal site for heavy industries.

This would entail the establishment of an industrial park based on petrochemical industries, industrial machineries, shipbreaking, building and repair in the Batangas Bay area near the existing heavy industries and adjacent to the central business district and main artery or road networks leading to the industrial zone of Laguna.

The probable expansion of existing industries coupled with a deliberate program to attract more industries would spur the level of economic activity through a linkage effect with the different economic sectors of the city that would generate more employment opportunities, and thus raise the income of the city.

A host of measures and actions are needed to implement this strategy and guard against likely environmental hazards. Among these are: (1) enforcement of pollution abatement measures and other industrial safety standards as a prerequisite to the establishment of industries; (2) construction of a two lane highway in order to decongest traffic along the port periphery and for accommodation of a big volume of cargo transport; and (3) encouragement of export-oriented and labor intensive industries.

(4) PASTORA: Municipality of Bauan Framework Plan, 1982

The strategy of the municipality shall follow a path wherein areas with greater opportunities shall be exploited. Recognizing the specified role of the municipality in the regional strategy, its development efforts shall be consistent with the regional plan.

In the industrial sector, the expansion of port facilities and the development of port-oriented industries will be emphasized. Major public infrastructures will be improved: public utilities and social facilities will be provided, and an industrial park, housing communities, and other facilities will be developed.

The coordination between the existing heavy industries and new ones will be promoted in terms of ancillary and support service industries. This would provide pooling and sharing of expertise and establish linkages in terms of industrial requirements. This process may proceed from a single industry to an agglomeration of related and interdependent industries.

Small and medium scale enterprises which are complementary to existing large industries will be encouraged. Such industries provide productive outlets for the talents and energies of enterprising, independent people, many of whom would not fulfil their potential in large organizations. They enhance community stability, do less harm to the physical environment, stimulate personal savings, promote agro-industrial linkages and generally raise the level of popular participation in the economy.

The development of the urban core, specifically the business and commercial centers, will have to be enhanced to cater to growing needs and to absorb capital inflow.

To enhance the mobility of goods to and from commercial centers, repair and rehabilitation of roads and bridges will have to be carried out.

(5) PASTORA: Municipality of San Pascual Framework Plan, 1982

San Pascual's development is crucial to the development strategy of the entire region.

Seen as the critical link in Batangas City-Bauan Corridor, this municipality needs to respond effectively to the development of these two centers to ensure continuous, consistent growth. Although not as developed as Batangas City and Bauan, San Pascual offers the best potential to fulfill both residential and agricultural requirements in the future.

(6) Mabini Municipality Development Plan: 1984 ~ 2000

The plan aims to ensure the enjoyment of a satisfactory quality of life through the development of a well-balanced physical environment where economic, social and cultural activities are freely and fully pursued.

The following are some of specific objectives that will support the overall development goal:

- To effect a balanced and integrated development of all areas of the municipality through rational land use;
- To increase employment opportunities through a balanced mix of economic activities in terms of the development of industry and tourism;
- To preserve and develop forest areas which can be a good watershed for a balanced ecology.

Considering the development plans/programs mentioned above, the central thrust of the regional development plans is to utilize the Bay's natural advantages.

4.2.2 Required Functions of the Coastal Zone

The Coastal Zone of the Bay of Batangas must serve various functions in accordance with the development plans mentioned in the previous section.

Summarizing the regional development plans, the Coastal Zone should include:

- Ports that serve industrial and agricultural development, and function as a center for trade and commodity supply;
- Processing industries based on the existing port-oriented industries, agro-products and port cargoes which encourage local small and medium scale entrepreneurs;
- Port-oriented industries that support the national economy and industry;
- Business and commercial centers along the Urban Corridor Center; and
- Amenity areas which enhance the community.

4.3 Coastal Zone Use Concept

In this section, the Coastal Zone Use Concept is studied considering the functions of the zone in the future in accordance with current regional development plans and present conditions.

4.3.1 Development Principles of the Coastal Zone

Regional development is based on utilizing the advantages of each area.
The advantages of the Bay of Batangas are summarized as follows:

- Natural harbor with deep, spacious and calm waters
- Proximity to the main domestic and international shipping routes;
- Location as the gateway of Luzon to Mindoro, Visayan and Palawan Islands;
- Proximity to the nation's capital, Manila;
- Proximity to the growth center supplying entrepreneurs, skilled labor, and technical assistance from academic institutions;
- Accumulation of large-scale/advanced industries;
- Existence of a favorable agricultural hinterland.

Then, the development principle of this study should be how to utilize these regional advantages in harmony with the natural environment.

4.3.2 Development Policy of the Coastal Zone

Considering the Bay's present conditions, problems and advantages, the development policies of the Coastal Zone will be the following:

1) Port-oriented infrastructure and port-oriented industries will be prior to other functions to utilize the Bay's characteristics to the utmost extent;
2) The Bay's limited space will be utilized for the public benefit in the future as much as possible;
3) Local industries such as processing industries based on port commodities, regional products, and the industrial products of the large-scale industries along the Bay will be promoted;
4) The existing large-scale industrial functions will be still maintained to support future national development;
5) Some portions of the undeveloped coastal space will be allocated for the enhancement of amenities for the local society;
6) The natural environment will be conserved as much as possible to maintain the indigenous coastal resources and fisheries.

4.3.3 Definition of the Coastal Zone

The extent of the Coastal Zone should be understood from the standpoint of the port and the port-oriented industry in this study. It is defined as follows:

- The port will still be developed in the inner part of the Bay, within the confines of an imaginary straight line between Matoco Point and Cazador Point at the entrance of the Bay.
- The port and portions of the port-oriented industrial area will be constructed/reclaimed within the shallow waters less than –20 m in depth. However, deeper parts of the Bay are also important for the region as sea transportation routes. Moreover, as the water is circulating in the Bay, all the waters within the Bay should be considered from the viewpoint of natural environment and marine resources conservation.
- In the future, most of the port-oriented industrial area will still be constructed within the strip of land between the coastline and the national and major provincial and city roads around the Bay. The widest strip is in Sta. Clara. Its width is approximately 2 km. Then, the Coastal Zone on land should be the area with a maximum width of 2 km from the coastline.
- The land areas which surround the Coastal Zone will support and affect its land use, so the whole area of Batangas City and San Pascual, Bauan, and Mabini municipalities other than the Coastal Zone itself should be considered as the Related Area to the Coastal Zone.

The extent of the Coastal Zone and its Related Area is shown in Fig. 4.3.1.

4.3.4 Available Waterfront

The aim of the study is to effectively utilize the limited space of the Coastal Zone. Therefore, we first consider the available waterfront areas.

Waterfronts are divided into fourteen districts from A to N according to geographical characteristics and present land use. The division of the waterfronts is shown in Fig. 4.3.2. Table 4.3.1 shows the present conditions and characteristics of each district. According to this table, possible sites for ports and port-oriented industries are limited. The only available areas are located in Districts E, I and K. Inland Districts GL and HL are also vast and flat, however these areas cannot be used as industrial areas because they are located adjacent to urban areas and other industries and villages hinder their access to the water (refer to Fig. 4.3.3, Table 4.3.2 and Table 4.3.3).

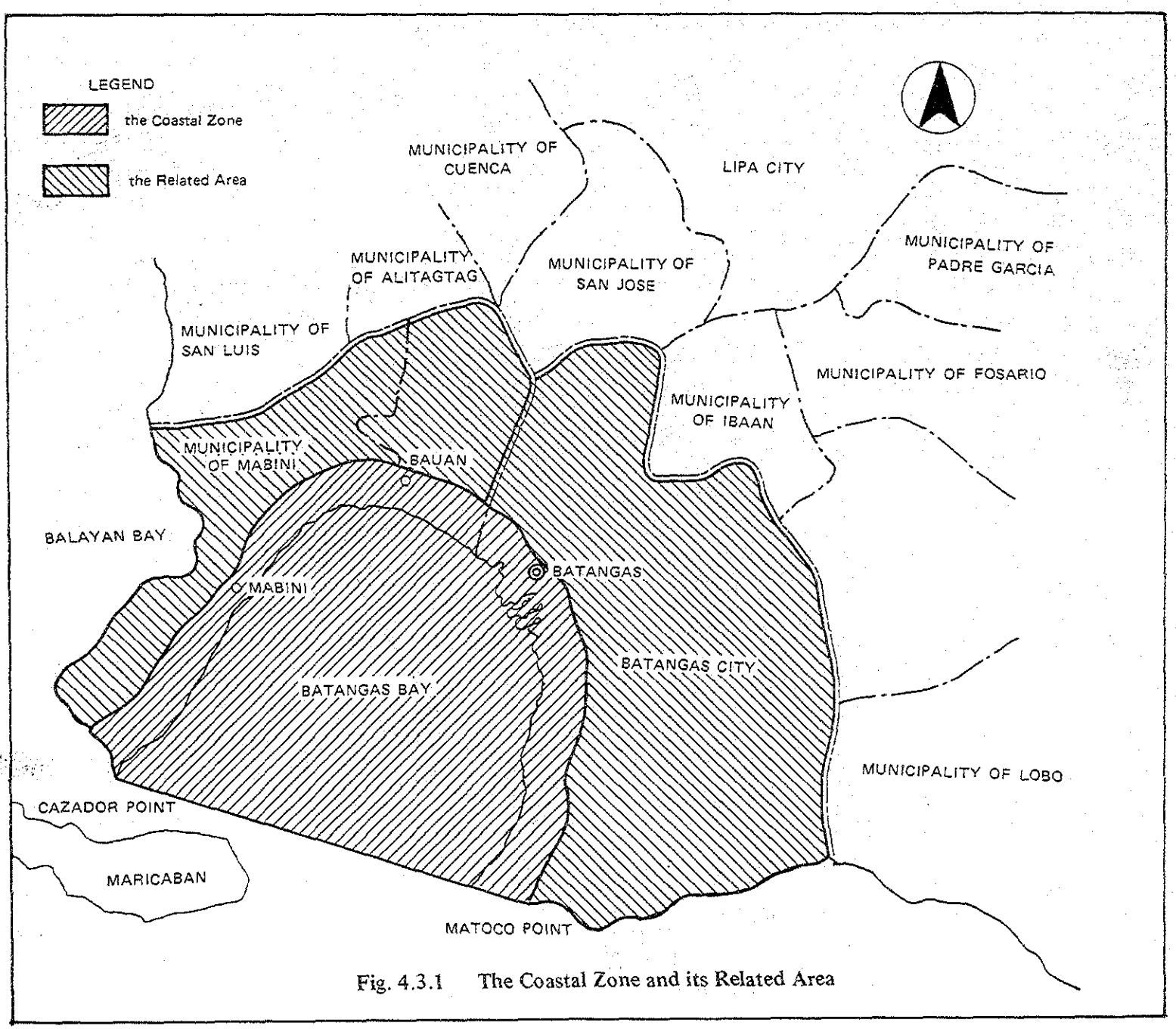

Fig. 4.3.1 The Coastal Zone and its Related Area

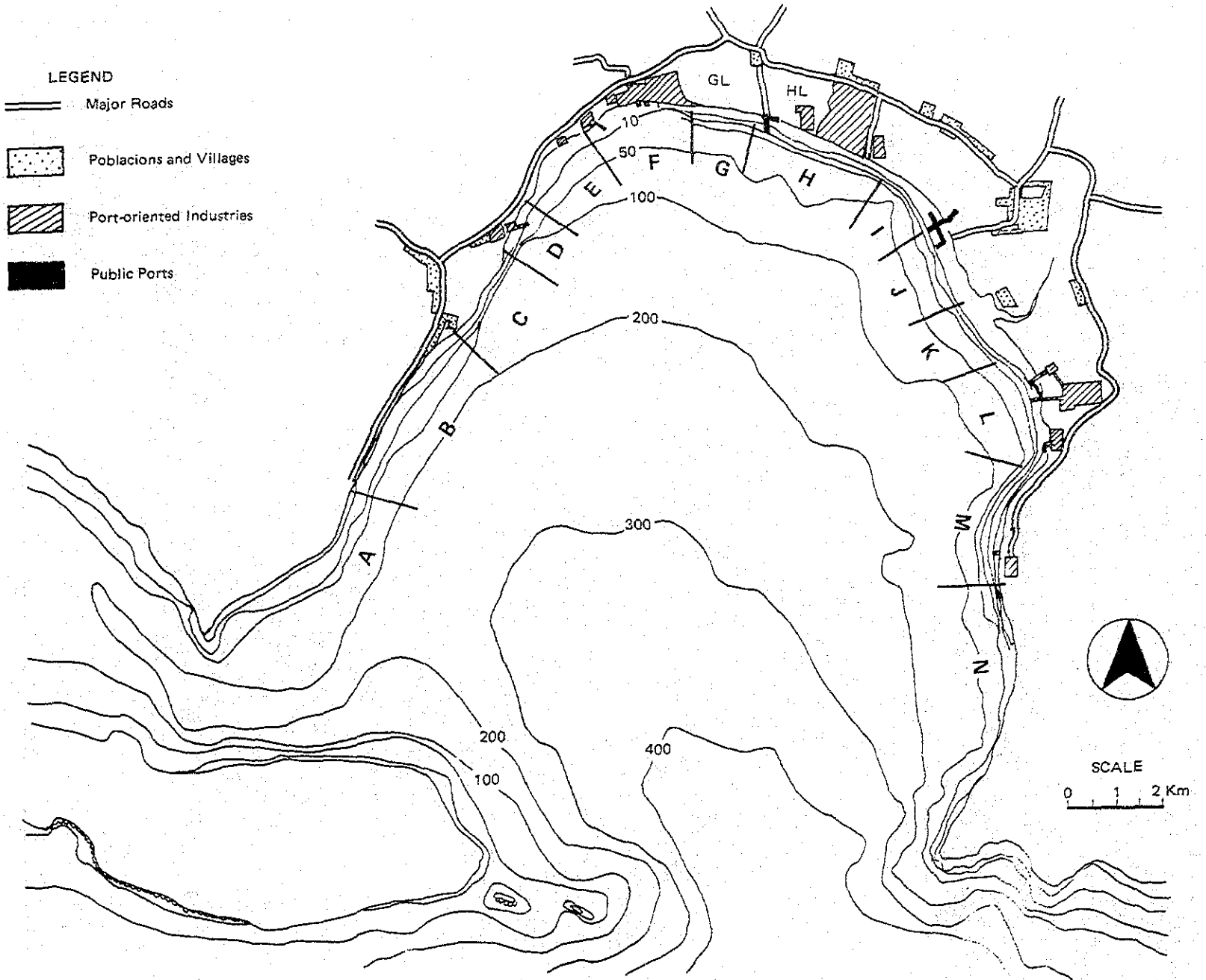

Fig. 4.3.2 Division of the Waterfront

Table 4.3.1 Candidate Sites for Industrial Location in the Coastal Zone

1. District	2. Present Conditions of Waterfront Area	3. Slope of Topography	4. Possibility of Additional Waterfront-oriented Activity	5. Difficulty of Land Reclamation		6. Possibility of Additional Port-oriented Industry/Port
				Engineering Aspect	Environmental Aspect	
A	Nature	Sharp	Impossible	Difficult	Easy	Impossible
B	Villages	Sharp	Impossible	Difficult	Difficult	Impossible
C	Nature	Sharp	Impossible	Difficult	Easy	Impossible
D	A private port	Sharp	Impossible	Easy	Easy	Impossible
E	Villages & ports	Flat	Possible	Easy	Easy	Possible
F	Private ports	Flat	Impossible	Easy	Difficult	Impossible
G	Villages	Flat	Impossible	Easy	Difficult	Impossible
H	Public & private ports	Flat	Impossible	Easy	Difficult	Impossible
I	Fish ponds	Flat	Possible	Easy	Easy	Possible
J	A base port & villages	Flat	Impossible	Easy	Difficult	Impossible
K	An estuary	Flat	Possible	Easy	Difficult*	Possible
L	Private ports	Flat	Impossible	Easy	Difficult	Impossible
M	A port & villages	Sharp	Impossible	Difficult	Difficult	Impossible
N	Nature & villages	Sharp	Impossible	Difficult	Difficult	Impossible

Remark: * Because of siltation

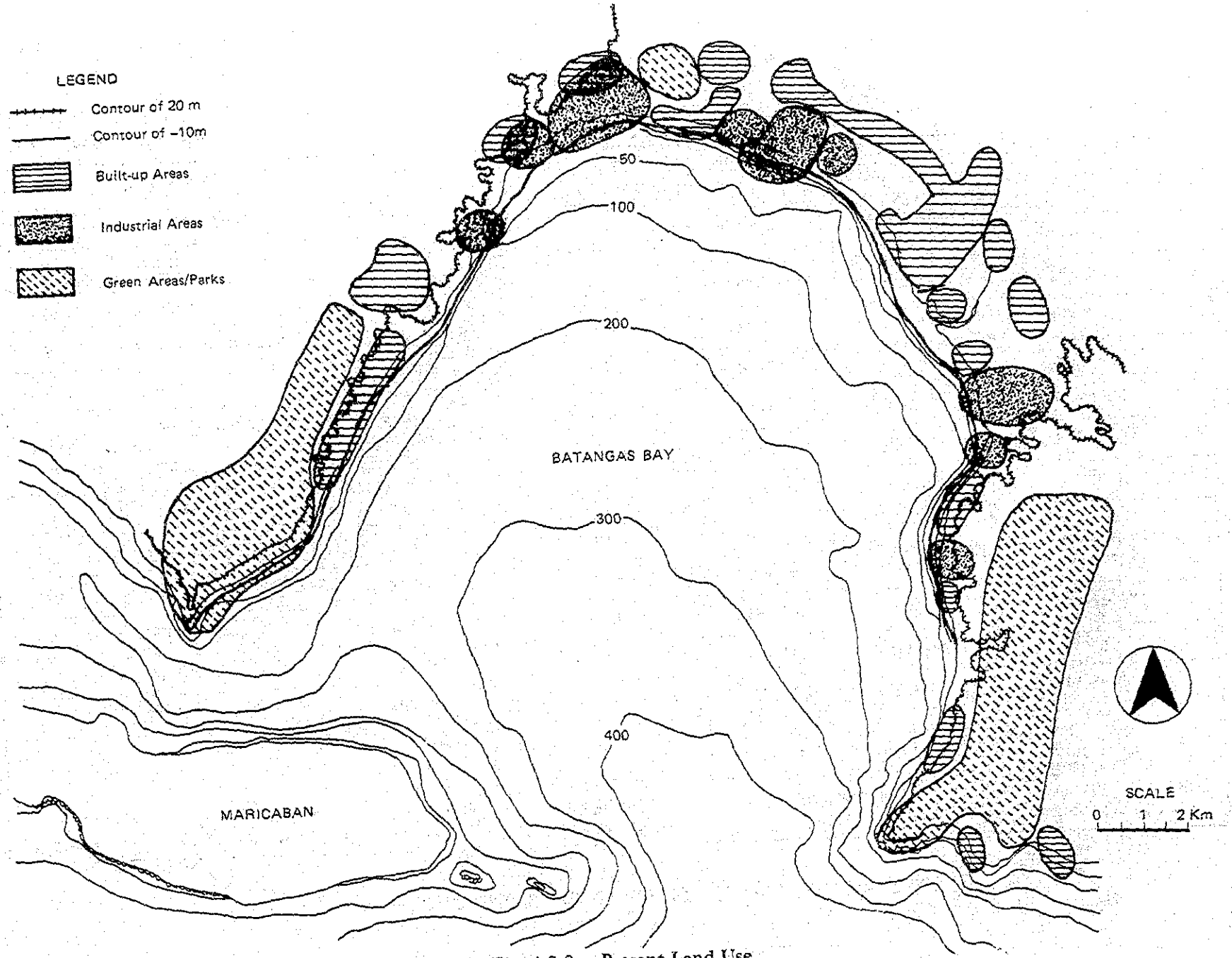

Fig. 4.3.3 Present Land Use

Table 4.3.2 Possible Waterfront Areas for Future Utilization

1. District	2. Present Conditions	3. Adjacent Activity	4. Available Area
E	Villages & ports	Private ports & villages	About 100 ha
I	Fish ponds	Base port, urban area, coal distribution center and oil refinery	About 250 ha
K	An estuary	Urban area & oil refinery	About 100 ha

Table 4.3.3 Possible Inland Area for Future Utilization (without waterfront)

1. District	2. Present Conditions	3. Adjacent Activity	4. Available Area	5. Approachability to the water
GL	Rice paddy	Villages & steel fabrication	About 100 ha	Hindered by villages
HL	Rice paddy	Villages, oil refinery and coco-chemical plant	About 30 ha	Hindered by industry

4.3.5 Alternative Coastal Zone Use Concepts

Coastal Zone Development should be in accordance with regional development policy. The key and leading factors of the coastal zone are the port itself and the port-oriented industries of Batangas Bay.

Therefore, the alternatives should be prepared mainly from the point of view of how to allocate the port area and locate port-oriented industry in the coastal zone, considering the geographical characteristics, present land use and available waterfront areas.

The basic ideas of the allocation of the ports and the port-oriented industries are as follows:

Basic Idea A): Disorderly location of private large-scale industries as in the past

Basic Idea B): Conservation of the natural environment considering the past development of large-scale industries

Basic Idea C): Development of industries, centering on processing industries, required in the region as seen in the various related regional development plans.

The following three Alternative Coastal Zone Use Concepts of the Bay of Batangas can be presented corresponding to three Basic Ideas.

Alternative A: Industrial Development as in the Past

Alternative B: Environmental Conservation

Alternative C: Industrial Development based on Local and Regional Requirements

The three alternatives are described in more detail below.

Alternative A: Industrial Development as in the Past.

Industrial development centered mainly on large-scale and heavy industries will be continued as in the past. The industrial plants will be developed mainly by private firms and government corporations. However, most of the remaining available waterfront area along the Bay will be occupied by the large-scale industries, and new private ports will be constructed by each private company or government corporation according to the locations of the new industries. This alternative is shown in Fig. 4.3.4.

Alternative B: Environmental Conservation

The most important aspect of this alternative is conserving the natural environment and creating amenity areas.

Under this alternative, development will be centered on the creation of amenities for local communities and commercial centers for regional economic growth. It will promote the use of the natural resources of the Bay for recreation, tourism, and the fishing industry.

Meanwhile, the present port functions of the base port and the present industrial functions of the private and governmental corporations along the Bay will still be maintained in the future. This alternative is shown in Fig. 4.3.5.

Alternative C: Industrial Development based on Local and Regional Requirements

The use of the coastal zone is limited by the physical environment of the Bay. Local and regional, as well as national requirements and benefits should be considered in the development of the coastal zone. However, most of the coastline is presently dominated by a small number of large-scale industries. These industries have contributed greatly to the national and regional economy by creating employment opportunities. On the other hand, they prevent local people from utilizing indigenous coastal resources. Besides, there is little relationship between these industries and local entrepreneurs. The commodities, such as agricultural products, industrial products and raw materials, which pass through the port are not related to the local industries, and there is little influence on the local economy.

If many local entrepreneurs establish small to medium scale processing industries near the coast based on the existing large-scale industries, port cargoes, and regional products such as agro-products in the hinterland, they will increase the value added. Thus, the processing industries, large-scale industries and the port itself will all contribute not only to national development but also to local and regional economic development to a great extent.

This alternative would share the benefits of the coastal zone development with the local inhabitants. Similarly, with respect to the port development, the development of the base port will take place in a manner consistent with the principle of maximizing the public utilization of the water area. It seems reasonable that processing industries could be developed in harmony

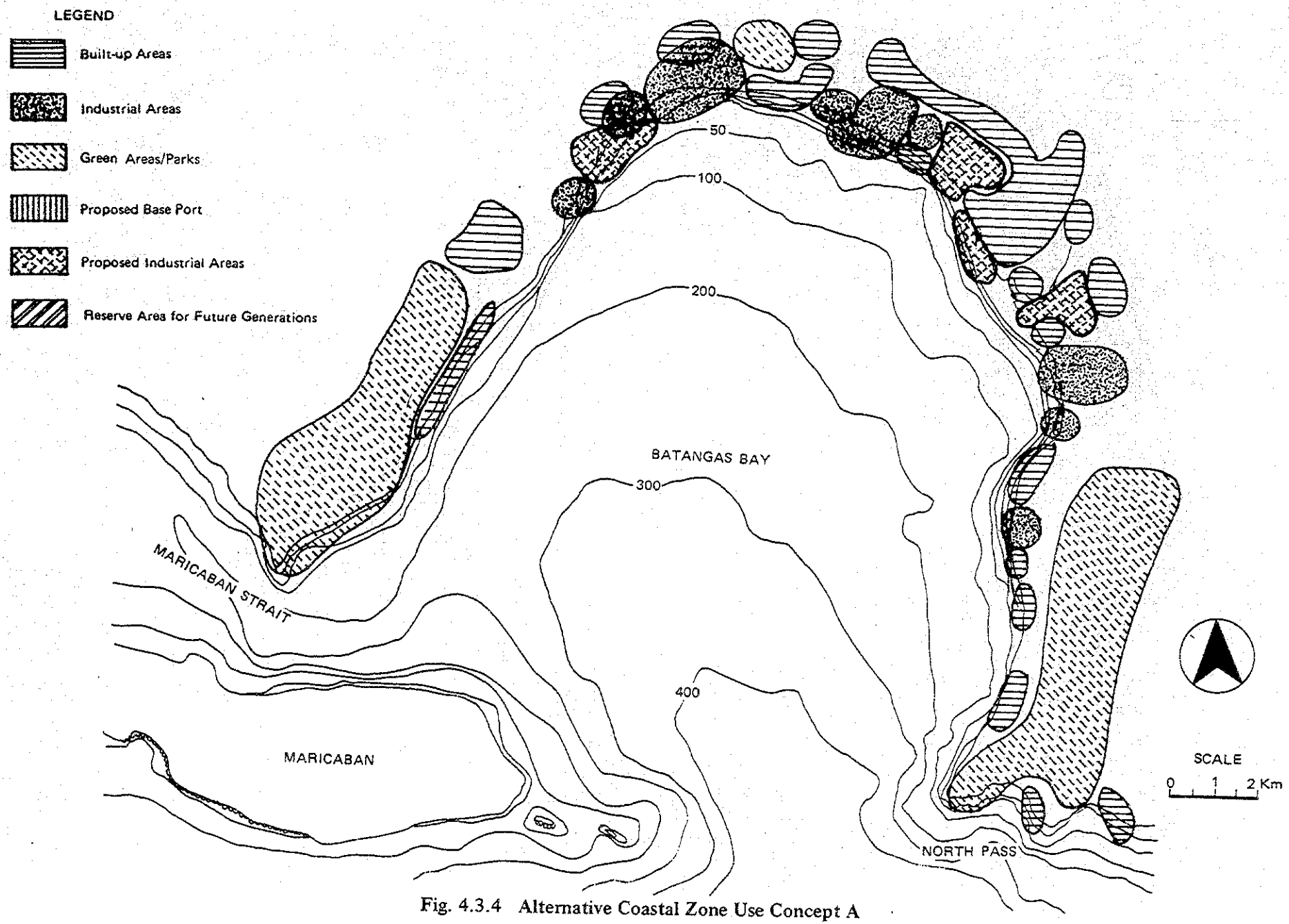

Fig. 4.3.4 Alternative Coastal Zone Use Concept A

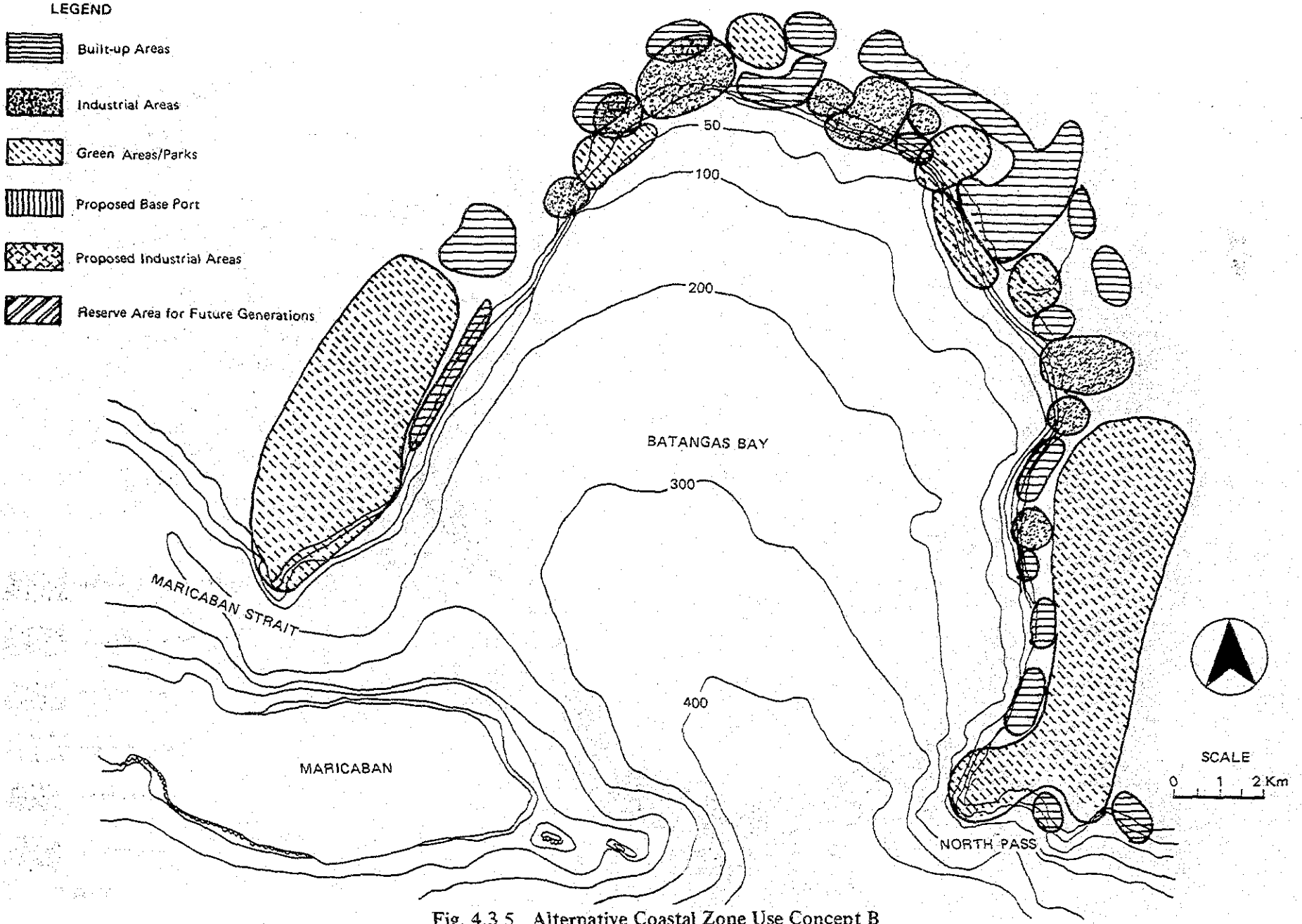

Fig. 4.3.5 Alternative Coastal Zone Use Concept B

with the natural environment.

Thus, the main objectives of this alternative are to secure rational and effective development maximizing public benefit and minimizing environmental damaage.

The concept of this alternative is shown in Fig. 4.3.6.

The relation between the Alternatives and the related development policies described in 4.3.2 can be enumurated as follows:

Concerning Alternative A, private large-scale industries and private ports will disorderly locate in the Bay as in the past. However, this alternative is consistent with development policy 1). Existing private industries and ports, of course, will also be maintained in the future in this alternative, so it is also consistent with development policy 4).

Regarding Alternative B, conservation of the natural environment is emphasized in this alternative. Thus, it is consistent with development policy 6). Environmental conservation will be implemented in connection with and as a part of public utilization of the Bay, so this alternative is also in accordance with development policy 2). Existing large-scale industries and private ports will also be maintained even while conserving the environment. Therefore, development policy 4) is also included in this alternative.

With respect to Alternative C, it aims at encouragement of the processing industry by local entrepreneures based on port cargoes, agricultural products and products at existing large-scale industries, and development of the base port for public utilization. Thus, the industrial aspect of this alternative is consistent with development policies 1), 3), 4), and the development of the base port is consistent with development policies 1) and 2). Alternative C aims not only at industrial and spatial development but also at the comprehensive development of regional amenities, emphasizing the industrial and spatial development mentioned above. Then, this alternative is also consistent with development policies 2), 5) and 6). Thus, this alternative is in accordance with all of the development policies.

The correspondence between the three Alternative Coastal Zone Use Concepts and the development policies described in section 4.3.2 is shown in Table 4.3.4.

Table 4.3.4 Correspondence between the Alternatives and the Development Policies

Alternative	The Development Policy
A, B, C	1) Priority of port-oriented infrastructure and port-oriented industries.
	2) Utilization for the public benefit
	3) Promotion of local industries
	4) Maintenance of large-scale industry
	5) Spatial allocation for amenities
	6) Natural environment conservation

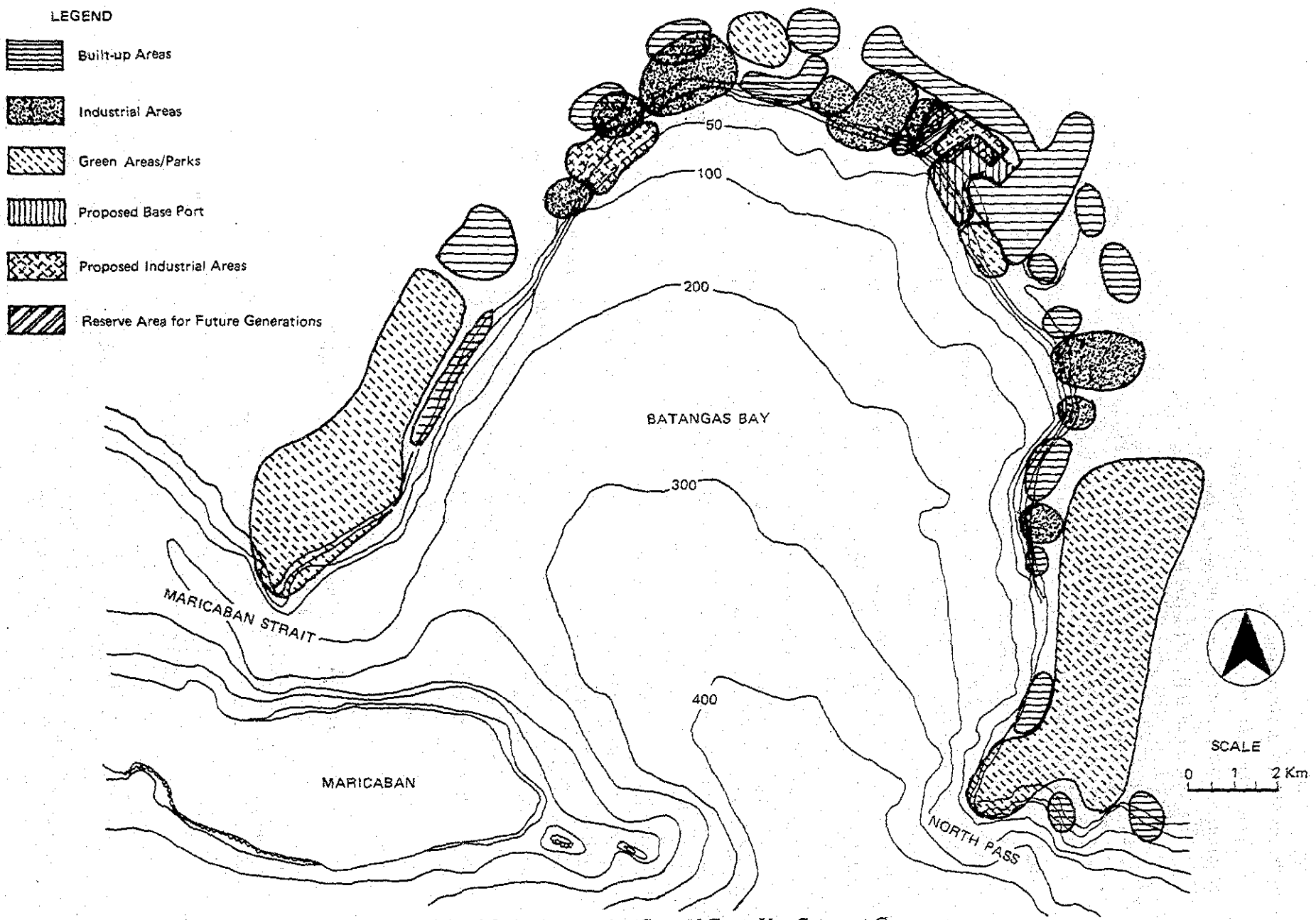

Fig. 4.3.6 Alternative Coastal Zone Use Concept C

4.3.6 Selection of Coastal Zone Use Concept

Considering the present problems of the region and the required functions of the coastal zone, the development objectives of the coastal zone can be enumerated as follows:

a) To utilize the Bay's limited space for the public;

b) To rationalize port development including private ports;

c) To contribute to regional development mainly through the port and port-oriented industries;

d) To contribute to national development mainly through the port and port-oriented industries;

e) To create amenities for the local community; and

f) To conserve the natural environment and develop fishing industries.

All the alternatives are evaluated based on the extent that they achieve the development objectives. The evaluation items correspond to the development objectives themselves.

In Alternative A, the limited space will be occupied not by public, but by private industries. These industries will contribute greatly to the national economy. However, they will not enhance the local economy because they have little relation with local industries. Private ports required by these industries will be constructed by themselves. Accordingly, not only land areas but also water areas will be dominated by these industries. They will also prevent local inhabitants from creating amenities for the local community and may affect the natural environment. Furthermore, it is possible that the new private ports will locate disorderly in the Bay.

Alternative B would effectively conserve the natural environment and create amenities for the local community. The area used for green belts and parks will be maximized. Further, the amenities will be located immediately adjacent to the urban areas. One could say that under this alternative the limited space will be used for the public benefit. It would be easy to rationalize the alignment of ports in the Bay because the number of ports would not be very large.

On the other hand, the growth of the national and regional economy would not be significant as the number of new industries under this alternative would be relatively small.

The main aims of Alternative C are to promote local industries in close relation with cargoes at the base port, regional resources, and existing industries. If these local industries run by local enterpreneurs are promoted, they will contribute greatly to the regional development and the regional and national economy.

Port development in the Bay will be led by development of the base port. The limited waterfront can be utilized for the public benefit and the rationalization of port development can be achieved because the number of new private ports will be small. Portions of the available space will be used to create local amenities, and the natural environment will be conserved because the space used by new facilities will be limited as much as possible. This will be accomplished by developing areas efficiently, and especially by centralizing new development at the base port area.

The result of the evaluation is shown in Table 4.3.5. According to this table, Alternative C is the best alternative as a Coastal Zone Use Concept to acieve the development objective.

Table 4.3.5 Evaluation of the Alternatives

Evaluation Items	Alternatives		
	A	B	C
a) Public utilization of the limited space	△	○	○
b) Rationalization of the port development	△	□	○
c) Contribution to the regional development	□	□	○
d) Contribution to the national development	○	△	□
e) Creation of amenities for the local community	△	○	○
f) Natural environmental conservation	△	○	○

Legend:
- ○ : Suitable to a great extent to achieve the objective
- □ : Suitable to achieve the objective
- △ : Not so suitable to achieve the objective

4.3.7 Key Factors of the Coastal Zone Use Concept

In the previous section, Alternative C is selected as the best Coastal Zone Use Concept. The concept is studied in more detail in this section.

(1) The Central Area of Development

The most important portion of the coastal zone from all viewpoints is the swamp area between the base port and the NCA Coal Blending Terminal which is currently under construction, for the following reasons:

- Size of the flat land (about 400 has.);
- Depth of the water area in front of the land;
- Proximity to the existing base port;
- Proximity to the urban center and availability of entrepreneurial talent, labor, and technical assistance from the college;
- Proximity to the major road and junction;
- Proximity to many industries; and
- Favorable oceanographic conditions (little siltation and calm water area).

(2) The Location of the Base Port

With respect to the location of the new base port, it should be concentrated into one area in the coastal zone where the existing base port is located, taking into consideration the following

points of view:

- The need for accelerated development of the port as a terminal for interisland sea transportation;
- The need for urban and commercial support located close to the base port;
- The desire to rationalize the use of the Bay of Batangas, sea transportation, and land transportation in the hinterland of the base port;
- The possible Extension Project of the South Luzon Expressway to Batangas City; and
- The importance of the area adjacent to the present base port in the utilization of the Bay of Batangas.

(3) The Rational Alignment of Private Ports

There are already thirteen private ports disorderly located around the Bay. Problems resulting from this disorderly development are not yet consipicuous. However, the location of these facilities will affect the rational land and water area use in the future. So, the location of new private ports and expansion of existing private ports should be properly guided by the authorities concerned.

(4) Reserve Area for Future Generations

As the valuable waterfront and land around the Bay is limited, it is important to reserve an area for future development. The Bay of Batangas is destined to play a major role in regional and national development. Thus development around the Bay will surely continue after the year 2000. Valuable land must be reserved for development by future generations.

Specifically, the waterfront area between the proposed site for the development of the base port and the new NCA coal blending terminal should be reserved as a future public port expansion area (refer to Fig. 4.3.6). We expect that newly developing industries including high technology industries and related urban functions will locate in this area after the year 2000. Thus, this area will be a prime location within the central area of the Bay mentioned in Section 4.3.7 (1).

(5) Water Area Use

The water area will be used for shipping routes, anchorages, refuge anchorages during monsoons, and fisheries in the Bay as in the past. Water area use will not change greatly by the year 2,000. However, the use of the water area should be considered more carefully than at present.

i) Shipping Routes

The number of ship calls will increase greatly in the future. The safety of sea transportation in the Bay should be maintained in the future. Safety depends on sailing routes, ship size, oceanographical conditions, ship cargoes, fishing areas, port locations and other factors. Therefore, shipping routes should be aligned from the viewpoint of safe sea transportation.

The proposed alignment of main routes should be shifted slightly to the north in accordance with the expansion of the base port. These are shown in Fig. 4.3.7.

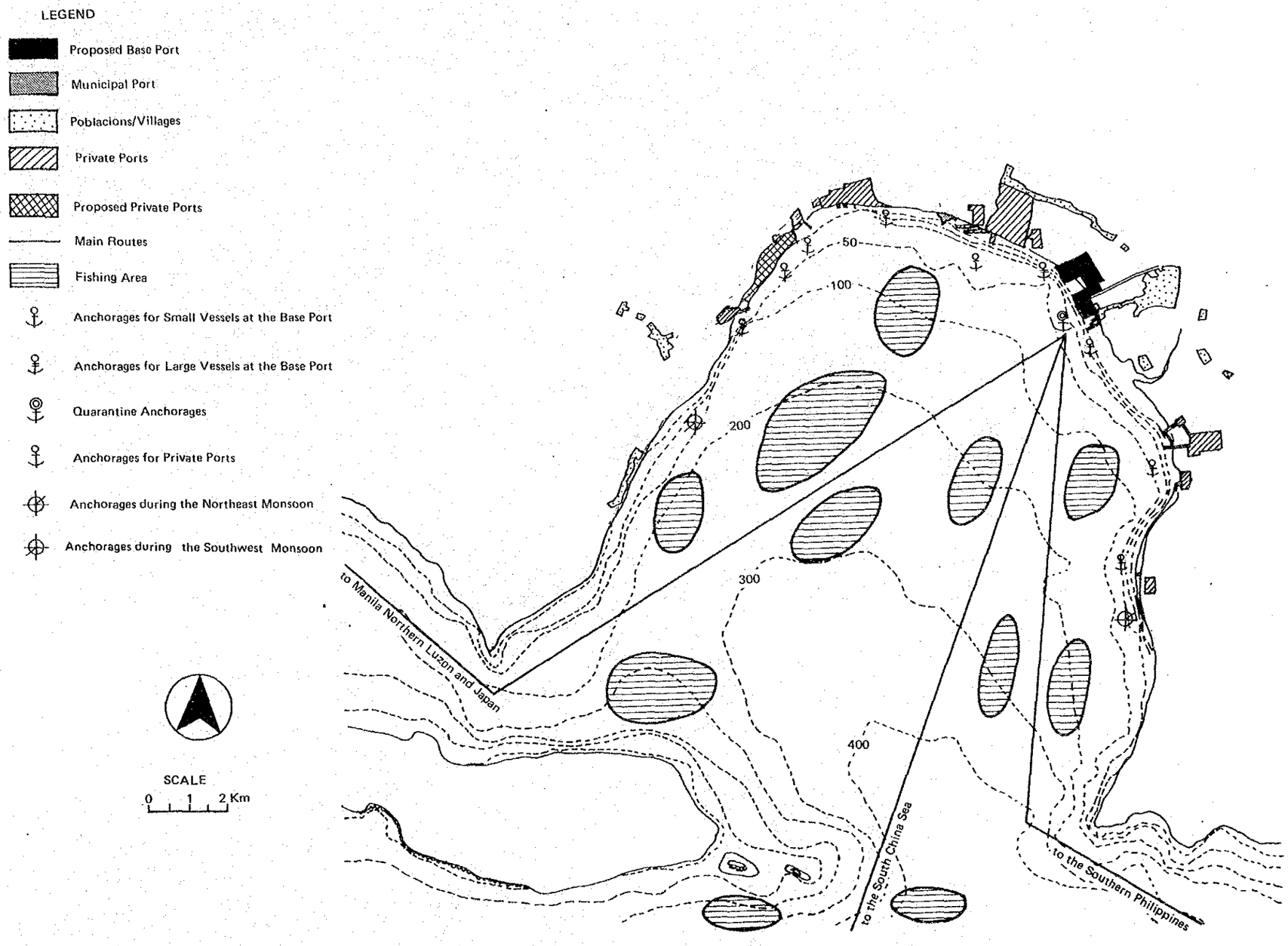

Fig. 4.3.7 Proposed Future Water Area Use

ii) Anchorages

Present anchorage areas in the Bay, both for the base port and private ports, are too deep for vessels to anchor safely, according to the data gathered in the Philippines. Anchorages should generally be shifted to more shallow areas.

Anchorage areas for the base port fall into three catagories: anchorages for quarantine, anchorages for small vessels, and anchorages for large vessels, which in the future should be located according to the locations of ship berths. Anchorage areas for private ports should be located near each private port so as not to hinder ship operation. Refuge anchorages during monsoons will also be needed in the future. Two refuge areas will be necessary: one against the northeast monsoon and another against the southwest monsoon.

The locations of these refuge anchorage areas are shown in Fig. 4.3.7.

iii) Fisheries

There are two types of fisheries in the Bay: commercial and municipal. Fisheries are active in the Bay. However, there is little statistical data concerning these fisheries. Therefore, a survey on fishing activities in the Bay should be conducted at first. Then, a development program should be formulated based on this survey.

The fishing activity areas are also shown in Fig. 4.3.7.

(6) The Proposed Road Network

Roads are lifelines for urban life and industrial activity. However, present road conditions around the Bay are extremely bad in spite of the fact that many important industries are located there.

Therefore, road network development should be given top priority along with port development. Main roads such as the national, provincial and city roads which surround the Bay should be extended and completely paved. Other major roads connecting industrial estates with main roads should also be paved. The road connecting the newly developed base port with the national road Route No. 24 should, of course, be given top priority.

Furthermore, the expressway should be extended from Calamba to Batangas to connect Batangas with Metro Manila as soon as possible. According to the report: Feasibility Study, South Luzon Expressway Extension prepared by PNCC in January 1982, there is a stage program to extend the expressway as shown in Table 4.3.6.

The future road network along the Bay is proposed in Fig. 4.3.8.

Table 4.3.6 Stage Program of Expressway Extension

I.	For the first two (2) lanes;	
	1. Calamba-Sto. Tomas (9 km)	Year 1991 ~ 1992
	2. Sto. Tomas-Batangas City (39.15 km)	Year 1993 ~ 1996
II.	For the additional two (2) lanes;	
	1. Calamba-Sto. Tomas (9 km)	Year 1999 ~ 2000
	2. Sto. Tomas-Lipa City (19.20 km)	Year 2001 ~ 2002

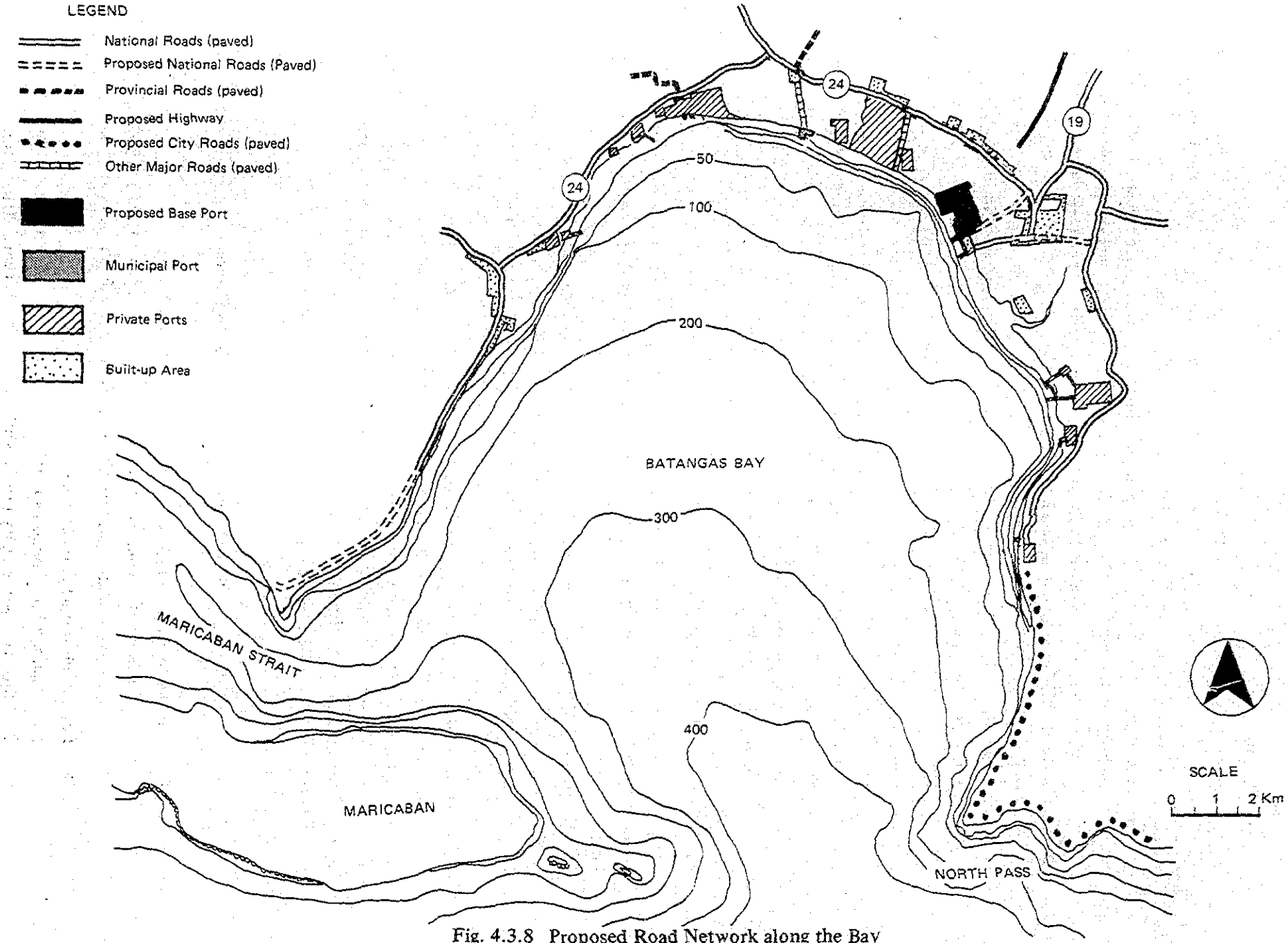

Fig. 4.3.8 Proposed Road Network along the Bay

4.4 Policy Recommendations

There are various indispensable policies which must be established in order to implement the proposed Coastal Zone Use Concept. These are all necessary for the fruitful use of the Bay, and consequently for regional and national prosperity.

(1) Suitable Industrial Development

The region has great industrial potential. Abundant natural resources, educated laborers, existing large-scale industries, urban and commercial support, and proximity to main shipping routes and to Metro Manila will all support the development of industry.

However, there are few remaining open spaces for private industries in the coastal area, so industry should be developed carefully along the Bay. In this sense, existing private industries should be expanded within their existing compounds by improving their plants, and new industries should be selected carefully to effectively utilize the advantages of the Bay as much as possible.

Furthermore, there is hardly any organic industrial linkage among existing industries. Regional industry should be developed strategically and organically, but there is currently no industrial development program for the region.

Therefore, a detailed study of an industrialization program should be carried out as soon as possible from the viewpoint of effective land use and organic industrial development.

For instance, processing industries related to port cargoes at the base port, regional natural resources, agro-products, and industrial products at the existing large-scale industries are desirable as they will utilize less open space along the Bay. Of course, export-oriented industries such as those which could locate in an Export Processing Zone and labour-intensive industries are also desirable. However, such industries should be developed as part of the above-mentioned industrialization program.

In short, all new industries should be introduced under a comprehensive industrial development program.

(2) Guideline for the Location of Private Ports

Existing private ports have located disorderly around the Bay. The location of private port facilities will affect the land and water area use in the future.

To resolve this problem, new location and expansion of private ports should be assessed according to a certain standard. A Guideline for the Location of Private Ports is presented as Table 4.4.1. This Guideline will function as the standard to assess applications from the standpoint of proper port and harbour development and management.

Especially, all wharfs which are acceptable at the base port should locate at the base port from the point of view of effective utilization of the limited waterfront.

Table 4.4.1 Guideline for the Location of Private Ports (Draft)

1. General Policy

In the Bay of Batangas, the establishment of new private ports should be minimized as the available waterfront is limited.

2. Specific Policy

2-1. Required Industrial Functions

Only private ports with the functions described below should be allowed to locate in the Bay of Batangas:

(1) Industries which are indispensable for the national economy and for regional development; or
(2) Industries which provide employment opportunities and which promote other local industries and the development of the regional economy, such as industries which process regional natural products.

2-2. Land and Water are Use Requirements

Land and water area use should be in conformity with the Coastal Zone Use Concept prepared by PPA.

Spatial expansion of existing facilities should be limited to the areas adjacent to the existing facilities.

2-3. Sea Transportation Requirements

(1) New private ports which handle dangerous cargoes should only be allowed to locate in the outer eastern portion of the Bay of Batangas;
(2) Private ports should not be located so as to cause vessels to cross arterial sea lanes; and
(3) New private ports where large vessels such as crude oil tankers will call should be located only in the water area which is currently used for that purpose.

2-4. Conformity to the Base Port Development Plan

In an effort to effectively utilize the limited, valuable waterfront, and to promote the mutually reinforcing effect of concentrating related industries,

(1) Ports which are acceptable at the base port in terms of integration with related industries, scale of port facilities, availability of land, etc., should located at the base port; and
(2) Ports accompanied by industrial estates for commodity distribution or processing should locate in the base port.

2-5. Environmental Conservation Requirements

The deleterious environmental effects caused by private ports should be minimized.

Those industries with few harmful environmental effects should be given priority over other industries. (The classification of industry types from the Environmental Impact Assessment Handbook should be consulted when determining which industries are less likely to harm the environment).

(3) Coastal Zone Management

The Philippines is an archipelagic country that consists of about 7,100 islands with a coastline of about thirty thousand kilometers. Then, it may safely be said that the nation's prosperity depends on how to develop, conserve and manage the coastal areas for future generations. In the case of the Bay of Batangas, the coastal zone already serves numerous functions and roles both at the national and at the regional levels. Present generations should not exhaust these resources, but should maintain them, so that the Bay and the coastal zone will continue to benefit future generations.

To achieve this aim, the authorities concerned should establish a policy for the coastal zone management of the Bay of Batangas.

The coastal zone plan should seek the following concrete objectives:

- Better management of the development of the coastal areas in order to give priority to water-dependent uses such as the port itself and port-oriented industry, and to avoid losses to life and property;
- Enhanced access to and enjoyment of the amenities of the coastal area;
- Increased protection of valuable, natural coastal resources; and
- Better coordination of governmental activities at all levels.

To achieve these objectives, the Coastal Zone Management Program will:

- Identify important uses, areas and resources within the Bay;
- Establish a policy framework to guide decisions about appropriate use and protection of the Bay;
- Identify the seaward and landward boundaries of the coastal zone;
- Consider the national interest in the planning; and
- Include sufficient legal authorities and organizational arrangements to implement the program and ensure conformity to it.

(4) Guideline for Industrial Location in the Bay of Balayan

The Bay of Balayan has the following advantages:

- The open land area along the Bay of Balayan is larger than that around the Bay of Batangas. No industry has located there other than the Calaca Power Plant.
- The calm and deep water area in the Bay of Balayan is as vast as the Bay of Batangas.
- The Bay of Balayan is near to Metro Manila, Cavite Zone and the Bay of Batangas, and is located between Metro Manila and Batangas where large-scale industries have already located.

Then, we can foresee that various waterfront-oriented industries will locate in the Bay of Balayan in the near future, and they will contribute greatly to the national economy. Location along the Bay of Balayan becomes more realistic as large-scale industries take up the remaining shoreline along the Bay of Batangas. Thus, the Bay of Balayan will be one of the important areas for regional and national development in the future.

To achieve proper development along with environmental conservation, new industries should be introduced appropriately and make the best possible use of the natural resources of

the Bay of Balayan. This is specially important considering that large-scale industries have located disorderly around the Bay of Batangas because there had been no industrial development or land use plan for the Bay of Batangas.

Furthermore, when industries along the Bay of Batangas and the Bay of Balayan are linked together, they will function more effectively and contribute more to the development of the region and of the nation.

Therefore, a guideline for industrial location as well as an industrial development plan and a land use plan should be studied, formulated and implemented by the authorities concerned as soon as possible.

CHAPTER 5
BASIC CONCEPTS UNDERLYING PORT DEVELOPMENT

CHAPTER 5 BASIC CONCEPTS UNDERLYING PORT DEVELOPMENT

This chapter is devoted to establishing the basic concepts for Batangas Port to be further developed as a regional nucleus port for contributing to the economic growth of the entire Southern Tagalog Region. Towards this goal, the roles that the port has played in the regional economic development to date must first be considered. In addition, the various advantages of the Port that might be effective in future port development will have to be taken into consideration, particularly its strategic location close to Metro Manila.

5.1 Role as the Gateway to Mindoro Island

5.1.1 Development Programs in Mindoro Island

Before the establishment of the Cabinet Coordinating Committee on Integrated Area Development (CCC-IRDP), there was relatively little development on Mindoro Island. In 1973, the CCC-IRDP designed the Mindoro Integrated Rural Development Project (MIRDP) as a pilot project covering the two provinces on Mindoro Island.

On April 16, 1975, by virtue of Presidential Decreee No. 805, the Mindoro Integrated Rural Development Office (MIRDO) was established. Since that time, the Office has been responsible for development on Mindoro. Growth has been initiated through construction of major infrastructures including irrigation systems and arterial roads.

In 1982, the Second Phase of the MIRDP began. Phase II projects are primarily directed at utilizing abundant natural resources and processing surplus agricultural and aquacultural products.

As of the end of 1982, MIRDO had planned twenty projects as shown in Table 5.1.1. These are in addition to the Philippine Medium Scale Irrigation Project and the San Jose – Mamburao Road Project.

5.1.2 Future Function of Batangas Port for Development of Mindoro

Most of the construction materials and other equipment necessary for the various projects conducted by MIRDO have to be shipped to Mindoro from Luzon. As Mindoro Island is geographically located some 10 ~ 15 nautical miles south of the Southern Tagalog Region of Luzon, Batangas is located in an ideal position to serve as a supply base for the development of the Island, and as a gateway to both Mindoro and to the Metro Manila Zone.

Batangas is already closely linked with the ports located along the northern shore of Mindoro Island. Agricultural products are shipped from Mindoro through Batangas to Metro Manila, the biggest market in the Philippines. Conversely, industrial and consumer goods produced on Luzon are shipped through Batangas to Mindoro. The flow of cargo has been enhanced by the opening of Ro-Ro vessel service between Batangas and Calapan in 1981.

Table 5.1.1 Mindoro Integrated Rural Development Program Ongoing MIRDP-11 Projects Status as of December '82

PROJECT TITLE	LOCATION	IMPLEMENTING AGENCIES	IMPLEMENTING SCHEDULE	ESTIMATED COST (P)	FUNDING	STATUS
1.0 ENERGY DEVELOPMENT						
1.1 Mag-asawang tubig mini-hydro development project	Naojan, Oriental Mindoro	NEA-NIA	1982-85	80.0 M	External	Under negotiation W/NEA
1.2 Amnay river dam & reservoir development project	Sablayan, Occ Mindoro	NPC, NEA, NIA,MPWH	1984-89	200.0 M	External	Feasibility study going on
1.3 Montelago geothermal power	Montelago, Naujan	PNOC	1983-87	50.0 M	External	Pipeline-recommendation from PNOC to be received
2.0 FOOD, AGRO-INDUSTRIAL & LIVELIHOOD DEVELOPMENT						
2.1 Fisheries integrated system dev't approach for Mindoro	Oriental Mindoro	BFAR	1983-87	12.0 M	Local	Negotiation for implementation W/BFAR
2.2 Mindoro barangay livelihood generating project	Oriental Mindoro, Occidental Mindoro	MHS,NACIDA, MIRDP,PROV'L GOV'T	1983-87	31.9 M	Local	Feasibility study-for revision
2.3 Mindoro agro-industrial rural commuties dev't project	Bansud, Or Mindoro Sta. Cruz-mamburao, Occ. Mdo.	BCOD, MA, PROV'L GOV'T	1983-87	34.0 M	Local	Feasibility study-for revision
2.4 Mindoro integrated agro-industrial trading complex project	Calapan, Oriental Mindoro, san jose, Occ. Mindoro	MHS, BFAR, BCOD,PROV'L GOV'T	1983-87	17.0 M	Local	Moa under negotiation W/MHS
2.5 Naujan Lake & vicinity comprehensive development project	Naujan pola, Victoria-Oriental Mindoro	MPWH,NIA, MOH,BFAR, BFD	1983-90	793.57M	External /Local	Irrigation component has been evaluated
2.6 Mindoro integrated livestock & dairy development project	Oriental Mindoro, Occidental Mindoro	PDC, MAR-4	1984-87	10.0 M	External /Local	Consultant has been selected no funds available
2.7 Mindoro agro-industrial estate development project	Calapan, Or Mindoro				External	Project concept has been finalized
3.0 FORESTRY & ENVIRONMENTAL						
3.1 Agro-forestry dev't of of Mindoro	Bongabong Or Mindoro Tikian, Occ Mindoro	BFD	1983-87	1.5 M	Local	For implementation
3.2 Mindoro integrated watershed management & erosion control proj.	Baco, Bongabong-Or Mdo. Sablayan, SN.JOSE-Occ. Mdo.	BFD, NIA	1984-89	106.0 M	External	Finalization of F.S.
3.3 Mindoro Barangay water supply	Selected Barangay in Oriental & Occ. Mindoro	MPWH, MLGCD, PROV'L GOV'T	1982-85	132.4 M	Local	F.S. completed-for implementation
3.4 Mag-asaviang tubig river flood control project	Naujan, Or Mindoro	NIA, MPWH	1984-88	41.10M	External /Local	Under negotiation W/MPWH
4.0 AGRICULTURAL DEVELOPMENT						
4.1 Integrated fertilizer development project	Oriental Mindoro, Occidental Mindoro	MA - BS	1983-87	6.132M	Local	For elevation to F.S.
5.0 TRANSPORT PROGRAM						
5.1 Mindoro ports project	Puerto Galera, Oriental Mindoro Sn. Jose & Sablayan, Occ.Mdo.	BPH-MPWH	1983-87	27.7 M	Local	For implementation
6.0 TOURISM DEVELOPMENT						
6.1 Puerto Galera integrated tourism development proj.	Puerto Galera, Oriental Mindoro	PTA	1983-86	53.0 M	External	Awaiting for release of cdc
7.0 SOCIAL DEVELOPMENT						
7.1 Mindoro minorities integrated development project	Oriental Mindoro Occidental Mindoro	PANAMIN	1983-86	34.0 M	Local	For implementation
7.2 Mindoro integrated health delivery system	Oriental Mindoro Occidental Mindoro	MOH	1984-87	26.0 M	Local	Evaluation of terms of reference
7.3 Mamburao manpower training center project	Mamburao, Occ. Mindoro	NMYC, PROV'L GOV'T	1983-	-	External	Feasibility study almost completed

Source: MIRDP Development Projects

Under the Phase II development, most of the projects are taking place in Occidental Mindoro. Completion of the San Jose-Mamburao Road Project and of other road projects will facilitate the growth of agricultural production, as transportation of agricultural goods will be greatly improved. A series of MIRDO projects are expected to greatly increase the production of rice on the island. It seems likely that Mindoro will become a leading rice production area which should help supply other areas of the Philippines where there is a shortage of rice. Increased rice production will increase the volume of cargo through the Ro-Ro facilities at Batangas.

The new Ro-Ro vessel service which will connect Batangas with Occidental Mindoro is expected to play an important role in accelerating regional development on Mindoro. The

In addition to a great potential for further agricultural development, Mindoro Isalnd also has a great potential for tourism. The Island is blessed with picturesque scenery including long white sand beaches and cascading waterfalls, and there are undeveloped, virgin islands nearby. Puerto Galera is one of the most famous resort areas on Mindoro. A large scale resort development project is now taking place at Puerto Galera under the coordination of MIRDO. This project will increase passenger traffic through Batangas Port. Consequentially, high quality terminal facilities will be required at Batangas in the not so distant future.

Considering the development projects that are taking place as well as the potential for future development on Mindoro Island, it is clear that the function of Batangas Port as a gateway to Mindoro will continue to expand.

5.2 Role as a Central Port for Development of the Hinterland (Southern Tagalog)

The Southern Tagalog Region located on the southern part of Luzon Island includes parts of the outskirts of the Metro Manila Zone, including the area which has been designated the "Batangas Urban Corridor". This Region, together with Metro Manila, is the most populated area in the Philippines. According to the 1980 census, the approximately 10.0 million population of this area represents 21% of the total national population. As shown in Table 5.2.1, the population of this Southern Luzon area is expected to reach 16.7 million in the year 2000, with an average annual growth rate of 2.59% from 1980 to 2000. Forecasts state that this will represent 23% of the national population in 2000.

Table 5.2.1 Population Projections for Southern Luzon and the Metro Manila Area

('000 persons)

Province	1980	1985	1990	1995	2000
Batangas	1,182	1,316 (2.18%)	1,443 (1.86%)	1,552 (1.47%)	1,642 (1.13%)
Laguna	980	1,114 (2.59)	1,241 (2.18)	1,351 (1.72)	1,442 (1.31)
Cavite	777	918 (3.40)	1,059 (2.89)	1,188 (2.33)	1,301 (1.83)
Quezon	1,143	1,308 (2.74)	1,468 (2.33)	1,610 (1.87)	1,733 (1.48)
Rizal	561	665 (3.48)	770 (2.97)	865 (2.35)	948 (1.85)
Sub-total	4,082	5,321 (5.45)	5,981 (2.37)	6,566 (1.88)	7,066 (1.48)
Metro-Manila	5,949	6,915 (3.48)	7,867 (2.97)	8,774 (2.35)	9,653 (1.85)
Total	10,031	12,236 (4.05)	13,848 (2.51)	15,340 (2.07)	16,719 (1.74) <2.59>

Note: ( ) indicates the average annual growth rate for the last five years.
< > indicates the average annual growth rate over twenty years from 1980.
Source: Population Projection by Province, 1980 ~ 2000, NCSO, 1983.

In 1980, Region IV which includes Southern Luzon had a GRDP of about 20,950 million pesos at constant 1972 prices, the second highest in the nation following the National Capital Region. As mentioned in Chapter 1, per capita GRDP is also the second highest in the nation. A noteworthy feature of the sectoral composition of GRDP in Region IV is the predominant share of manufacturing and commerce due to the proximity of the area to Metro Manila. However, the agricultural sector still accounts for a considerable portion of the GRDP, 28.3% in 1980. During the next four years, it is expected that agricultural activities will be the major source of growth in the region in accordance with the basic policy of the ongoing Five Year Regional Development Plan (1984 ~ 1987). The industrial and service sectors are also expected to grow, especially after 1986.

The Batangas Urban Corridor Plan calls for the establishment of a Batangas Bay Industrial Complex based on industries such as petro-chemical and coconut oil processing plants, and the ship building, ship breaking, and ship repair factories which are presently located in the area. Additionally, the cement production factory at Taysan and the two sugar refineries at Balayan and Nasugbu will continue to greatly contribute to the regional economy.

Considering the economic history of the region as well as the future plans, it goes without saying that there is a very high potential for further economic development in the Southern Luzon area which Batangas Port serves. Actually, Batangas Port will have to be developed in conjunction with regional development plans. For example, the plans to expand agricultural production will involve consumption of large quantities of fertilizer. This fertilizer will be supplied through Batangas Port, and in this way the Port will promote the economic growth of the hinterland. In this sense, Batangas will have to provide sufficient transportation for cargo and passengers as a central port to accelerate the development of the regional economy. Moreover, in order to realize its maximum potential, Batangas Port will also have to function as a nucleus for the development of the entire Southern Tagalog Region.

5.3 Role in Conjunction with Metro Manila

5.3.1 Expansion of the Metro Manila Zone

Batangas Province, part of the hinterland of Batangas Port, will have increasingly close economic relations with the Metro Manila Zone through the implementation of the Growth Corridor Strategy. The economic sphere of both Batangas and Manila will in fact be unified as a result of increasing population in both these areas and future development of infrastructures including arterial roads and highways.

The population of Metro Manila, some 6.7 million in 1983, is estimated to reach approximately 9.6 million in the year 2000. The Metro Manila Zone including its adjacent provinces will surely have a population of over 10 million.

Metro Manila is already confronting major urban problems including a housing shortage, traffic congestion, insufficient water supply, insufficient social facilities, and high unemployment. Increasing population will make this situation more severe. Considering these conditions, Batangas port and the Urban Corridor should be developed to help alleviate these problems, and this will help to decentralize population and industry which are concentrated in Metro Manila.

5.3.2 Necessity for a Second Port to Serve Metro Manila

Over the last several centuries, the Metro Manilla Zone has been spreading out east from Manila Bay as if the Port of Manila were the pivot of a fan. When Metro Manila was small, the Port enjoyed an ideal location for distributing cargo to and from the metropolitan area.

In recent years, however, Manila Port's central location is no longer completely advantageous. The great expansion of Metro Manila has led to traffic congestion in central areas, and thus hinders the flow of cargo to and from the port. Conversely, cargo movement should not congest already crowded roadways and cause environmental pollution in central urban areas.

As shown in Fig. 5.3.1, traffic congestion in Metro Manila area has already become quite severe, and the congested area is continuing to expand.

In order to ameliorate the traffic conditions in the urban area, construction of new roads and widening of existing roads will be carried out to increase the overall capacity for road traffic. However, the extent of such countermeasures is strictly limited as it is very difficult to obtain land for expansion of roads, especially in the central areas of large metropolitan regions.

Moreover, as the number of automobiles usually increases faster than road capacity, improvement of road conditions through acquisition of new road areas alone can not solve urban traffic problems.

The most effective approach to reduce congestion is said to be restricting the large trucks that heavily hinder the urban traffic, along with relocating the production and distribution firms that generate heavy traffic to locations outside the central urban area.

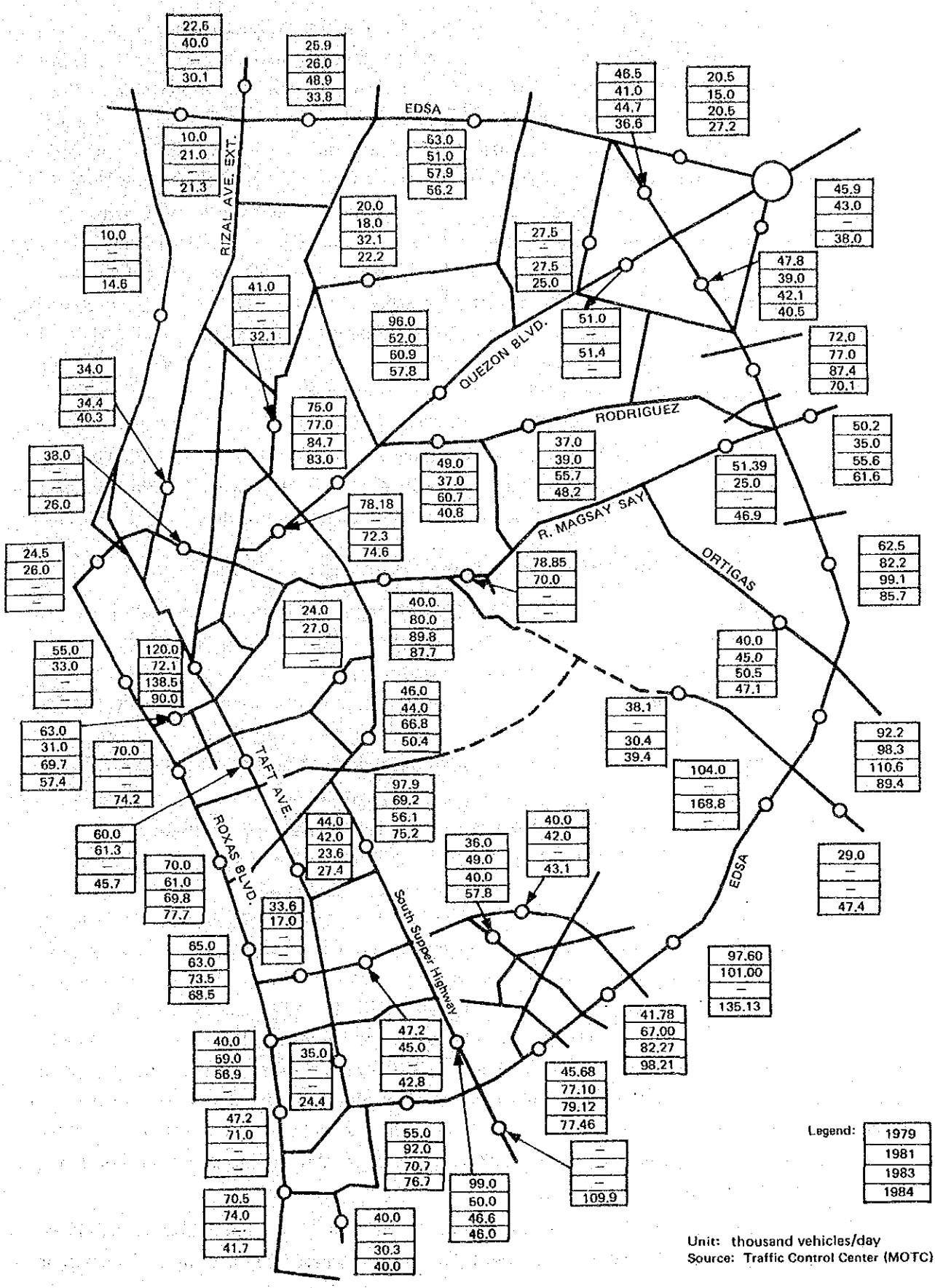

Fig. 5.3.1 Average Daily Traffic in Metro Manila

As Manila Port is located near the urban center, room for expansion behind the port is limited. However, current traffic flow and future cargo volume estimates show that Manila Port cannot easily accommodate all the cargo which will flow through the Metro Manila Zone. Increased cargo flow through Manila Port would further exacerbate already congested traffic flow in the areas behind the port. Although Manila Port could be extended, it seems much better to make use of two ports to support the economic expansion of the metropolitan area.

Overall, Batangas Port has great potential to supplement Manila Port. Of course, Metro Manila will continue to be the center of national political and economic activities, and Manila Port will continue to be the main port of the Philippines, central to the national economy. When planning Batangas Port, we should consider which functions should be promoted at Batangas and which functions should continue to be developed at Manila Port.

5.3.3 Future Functions of Batangas Port

When considering the future functions of Batangas Port that could be promoted through port development, the advantageous natural conditions of the project site and its strategic location close to the Metro Manila area should be taken into consideration.

(1) Strategy for Applying the Advantageous Natural Conditions of Batangas Port

Batangas Port is blessed with highly advantageous natural conditions. We should consider these conditions when determining the future role of Batangas Port. Advantages include:

- Sufficient water depth to accommodate larger vessels;
- Calm waters because Batangas Bay is protected by the two islands of Maricaban and Mindoro, and Batangas Port is nestled in the northeastern part of the Bay;
- Ample room for expansion of the port and development of port-related industries behind the present port area;
- Close juxtaposition to the major Verde Island Passage shipping lane; and
- Location on the periphery of the expanding Metro Manila Area.

Perhaps the most important effect of these natural advantages on the port development is that Batangas Port will not need any breakwaters and will need almost no maintenance dredging. The fact that there is plenty of room for expansion behind the Port is also important.

Manila Port, on the other hand, has very limiting natural conditions. Water depth is rather shallow due mainly to siltation from the Pasig River. Although Manila Port could be expanded through reclamation work, this is not necessarily ideal considering the costs involved. Also, as mentioned above, Manila Port is adjacent to the heart of Metro Manila, and so it is difficult to provide a backup area nearby the Port wide enough to handle and stock a large volume of cargo.

Based on the comparison of the natural conditions in Manila and Batangas Ports, the Batangas Ports, the Batangas Project should:

1) Accommodate large vessels which would be difficult if not impossible to handle at Manila because of shallow water depth, insufficient wharf structure and cargo handling equipment, and limited space for related facilities behind the Port; and

2) Utilize the area adjacent to Batangas Port for distribution terminals which will efficiently handle the commodities passing through the Port and present opportunities for growth to small and middle size industrial firms which are trying to improve their transport situation as well as to expand their activities.

(2) Strategy for Utilizing the Proximity of Batangas to the Metro Manila Area

– Introduction of a Steel Products Distribution Center –

Butangas Port will have to fulfill a role in conjunction with the entire Metro Manila area, taking advantage of its proximity to Metro Manila. Judging from the serious traffic situation in Metro Manila, it is very likely that in the future definite innovations will be sought to alleviate traffic congestion, and to reestablish the proper urban development of Metro Manila as the capital of the Philippines. Under the circumstances, relocation of industries that are currently located in central Manila, particularly those which handle heavy raw and intermediate materials, should be promoted. Steel is certainly one of these industries that causes traffic congestion in central Manila. The distribution of steel materials will continue to exacerbate the traffic problem as long as steel products continue to be supplied via Manila Port.

Batangas is an ideal location to function as a second supply base for distributing steel products, especially to those secondary manufacturers located south of central Manila. The Batangas steel distribution center would include unloading facilities for the steel products which are shipped from Iligan on Mindanao Island, storage facilities, and an industrial park, or a number of plant sites, for secondary fabricating firms.

Establishment of a steel complex would contribute to alleviating the urban problems of central Manila. It would also reduce transportation costs for those new firms which locate, and other firms which relocate, in or near the distribution center. Steel and steel products could be sent to the final consumers in Metro Manila area via the super highway which is scheduled to be completed in the year 2000, and to consumers located on other islands via Batangas Port.

The feasibility of a steel products distribution center at Batangas is evaluated by comparing the transportation costs via Manila and those via Batangas. Transportation via Batangas is clearly advantageous for firms in certain locations, and it seems that a large number of firms will locate or relocate in Southern Tagalog. (Refer to Appendix 5.1)

The development of a steel products distribution center at Batangas will promote the proper development of Metro Manila as well as the economic development of the Batangas area.