

3) Major Resort Area Development

Development of major resort areas shall be limited to the North Coast Resort (Base Bay Area), Nacpan Beach Resort, and South Coast Resort (Lio and Lamarao Beaches) so as to minimize small and fragmented development which is hard to manage and which may have negative effects on marine and/or terrestrial ecosystems. The selected areas are deemed to enhance the local characteristics of El Nido North by incorporating natural marine resources with small attractive islands.

- (1) North Coast Resort: Base Bay Area: The beach, north of Yocoton Bay facing Base Bay, stretches 4 km. The offshore Diapila and Labuyata islands and 180 hectares of hinterland make the location ideal for resort development. Resort development in the standard to de luxe class accommodation facilities, with a total of 520 rooms, are in the center of development. Inland sports facilities such as tennis courts, fisherman's wharf, and a shopping center are planned around the accommodation facilities. Tourism-related and commercial facilities shall be integrated to offer a more attractive environment.
- (2) Nacpan Beach Resort: Nacpan Beach, which is 3 km in length, has about 80 hectares of hinterland to be developed. Bury and Bolog islands and the beach add scenic value to the area. Half of the area, or about 40 hectares, is proposed to have the following: a 50-room tourist accommodation facility, which shall form the center of tourism development; marine research and human resource development center which shall have municipal environmental management functions; a nido museum showing the ecology of swiflets, nido hunting; and commercial facilities including restaurant/s specializing in nido dishes as well as souvenir products. The other half of the area, 40 hectares, will be preserved as a buffer zone.
- (3) South Coast Resort: Lio and Lamarao beach areas have geographical and scenic advantages. The beach is 5 km long, and the hinterland, which is mostly coconut plantation, is about 370 hectares. The black marble stone of Cadlao Island stands 600 meters high and adds scenic value to the area. 500 rooms of standard to de luxe class accommodation facilities, inland sports facility, shopping center, marine sports and recreation facilities are proposed to be developed. Facilities development will be limited to about 160 hectares, and mangrove and other forests, rivers, and other areas will be preserved as buffer areas.

4) Inland Nature Trail

Since there are niches of endangered and rare species of flora and fauna, only limited routes shall be utilized for environmental and ecological education and research. Entry to the trail shall be limited to authorized parties who will be accompanied by licensed guides and rangers. The results

of environmental research shall be fed back and used for the management of the terrestrial environment.

5) Pasadeña Agro-hill Park

To take advantage of the hot-springs in the area, Spa Resort is planned for healthcare and medical treatment purposes. Planned agro-tourism facilities are Orchard and Orchid Gardens and Butterfly/Insect Park. The Orchard and Orchid Gardens shall promote local agricultural products. As tourism development progresses, demand for fresh fruits and vegetables and cut-flowers will increase. Thus, development of high-quality as well as value-added agricultural products shall be promoted. Also, local insects shall be introduced at the Butterfly/Insect Park.

The accessibility of the area shall be improved by developing and improving the existing arterial road and access roads to various locations of tourism attractions. As a tourist destination, the area shall be characterized by diversified day-time inland activities.

5) Facilities for Beach Activity

Facilities required for marine and beach recreational activities such as water and power supply, telecommunication, and sewage treatment facilities will be developed in the three major resort areas. Solid waste collection shall be planned and operated concurrently with tourism facility development.

The marine as well as the terrestrial environment of limestone forest in island areas shall be protected by establishing and enforcing strict guidelines on sewer discharge, solid waste management and importation of non-indigenous species.

6) Corong-corong/Dipnay Port and Marina

Corong-corong and Dipnay are known as good anchor areas. Port facilities shall be developed in these two areas to accelerate the delayed development of El Nido port as a core marine activity area.

Table 5-25 Conditions of Port Development

Item	Condition
1. Marine Condition	Calm without monsoon effects
2. Depth	Deeper than 5 meters
3. Environmental Management	Area outside of marine environmental conservation and preservation areas area outside of terrestrial environmental management areas

Source: Study Team

7) **Areas for Marine Sports and Recreational Activities**

Marine resources are utilized in accordance with acceptable activities in the environmental management area. The acceptable activities by area are:

Table 5-26 Acceptable Activities by Environmental Management Area

Activity	Area	Allowed Activity Level
Marine activities	Preservation Area	Limited to cruising by glass-bottom boats in the peninsula west area.
	Conservation Area	Allowed in Scuba diving area in the peninsula west and island areas.
	Other coral reef areas	Diving and bathing areas (Collection of corals and other marine resources are prohibited.)
Fishing		Areas except the Preservation Areas

Source: Study Team

8) **Required Infrastructure**

The El Nido Feeder Airport, the road to/from the airport to core development areas, and other access roads to connect locations of tourism attractions have important functions not only for tourism development but also for socioeconomic development. Development of key infrastructure shall be prioritized: Power, water, telecommunication, solid waste disposal etc., shall be developed in conjunction with local community development.

9) **Other Areas to be Linked**

Small islands in the western part of Linapacan shall be developed for diving spots, island hopping, and other sport/recreation areas to integrate tourism core development areas in the main island and to establish an international tourist destination which offers diverse activities.

5.4.6 Typical Tourism Activity Pattern

The potential of utilizing nature-oriented tourism resources is high. However, unless attractive products are developed tourism potentials may not be tapped effectively. Unless proper facilities are provided, activities may not be integrated with resources adequately (refer to Figure 5-18 and Figure 5-19).

Accommodation facilities in the Resort Areas (North Coast, Nacpan, South Coast) are the bases for tourism activities such as sports and recreation activities in Resort Areas and nature-oriented activities such as environmental education tours.

1) **Activity based on Inland Resources**

(a) **SPA Resort Tour: 1 day - Target Tourist Arrivals (TTA):**

13,000persons/year: A hot spring resort of high quality for people who seek therapy, rehabilitation, or just relaxation which will have indoor

and outdoor sports facilities offering exercise opportunities, and restaurants offering healthy fare.

- (b) Butterfly Garden: 1 hour Tour - TTA: 36,000/year: A center for research, local enterprise development as well as a tourist attraction showcasing rare and native insects, where ecology of insects is studied, and souvenirs are developed and marketed.
- (c) Agro-Tourism Tour: 2 hour Tour - TTA: 11,000/year: The gardens shall serve as a center of agro-industry and have research, production, and marketing functions. Orchids, vegetables, fruits, and cut-flowers will be developed to meet the expected rise in demand accompanying tourism development.
- (d) Nido Center Tour: 2 hours—TTA: 38,000 persons/year: The Nido Center, a museum, showing the ecology of swiftlets, the history and practice of nido hunting, and dishes of edible birds nest, will have a restaurant specializing in nido dishes. Souvenirs of nido shall be developed in conjunction with the museum.
- (e) Sightseeing: Half-day - TTA: 15,000/year: The arterial road from the proposed marina in Corong-corong, passing through El Nido Town and the marble cliff at Ipil, South Coast Resort, the town of Pasadeña, and Agro-Hill Park, to Sibaltan is a sightseeing route which includes various tourist attractions. The and scenery here is attractive from the road as well.

2) Inland Resort Activity

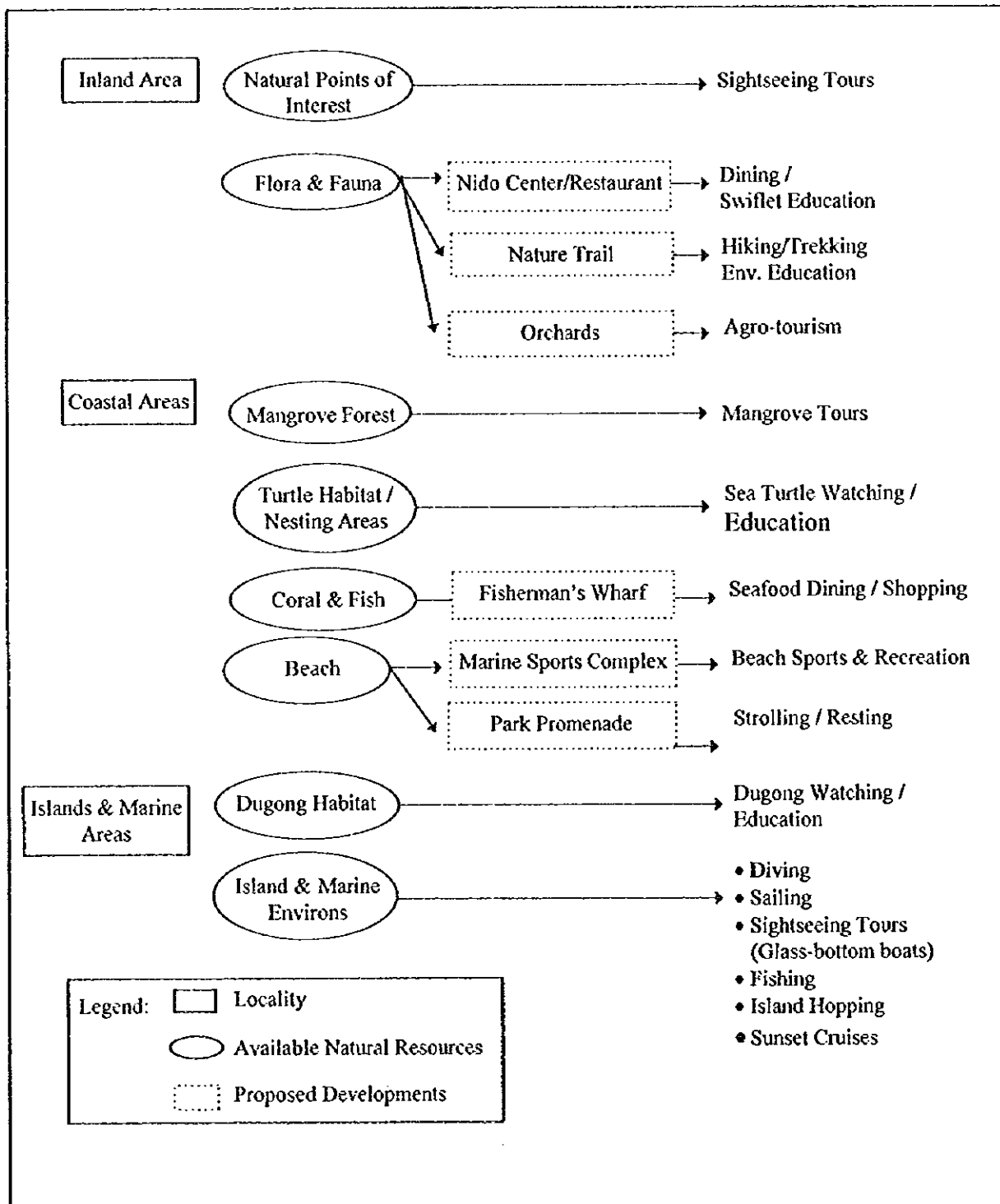
- (a) Inland Sports: 2 hours to half-day - TTA: 13,000/year: The diversity of daytime sports and recreational activities shall be enhanced by developing facilities for horseback riding, tennis, golf, etc. in such a way as not to disrupt the natural environment.
- (b) Shopping and other Amenities: 2 hours - TTA: 43,000/year: In the South and North Coast Resort Areas, the density of present tourists is high. Thus, development of various facilities is needed to meet their dining and shopping demands (of about 2 hours).

3) Nature- Oriented Environment - Educational Activity

- (a) Nature Forest Trail: 2 hours - TTA: 3,000/year: By developing a trail, in a well-controlled manner, from the South Coast Resort to the Lagoon of Nagugangot River along the ridge line, a nature-oriented tour shall be promoted in order to show tourists not only rare animals and plants but also methods of conserving the ecosystem of the area. Manpower training is important for this purpose.

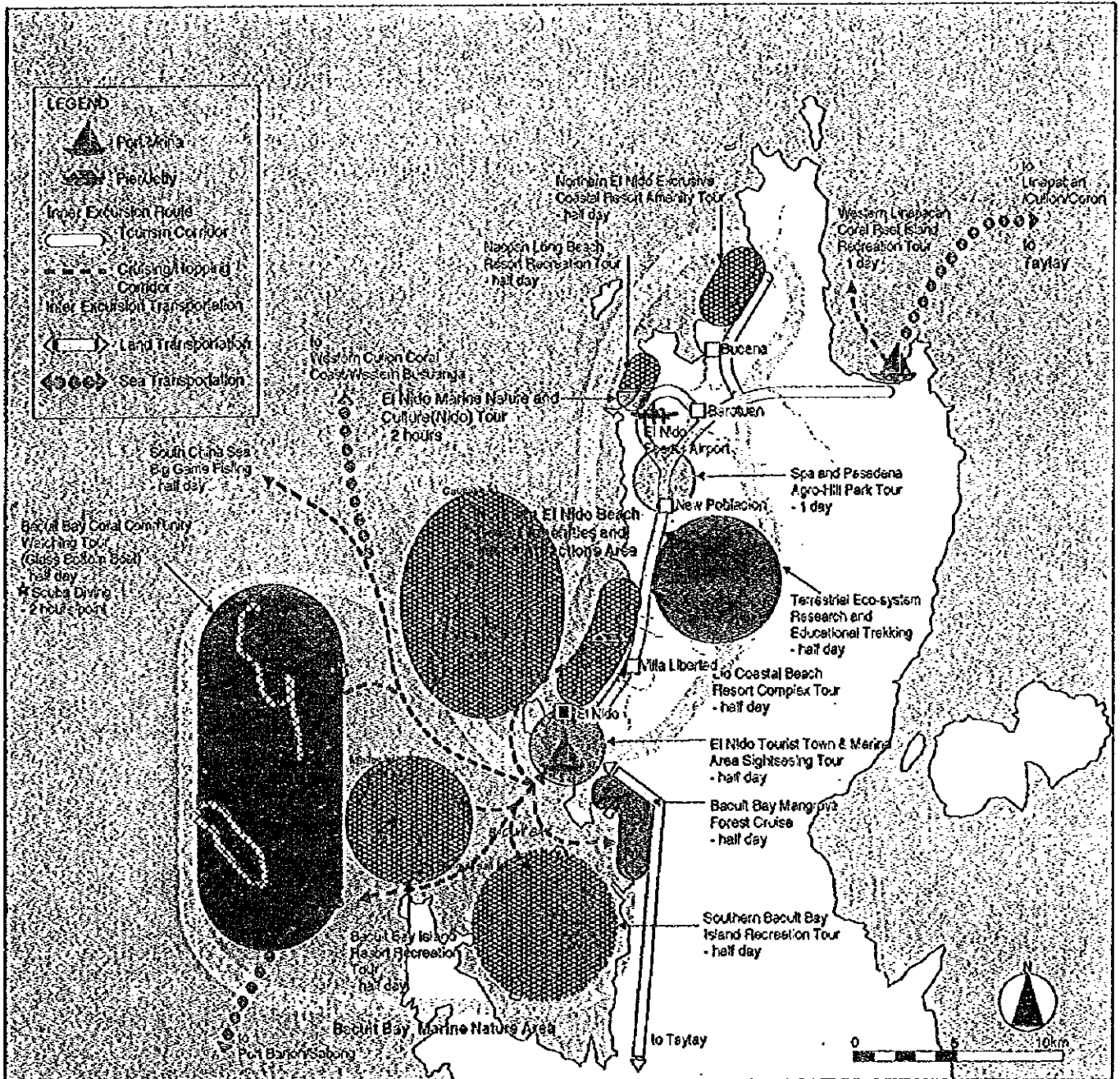
This tour shall be subject to the permission of local authorities in charge of environmental conservation in order to protect nature from destruction and to conduct ecological education. This tour shall also be guided by a ranger or a guide licensed by PCSD.

Figure 5-18 Tourism Resources and Typical Activities



Source: Study Team

Figure 5-19 Typical Activity Pattern: El Nido North



Source: Study Team

- (b) Dugong/Sea Turtle Museum Tour: 2 hours - TTA: 38,000/year: The proposed Dugong/Sea Turtle Museum, near the proposed feeder airport in Nacpan, is a tourist attraction with functions of environmental research, human resource development for environmental protection, and environmental education.
- (c) Sea Turtle Watching Tour: 2 hours - TTA: 3,000/year: Hawksbills are frequently seen in this area, and they have nesting sites on the narrow steep beaches where coastal forests remain. The nesting sites on the beaches in Mgangatangan Bay and Caltang, need to be protected not only by the local environmental protection authority, but also by local environmental NGOs. In areas where eggs may be disturbed, temporary relocation of eggs to safer places may be necessary. The ecology of marine turtles after hatching may be observed for educational purposes under certain conditions.
- 4) **Activities based on Beach Resources: Half-day - TTA: 60,000/year**
- (a) Corong-corong Marine Sports/Recreation Center: This center acts as the core facility for marine and commercial activities, and sea transportation. Island hopping within Bacuit Bay and to Linapacan islands, glass-bottom boat cruises, offshore sport fishing and diving are some of the marine activities proposed. Restaurants and a shopping center offering sea foods and gear for marine activities and ports must be developed.
- (b) Dipnay Marine Sport/Recreation Center: The center shall have facilities similar to the ones at the Corong-corong Marine Sport/Recreation Center. The center shall function not only as a transportation node but as a tourist attraction as well.
- 5) **Beach Resort Activity**
- (a) Beach Sports/Recreation: Half-day - TTA: 40,000/year: In the beaches of the resort area, a pier and a store or shopping center, where necessary equipment is sold or rented out and where instructors/guides gather, should be developed to support varied sports and recreational activities on beaches and in the coral reef areas along the coast.
- (b) Strolling Park and Promenade: In South/North Coast Resort and Nacpan Resort Area, a comfortable and safe promenade is planned for the convenience of tourists roaming around. The path shall be shaded by planted trees and shall provide amenities such as street benches.
- (c) Seafood Restaurant (Fisherman's Wharf): 2 hours TTA 45,000/year: The development of seafood restaurants shall be pursued to offer an opportunity for visiting tourists (about 50% of tourist arrivals) to taste the rich seafood available in El Nido North while, at the same time, enjoy a view of the sunset. Local fishery and food processing industries shall be invited to participate in this project. In order to meet the

expectation of high-class resort, promoting and developing high quality dishes and souvenirs would be necessary.

6) Major Tour Program in Bacuit Bay Islands

The small islands scattered in Bacuit Bay are covered by vegetation and have coral sand beaches around them. Taking advantage of the coral reef bed, clean waters, and various forms of marine-life, facilities need to be developed for daytime tourism activities based on the marine and terrestrial environmental management plans. For relatively large islands such as Cadlao Island and islands close to the main island, some high-standard resorts, which can conduct environmental management on their own, could give diversity to the possible activities and types of accommodations.

5.5 Tourism Infrastructure/Facility Development Plan

5.5.1 Transportation

Transportation infrastructure is the backbone of regional development. Quality of life depends in large part on basic infrastructure and transportation. Road facilities and ports are critical to the creation of employment opportunities and efficient social services. Current transport development by the central and local governments lack integration of the overall transport development.

The Provincial Medium Term development Plan emphasizes the necessity of transport infrastructure improvement within the next decade. The target is to connect mainland municipalities to the provincial capital with all-weather primary roads and to connect all barangays to their municipal centers with feeder roads.

1) Road Development

The circumferential road through Villa Libertad, New Ibajay, Sibaltan, Bucana is an on-going SPIADP project. Road developments of the study areas will be as follows:

- (a) Arterial Road: The national road between Taytay and El Nido and the above circumferential road will form arterial roads in the municipality. After their implementation, concreting as an all-weather road is proposed.

An Access road to the proposed El Nido feeder airport shall be constructed with a concrete surface and shall be twelve (12) meters wide. Its construction shall be synchronized with the new airport construction.

- (b) Feeder Road: A road from the above arterial road to barangay center of Bucana is proposed to be constructed with a concrete surface and a nine meter-width. Its construction shall be a drastic improvement over the current impassable condition (especially during the rainy season) of the

deteriorated logging road. The Proposed road to Yocoton Bay from Barotoan barangay center shall be nine meters wide and concrete paved.

- (c) **Other Roads:** Access roads to farm land, communal forest and water resource in Bucana and Barotoan shall be made of gravel surface and shall be six (6)-meters wide. When all proposed developments are compiled, accumulated road length (km) will be as follows:

Road Type	1995	2000	2010
National road	-	13.0	13.0
Other road	28.5	36.5	43.5
Total length	28.5	49.5	56.5

km

Source: Study Team

2) Airport Development

From the standpoint of future tourism demands and regional development, a new feeder airport is proposed with 1,000 meter runway in Pasadeña.

5.5.2 Utility Infrastructure

1) Water Supply

Water problems in Palawan Island are mainly due to the absence of a comprehensive plan to provide water for the whole island. Because of this, water shortages often take place during the dry season in several areas.

(1) Water Resources Availability and Development

There are two typical methods of procuring water. One is through surface water from reservoir dams. The other is through deep wells located at the side of rivers. Both methods have advantages and disadvantages. Although reservoirs maintain enough volume throughout the year, they involve high construction costs, and require both large land area and purification plants. On the other hand, it is possible to obtain good quality water through deep wells; moreover, construction costs are lower than those of dams. However, volume of available water cannot be guaranteed, especially during the dry season.

In accordance with the "GROUNDWATER INVESTIGATION REPORT" by NWRC (National Water Resources Council)/UNDP in 1981, Northern Palawan, including the Calamian Island Group, has a total estimated safe mining yield of 4,102 liters/sec. and 20,013 liters/sec., respectively, and a withdrawal density of 19.3 liters/sec./sq.km. The estimated amount of groundwater is sufficient to meet these requirements.

A program for well drilling should give particular consideration and priority to areas with high potential for groundwater development as indicated in the water availability map prepared by the said study. In low-yielding areas, simultaneous use of groundwater and surface water sources may ensure favorable water supply. Springs, if available, could be developed, and wells of large diameter are advisable in dense formations where water can be drawn by means of the water-lift method.

Furthermore, according to the recent study of "RURAL WATER SUPPLY COMPONENT" by DPWH/PMO/SPIADP in 1995, the municipality of El Nido is generally classified as poor to fair in terms of groundwater potential. Poor groundwater condition exists in areas having elevations greater than 40 meters above mean sea level. Fair groundwater potential exists along river deltas and flood plains.

The study recommends the construction of wells for the time being. In the future, if there is a shortage, reservoir dams may be constructed to meet the increased demand caused by improvement in the standards of living.

(2) Water Demand and Supply Network

Provision of new water supply facilities will be required to cope with the demand of proposed tourism facilities as well as household or domestic use.

Unit water demand for the tourism and local community have been estimated based on available planning standards (refer to Table 5-27 and Table 5-28).

Table 5-27 Unit Water Demand for Accommodation Facilities^{1/}

Hotel Type	cu. meter/day/room
De Luxe Hotel	1.5
Standard Hotel	1.3
Economy Hotel	1.1

Source: Study Team

^{1/} inclusive of all types of water uses

Table 5-28 Unit Water demand for Urban and Rural Areas

Year	liters/day/capita	
	Urban Water	Rural Water
2000	1631	1101
2005	1751	1201
2010	1961	1321

Source: Improvement of the Puerto Princesa Water Supply, Dec., 1995

As to the supply system, Level II and III systems will be applied to meet future upgrading of living standards. From a geological and engineering point of view, it is proposed that the area will be divided into Base Bay Water Area and El Nido North Water Area of which the water demand in 2010 will be 1,905 cu. meter/day and 1,401 cu. meter/day, respectively (refer to Table 5-29).

Table 5-29 Estimated Water Demand for Base Bay and El Nido North

Water Area	Use		Total		2000	2001-2005	2006-2010
			cum./day (liter/sec.)				
Base Bay Water Area	Tourism	Accommodation ^{1/}	814	(9.4)	0	76	738
		Other Facilities	92	(1.0)	0	62	30
		Sub Total	906	(10.4)	0	138	768
	Local Community	Urban ^{2/}	1,425	(16.5)	839	1,075	1,425
		Rural ^{2/}	480	(5.6)	567	420	480
Total		2,811	(32.4)	1,406	1,495	1,905	
El Nido North Water Area	Tourism	Accommodation ^{1/}	656	(7.6)	88	433	135
		Other Facilities	47	(0.5)	0	47	0
		Sub Total	703	(8.1)	88	480	135
	Local Community	Urban ^{2/}	947	(11.0)	579	728	947
		Rural ^{2/}	319	(3.7)	391	285	319
		Sub Total	1,266	(14.7)	970	1,013	1,266
Total		1,968	(22.8)	1,058	1,493	1,401	

Source: Study Team

^{1/} no. of hotel rooms assumed to be constructed are as follows:

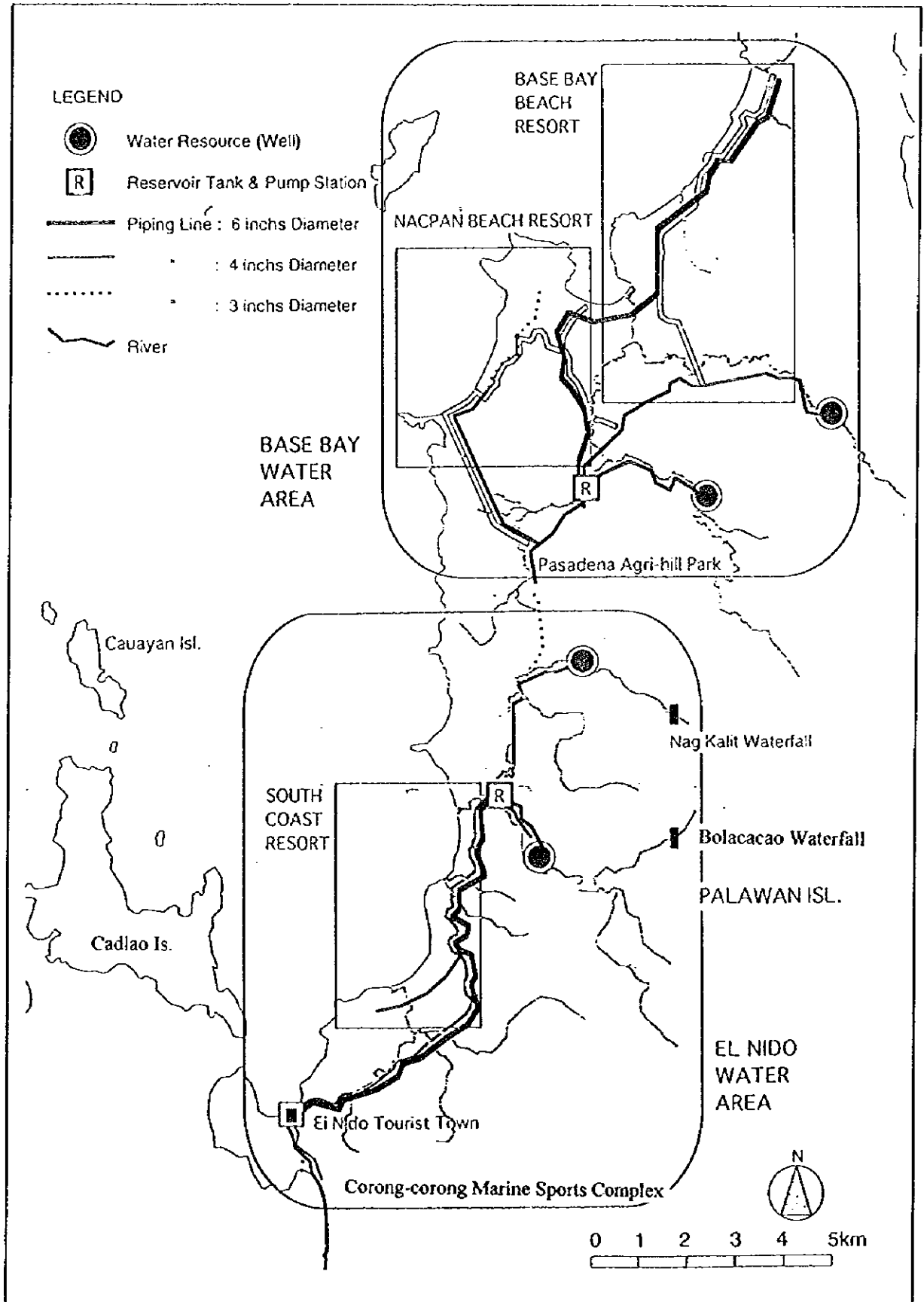
Water Area	Type	- 2000	2001-2005	2006-2010	Total
Base Bay	De luxe	0	0	300	300
	Standard	0	50	200	250
	Economy	0	10	25	35
El Nido	De luxe	0	160	90	250
	Standard	60	140	0	200
	Economy	9	10	0	19

^{2/} Population in respective water areas are estimated as follows:

Water Area	Type	2000	2005	2010
Base Bay	Urban	0	2,600	3,600
	Rural	5,000	3,500	3,600
El Nido	Urban	0	1,800	2,400
	Rural	3,600	2,400	2,400

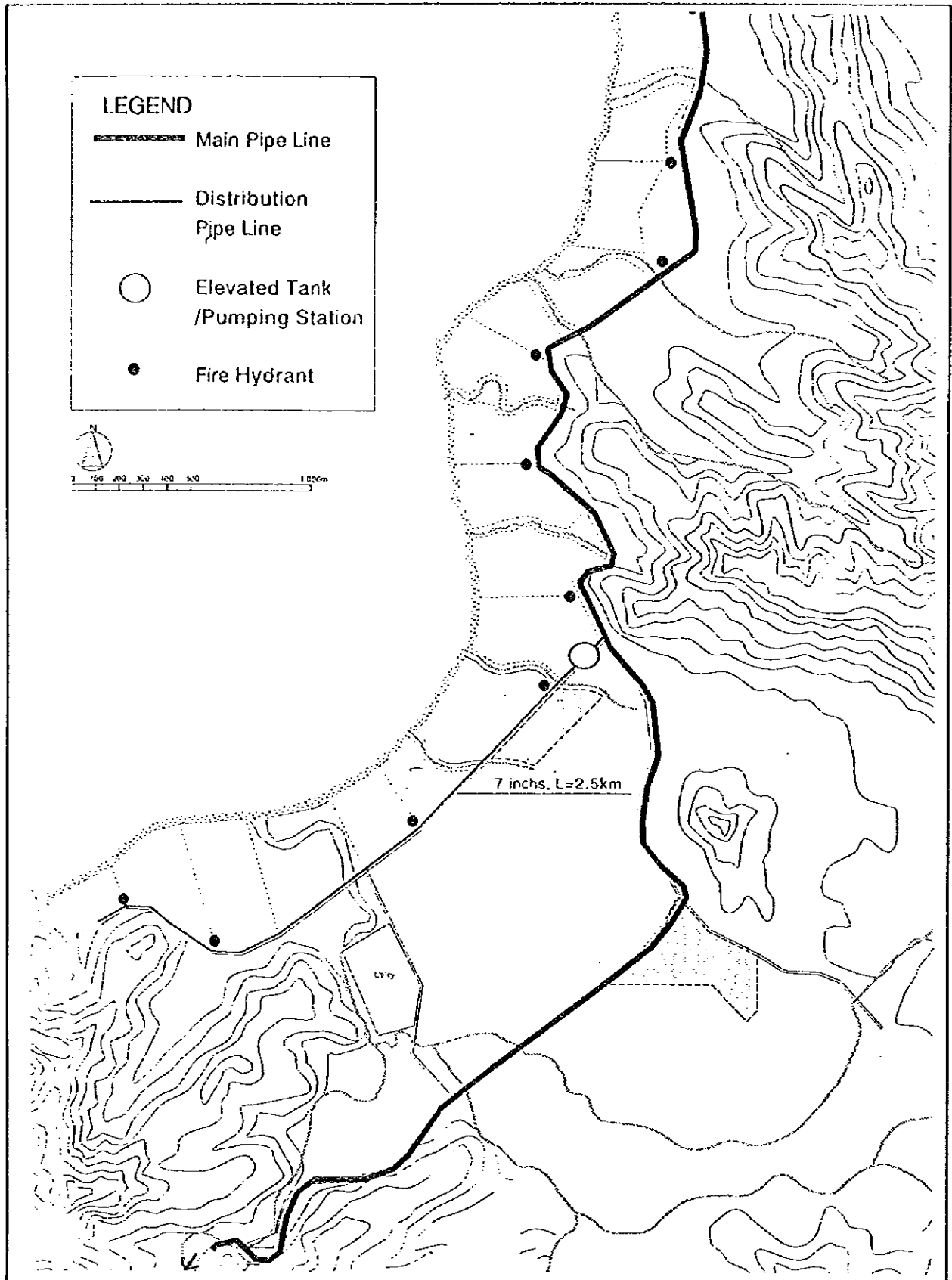
On the basis of the above, a preliminary water supply system plan has been prepared (refer to Figures 5-20 through 5-23).

Figure 5-20 Water Supply System in El Nido North Tourism Area



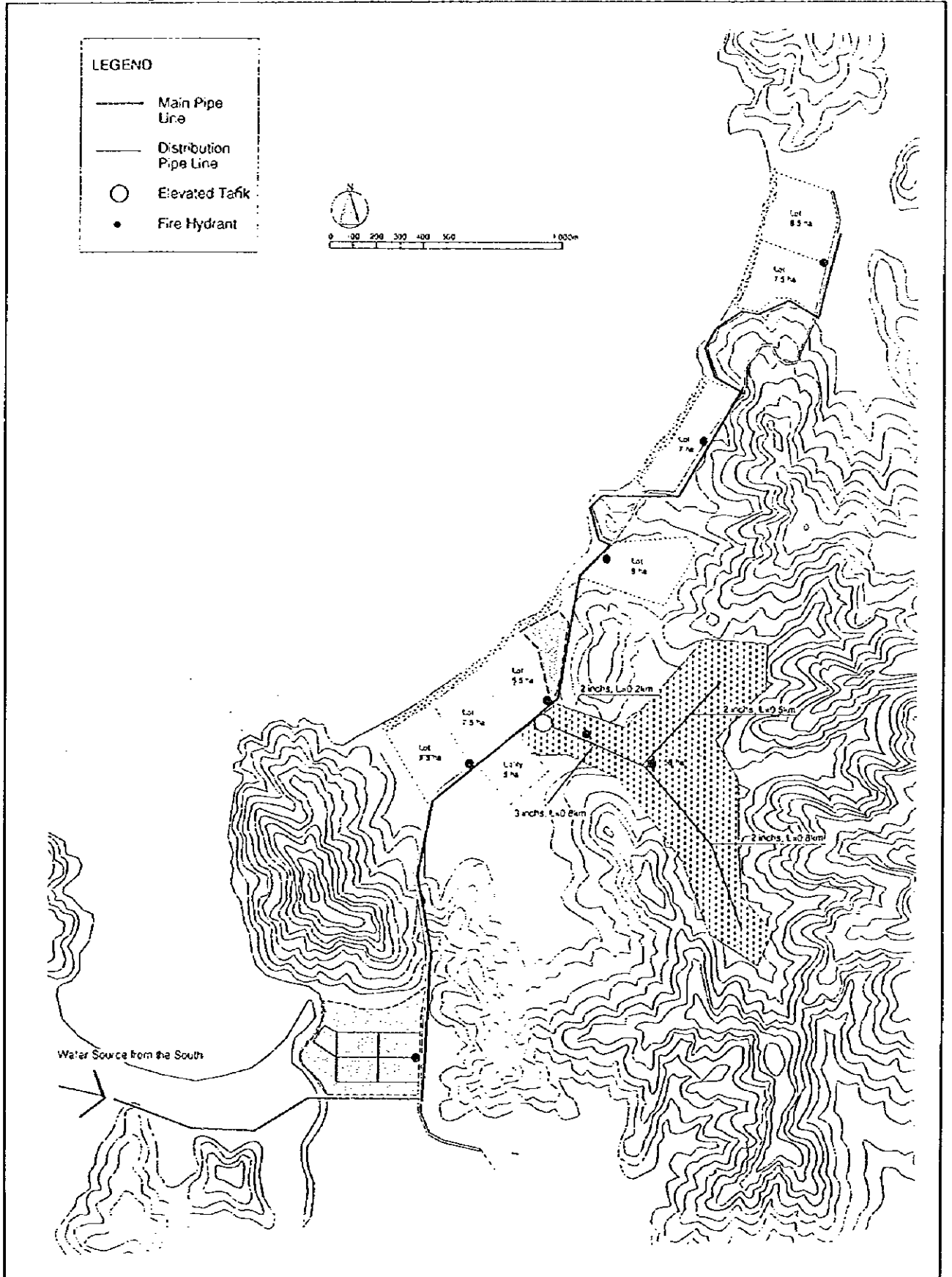
Source: Study Team

Figure 5-21 Water Supply System Plan: El Nido North/South Coast Resort



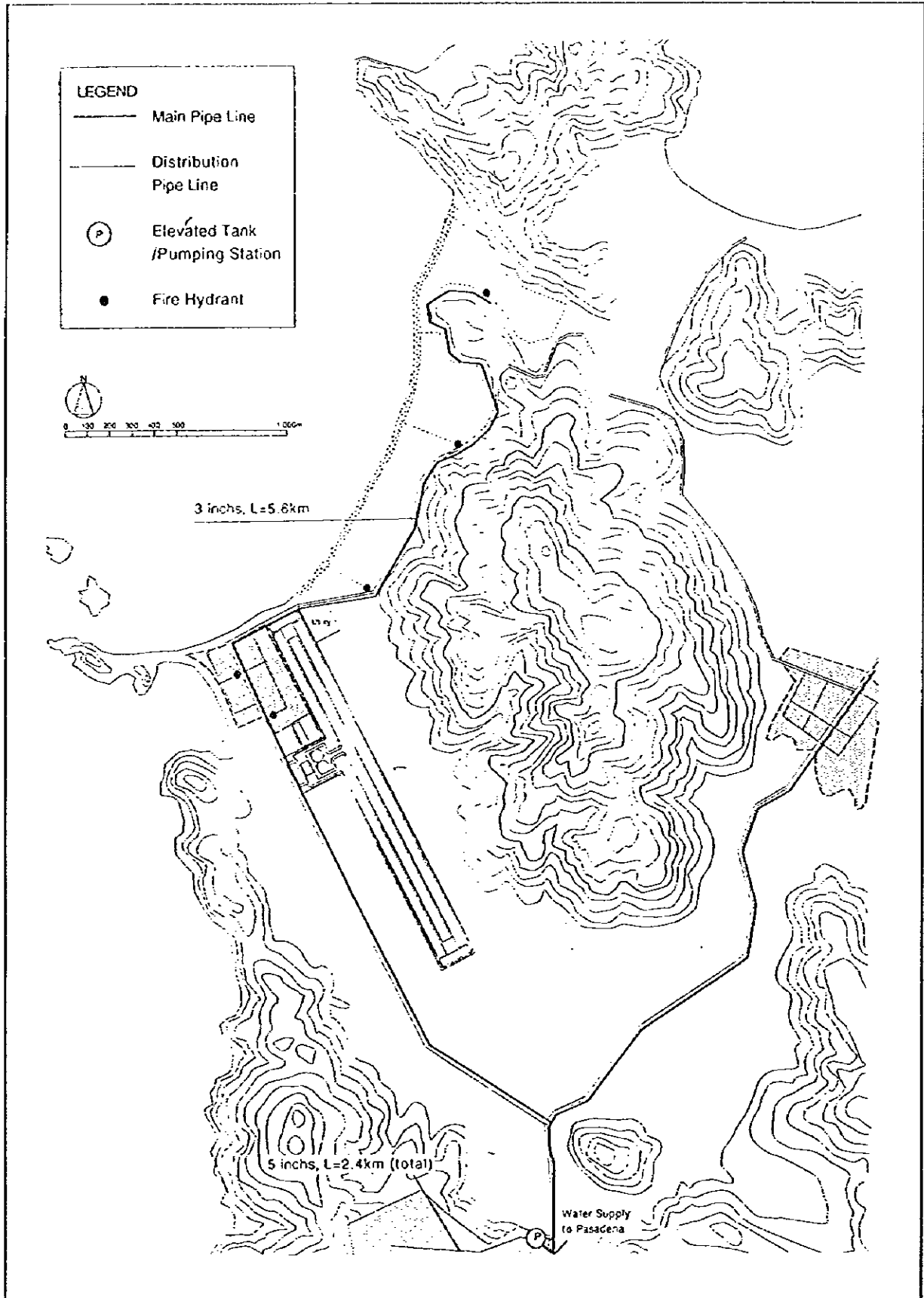
Source: Study Team

Figure 5-22 Water Supply System Plan: El Nido North/Base Bay Beach Resort



Source: Study Team

Figure 5-23 Water Supply System Plan: El Nido North/Nacpan Beach Resort



Source: Study Team

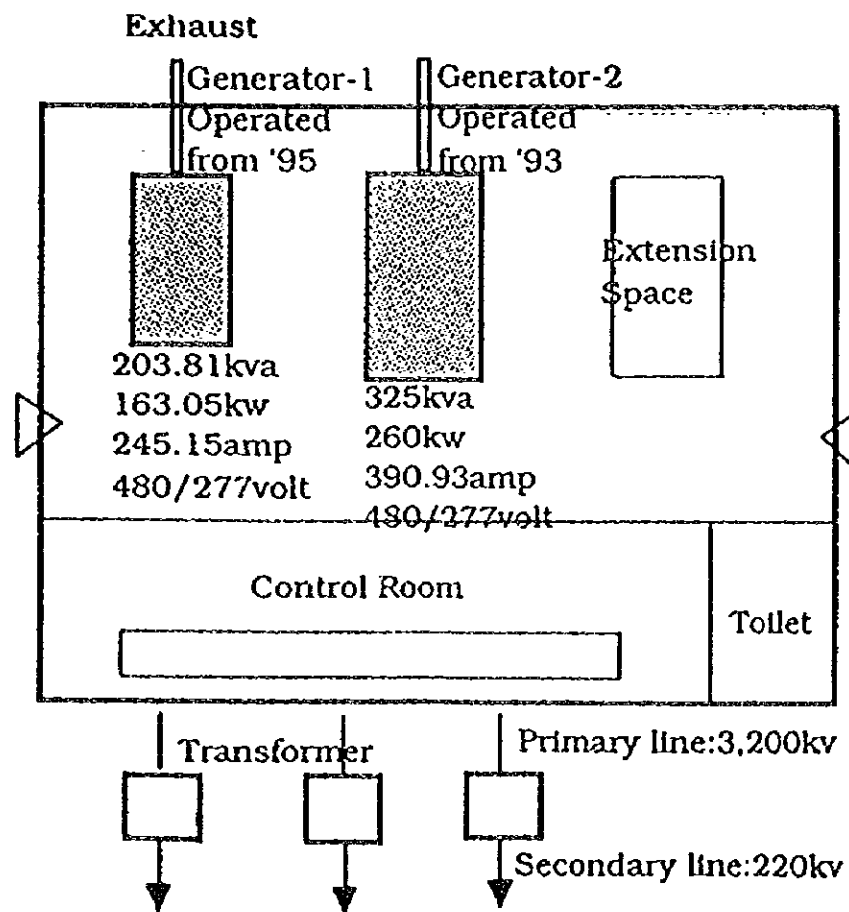
2) Power Supply

The power supply will be on a grid system to provide 24-hour service to the main activity areas and major settlements with adequate rates.

(1) Extension of Existing Power Source

Electricity will be supplied by the existing power plant of NAPOCOR in poblacion El Nido by expanding the existing system, which currently serves 150 consumers (refer to Figure 5-24), to meet future demands.

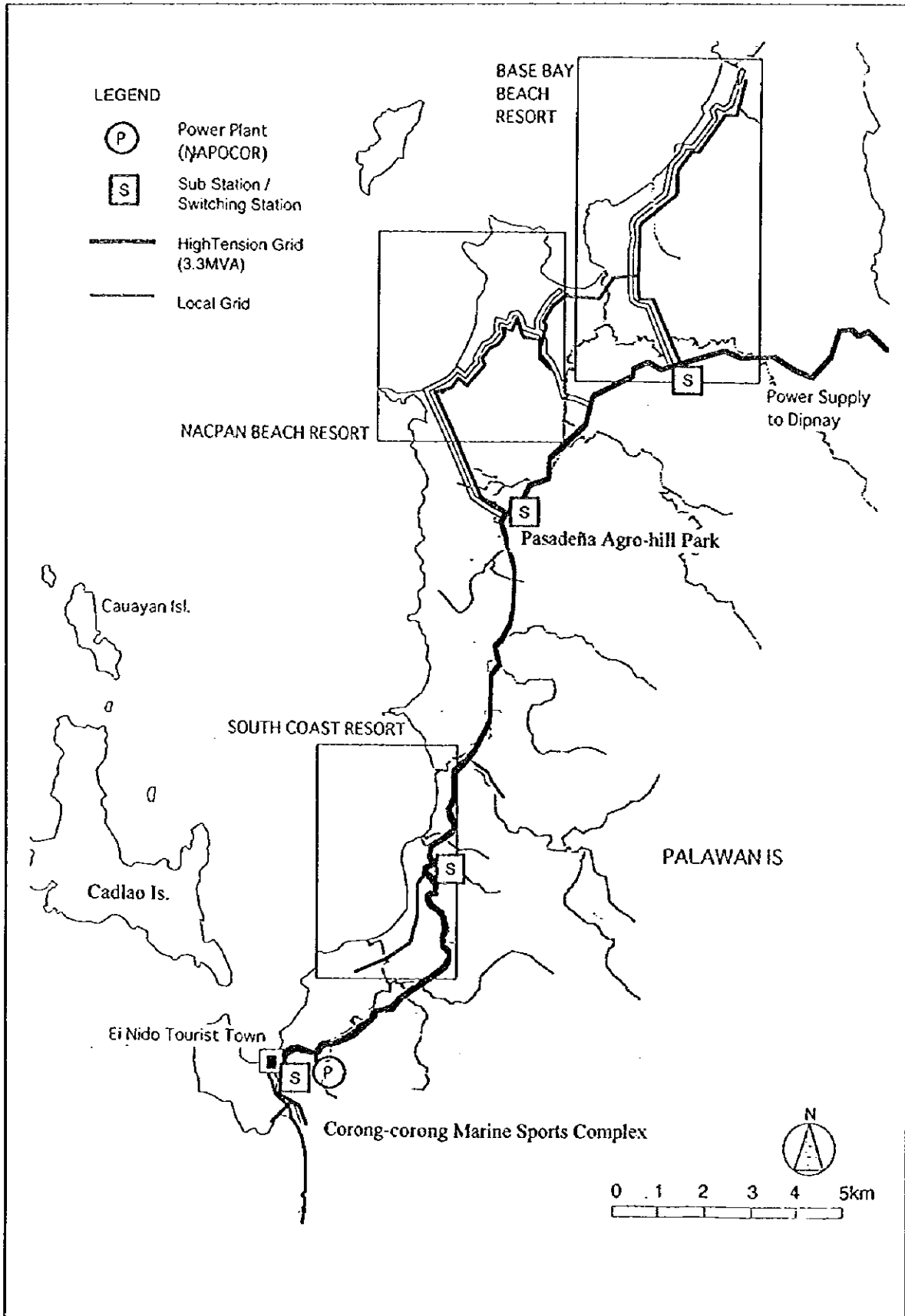
Figure 5-24 National Power Corporation (NAPOCOR)/El Nido ^{1/2/}



^{1/} power supply for 6 hours (6 p.m. to 12 midnight)

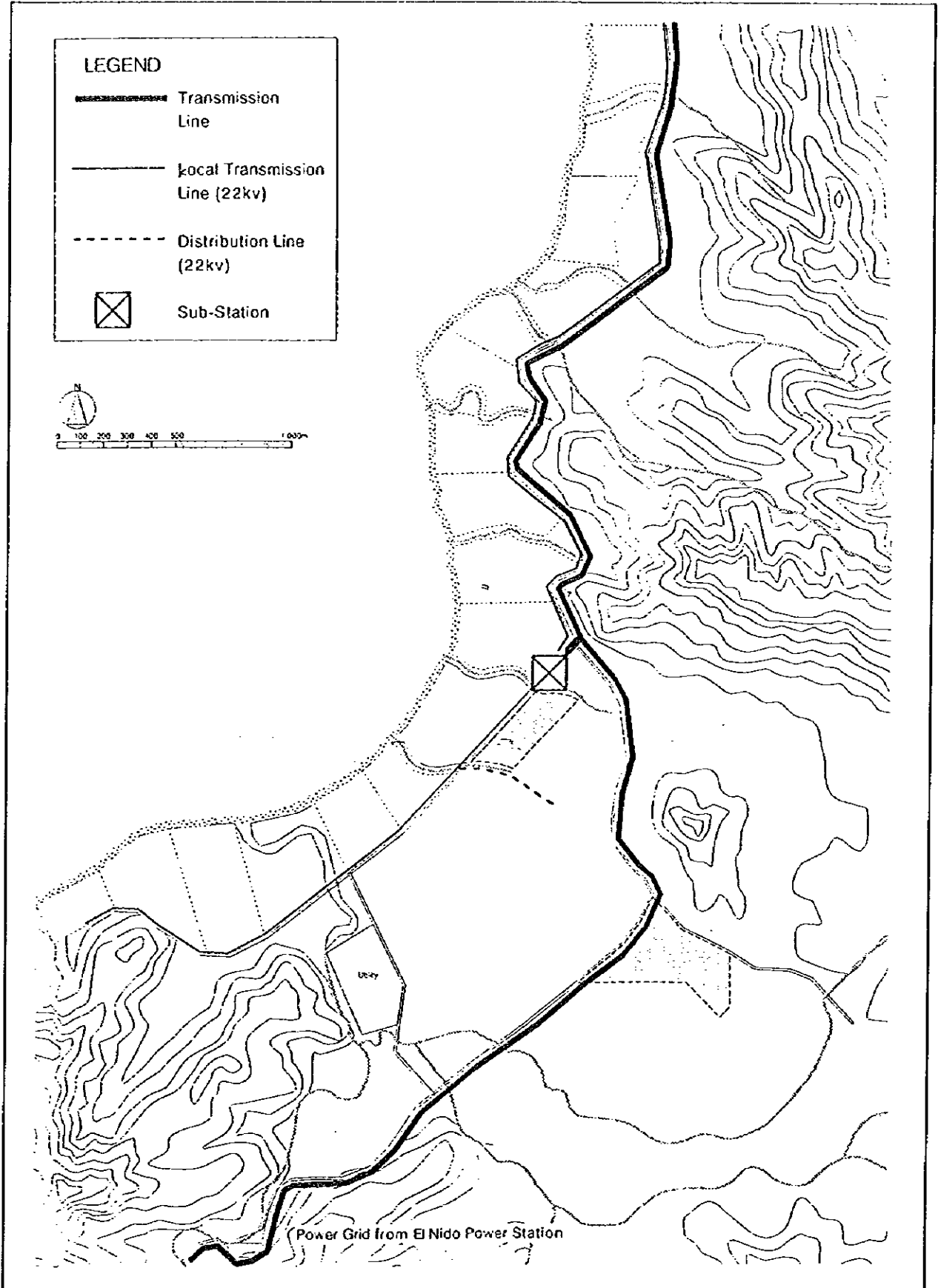
^{2/} number of consumers, including public and commercial users in the poblacion is 150.

Figure 5-25 Power Supply System in El Nido North Tourism Area



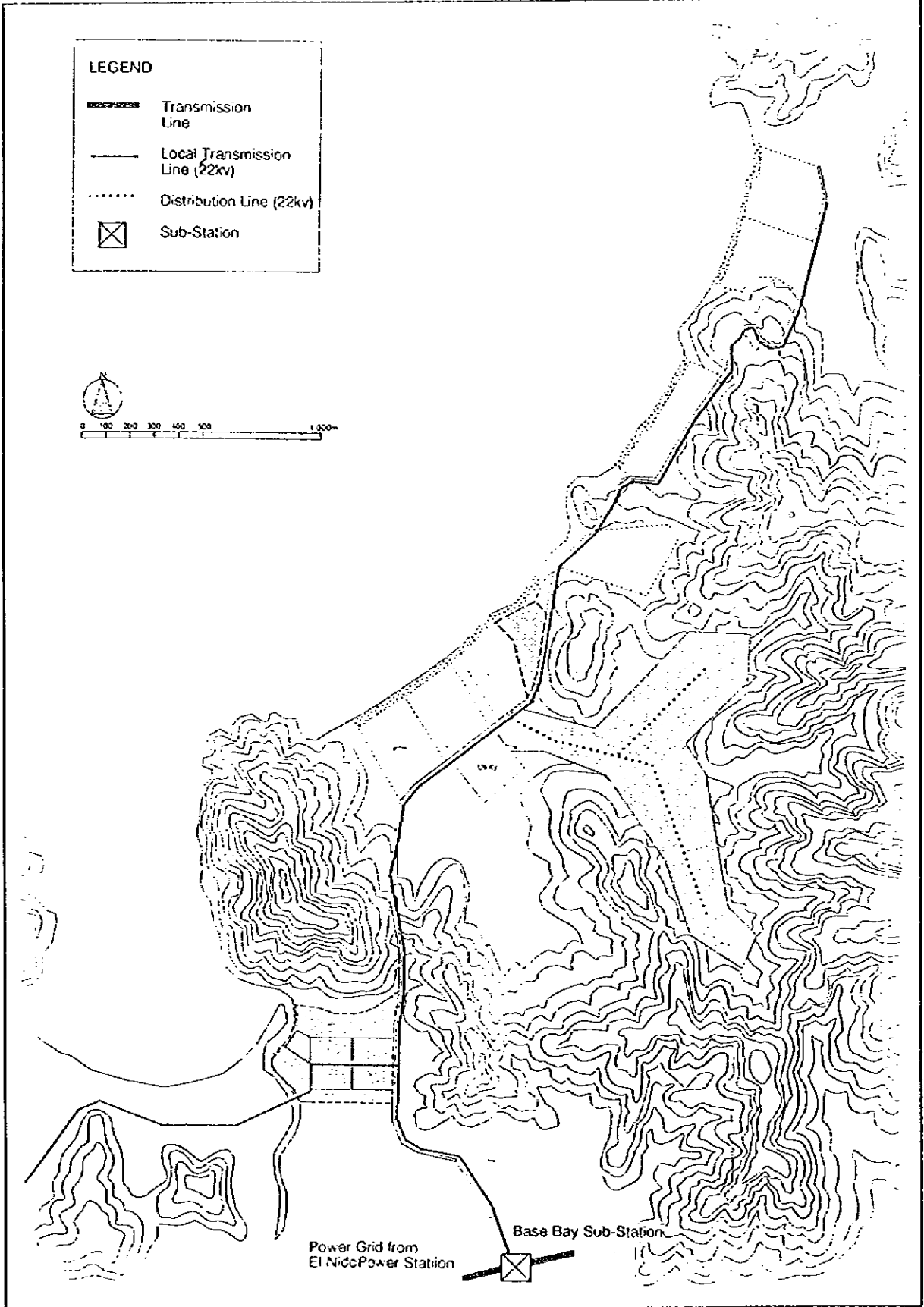
Source: Study Team

Figure 5-26 Power Supply System Plan: El Nido/South Coast Resort



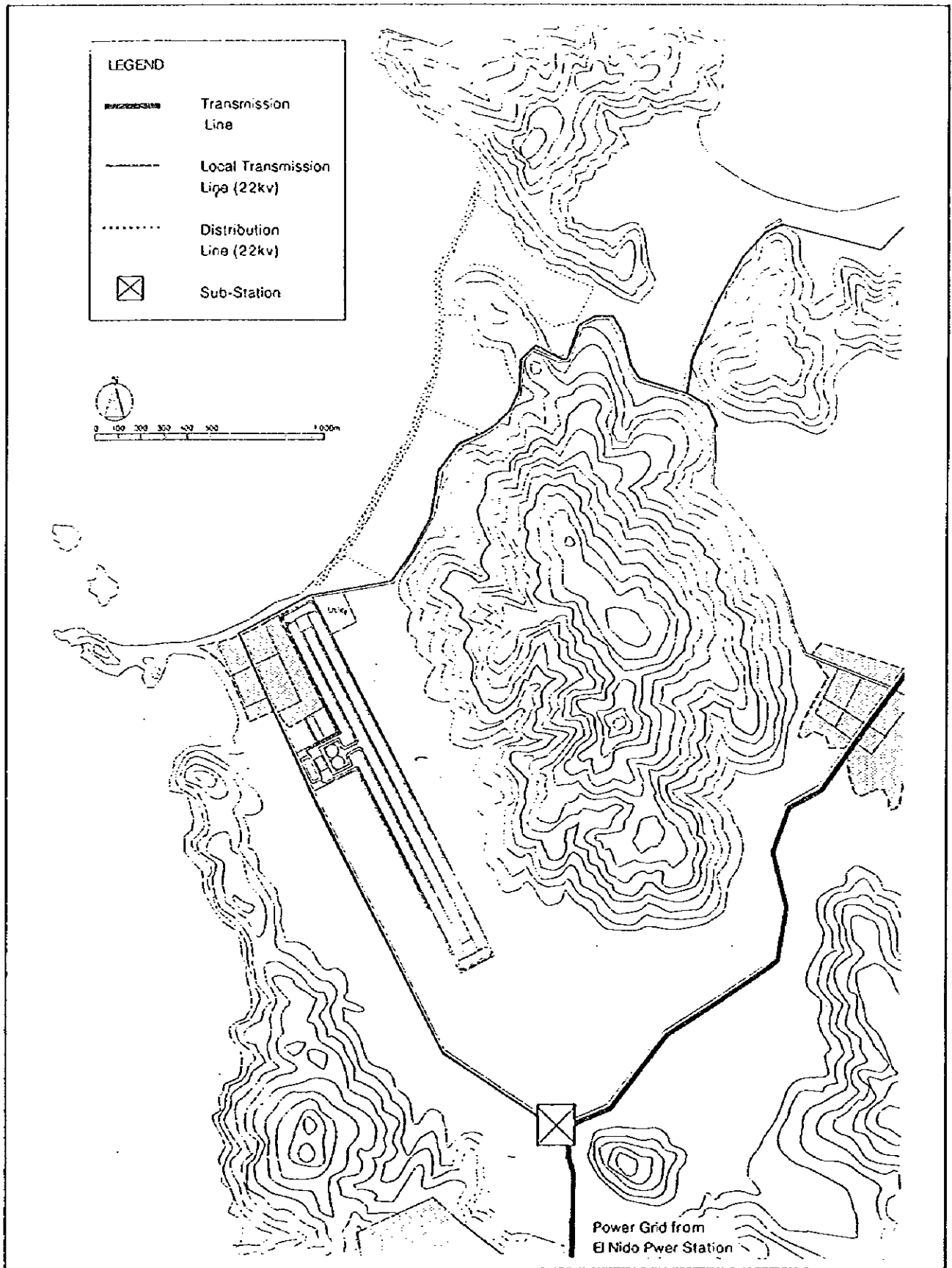
Source: Study Team

Figure 5-27 Power Supply System Plan: El Nido North/Base Bay Beach Resort



Source: Study Team

Figure 5-28 Power Supply System Plan: El Nido/Nacpan Beach Resort



Source: Study Team

(2) Estimated Power Demand

Power demand of the area was estimated for Tourism and local community use (refer to Table 5-30).

Table 5-30 Estimated Power Demand in Busuanga West

Use		Total	- 2000	2001 - 2005	2006 - 2010
Tourism	Accommodation ^{1/}	2,846	186	999	1,661
	Other Facilities ^{2/}	2,776	0	1,985	791
	Sub Total	5,622	186	2,984	2,452
Local Community ^{3/}		2,709	1,553	360	796
Total		8,331	1,739	3,344	3,247
Required Capacity = Total KVA / 0.85 & rounded		9,700	1,200	3,900	3,800

Source: Study Team

^{1/} unit demand of 2.7 KVA/room is assumed

^{2/} assumed unit demand for various tourism facilities are as follows: aquarium (0.16 KVA/sq. m), museum (0.14), turtle hatchery (0.07), nido center (0.07), fisherman's wharf (0.12), restaurant (0.10), bar/coffee shop (0.05), marina (0.10), country club house (0.08), spa house (0.10), shopping center (0.09), airport terminal (0.12), amusement/exhibition (0.13), office/shop/institution (0.07), and park/garden (0.1~0.05).

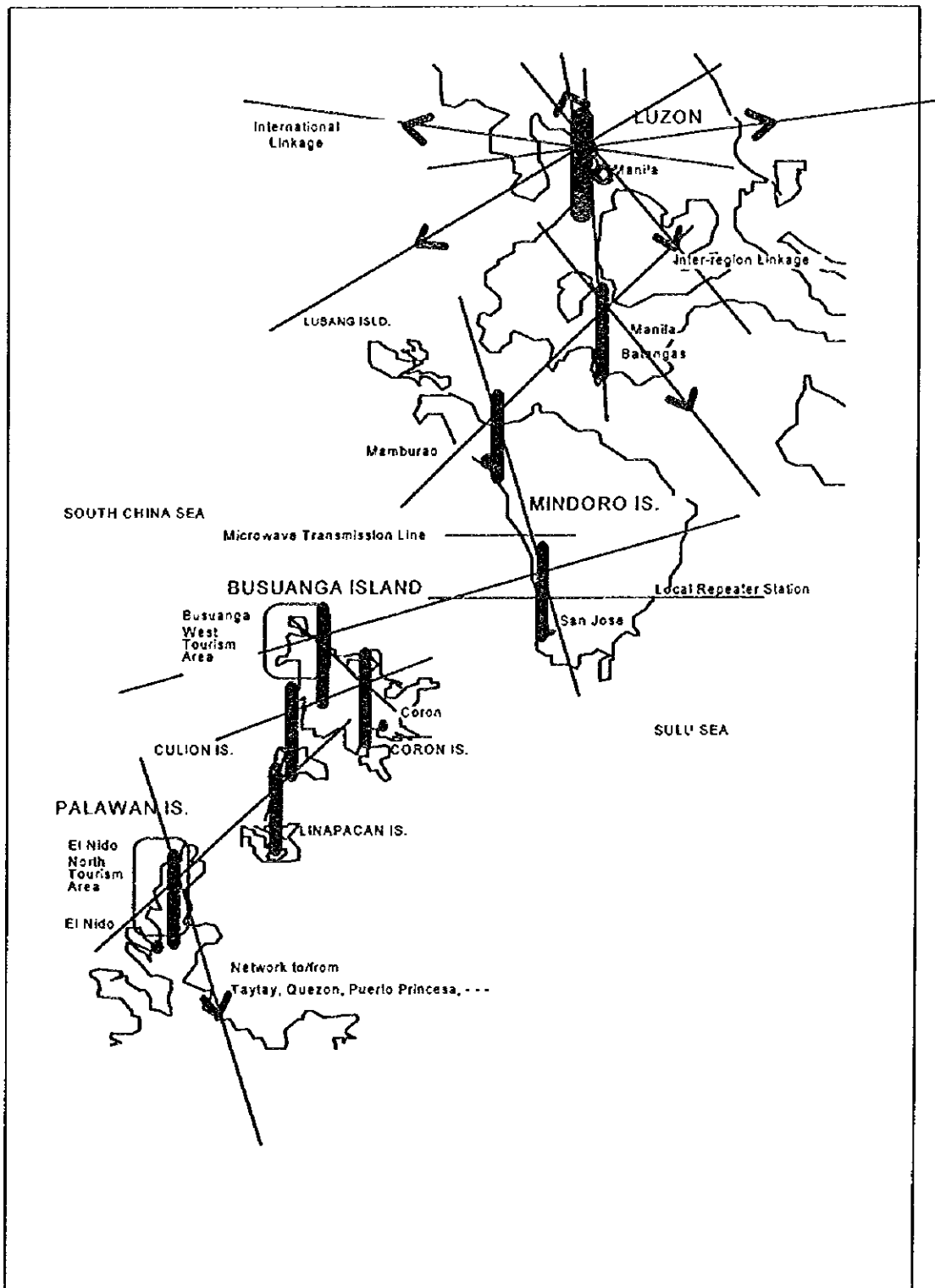
^{3/} power demand by the local community has been estimated as follows:
 No. of households x % of grid coverage x unit demand = demand
 Assumed % of grid coverage is 50%, 65% and 90% for 2000, 2005 and 2010, respectively. Unit demands by local community are assumed to be 0.543 KVA/consumer household, 0.693 and 0.884 for 2000, 2005 and 2010, respectively, considering that the demand grows as living standards improve.

4) Telecommunications

(1) Proposed Network System

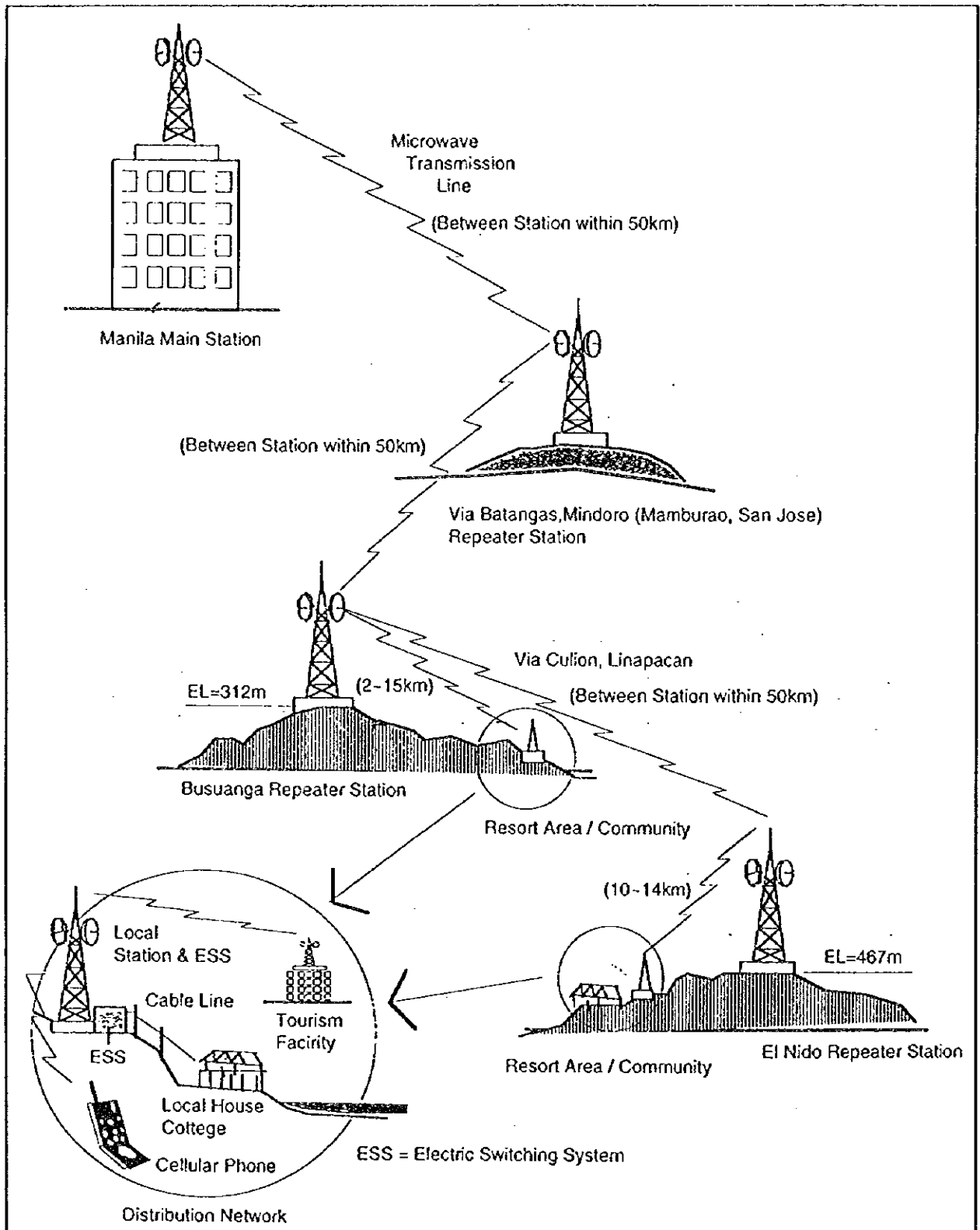
A microwave network system is preferred for inter-island transmission because it is easy to construct and is linked internationally (refer to Figure 5-29).

Figure 5-29 Microwave Network System



Source: Prepared by Study Team based on interviews with private companies

Figure 5-30 Schematic Diagram for Microwave System for El Nido



Source: prepared by Study Team based on interviews with private companies

(2) Estimated Demand

The number of main lines is estimated both for tourism and local community uses by taking into consideration area characteristics, function, number of accommodation rooms, etc., including telephone (cellular phone), telex and facsimile (refer to Table 5-31).

Table 5-31 Estimated Number of Telecommunication Lines

Use		Total	- 2000	2001 - 2005	200- 2010
Tourism	Accommodation ^{1/}	76	7	28	41
	Other Facilities	152	0	124	28
	Sub Total	228	7	152	69
Local Community		1,665	402	402	1,089
Total		1,893	554	554	1,158

Source: Study Team

^{1/} unit demand is assumed to be 10-15 rooms/line depending on hotel size

^{2/} demand was estimated assuming % of subscription (20,30 and 50% for 2000, 2005, and 2010, respectively) for number households of 870, 1,339, and 2,178 for 2000, 2005, and 2010, respectively

5) Sewage Disposal

(1) Necessity of Sewerage System

Provision of adequate sewage treatment systems is an important prerequisite to the tourism development in the area. At present, only a few hotels treat sewage on their own, and no centralized sewage treatment facilities are available. For large scale development, a central treatment plant for sewage would be advantageous in terms of efficiency and environmental effects.

(2) Estimated Sewage Demand

The area may be divided into four sanitary districts: Base Bay Sanitary District-1 comprising 7 lots, Fisherman's Wharf, and Inland Sports Club with sewage demand of 510 cu. meter/day; Nacpan and Pasadeña Sanitary District-2 comprising 4 lots, Airport Environment Center, Nido Center, Spa Resort, Orchid/Orchard Gardens, Butterfly/Insect Park, etc., with 395 cu. meter/day; Lamarao Sanitary District-3 comprising 7 lots, Inland Sports Club, and Shopping Mall with 686 cu. meter/day; and Corong-corong Sanitary District-4 comprising Marine Complex and Port with 15 cu.meter/day. The total sewage demand therefore is 1,606 cu. meter/day.

(3) Proposed System

The stabilization/aerated pond treatment process is considered adequate. Sewage and rain water drainage systems, are to be provided concurrently

with road construction. The quality of treated water is to be regulated to 60 to 120 ppm of COD. Water treated at the stabilization pond, can be utilized for irrigation water of landscaping, especially for golf course. For small-scale or isolated development areas under the geological conditions, individual septic tanks will be able to treat both night soil and gray water are proposed.

For local communities, improvements of sewage disposal using treatment plants is required in the future. For the time being, a septic-tank system is considered more practical. Based on the above, a preliminary sewage system plan was prepared (refer to Figures 5-31, 5-32, and 5-33).

6) Solid Waste Disposal

(1) Solid Waste Disposal System

The construction of an incineration plant is not recommended in the area because the solid waste collected will be very wet. A conventional sanitary landfill system with adequate protection measures against environmental pollution is considered more appropriate. To meet the solid waste disposal demand, required size of landfill site is calculated as follows:

El Nido Dumping Site:	$80.5 \text{ cum./day} \times 365 = 29,400 \text{ cum./year}$
10-year Capacity	$29,400 \times 10 \text{ years} = 294,000 \text{ cum.}$
Size of Landfill Site	$294,000 / 15^* = 1.96 \text{ ha}$

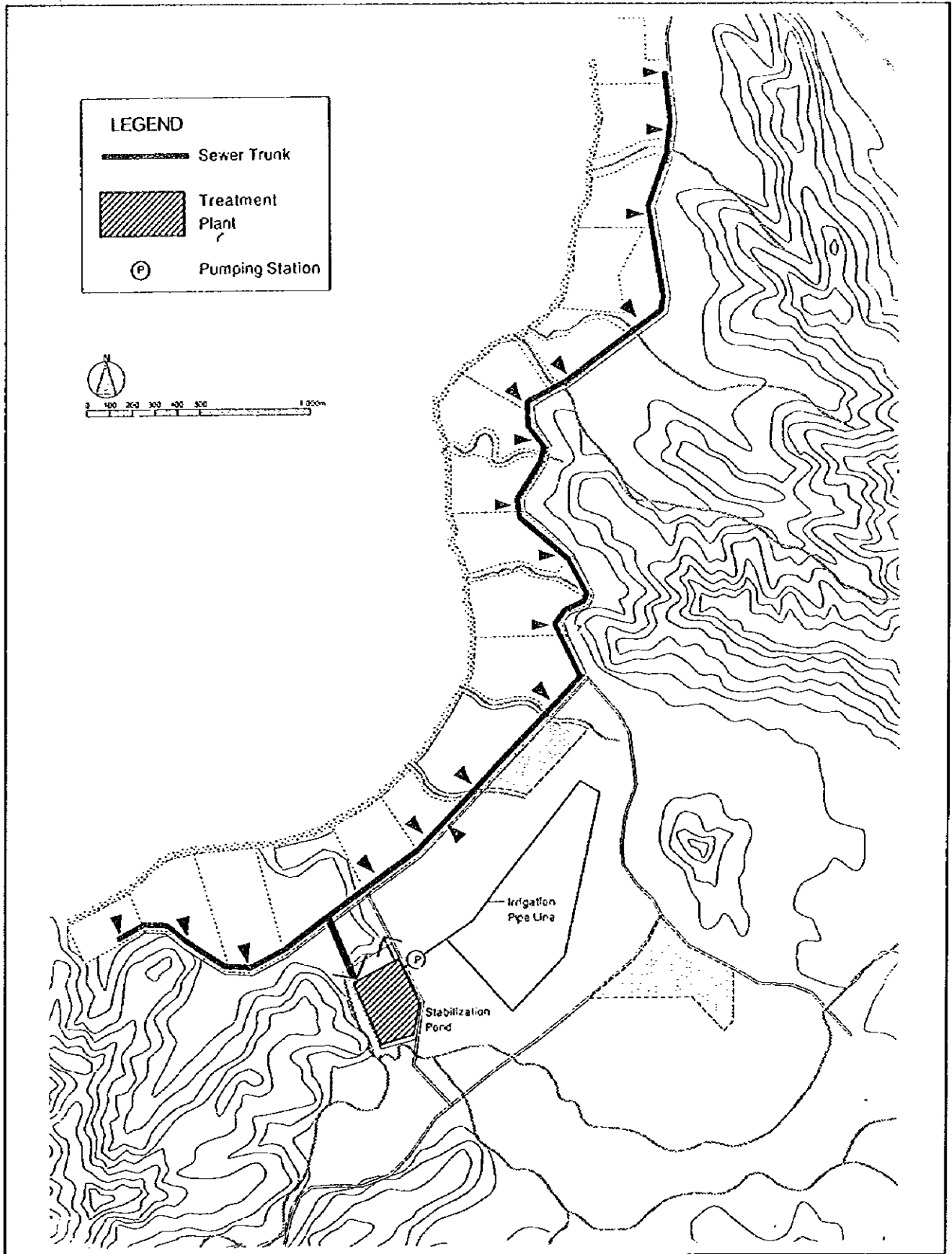
(2) Disposal Site Development

The site has been selected in such a way so as not to disturb the scenic view of residents and tourists. Furthermore, general agreement has been obtained from concerned agencies on the selection of these areas as dumping sites. Sanitary landfill sites shall be prepared in with regard to daily soil covering, fencing, weighing and recording, and lining and leaching treatment facility (if necessary). Recycling shall be promoted as much as possible. A system and market for recycling shall be required.

The components of solid waste shall include the following:

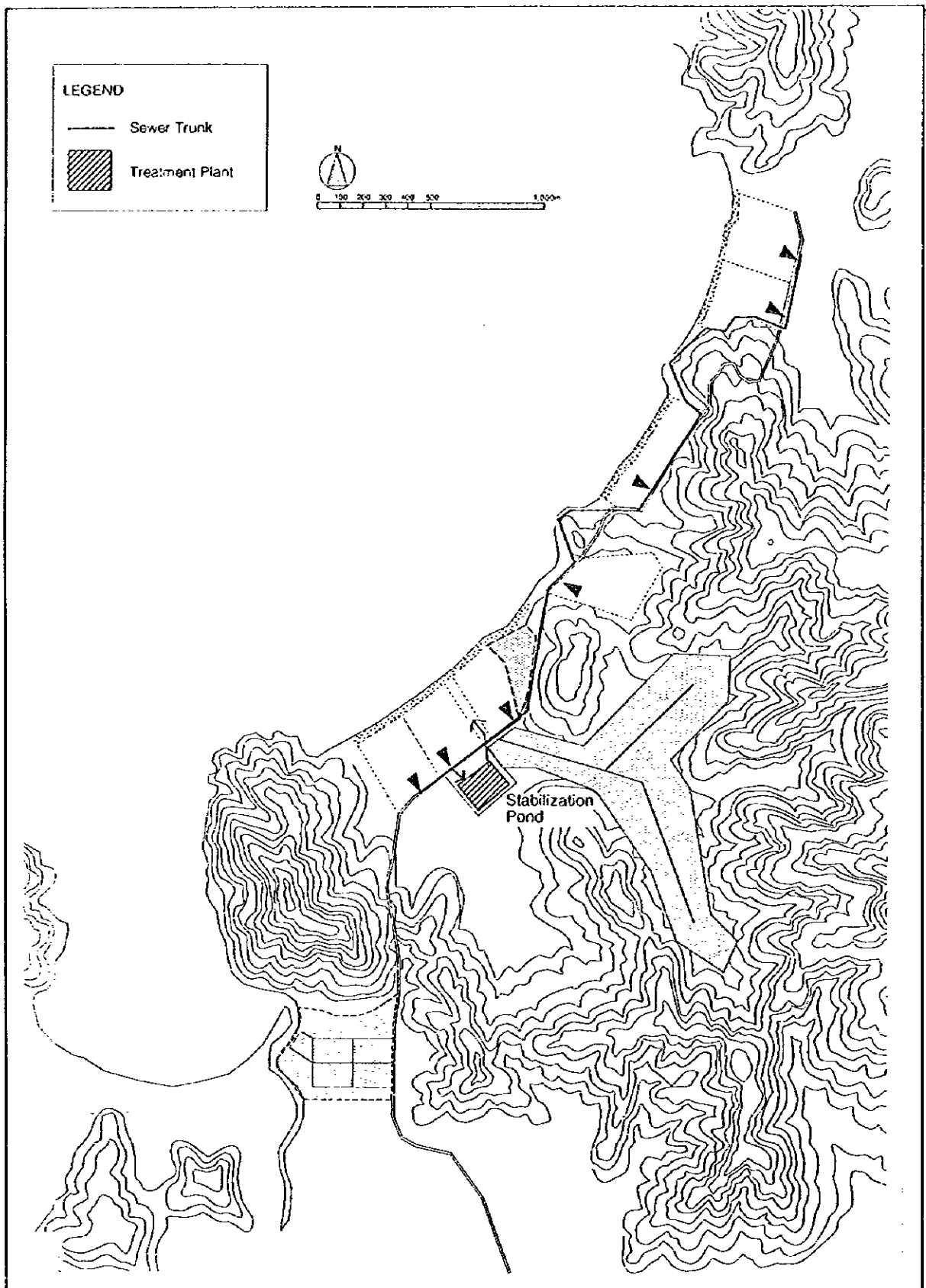
- (a) On site sanitary landfill site, access road, excavation, drainage, heavy equipment, weigh-bridge, house, fence and gate, computer, monitoring device, lining and leach treatment facility (if necessary)
- (b) Collection vehicle
- (c) Garage or workshop

Figure 5-31 Sewerage System Plan: El Nido/South Coast Resort



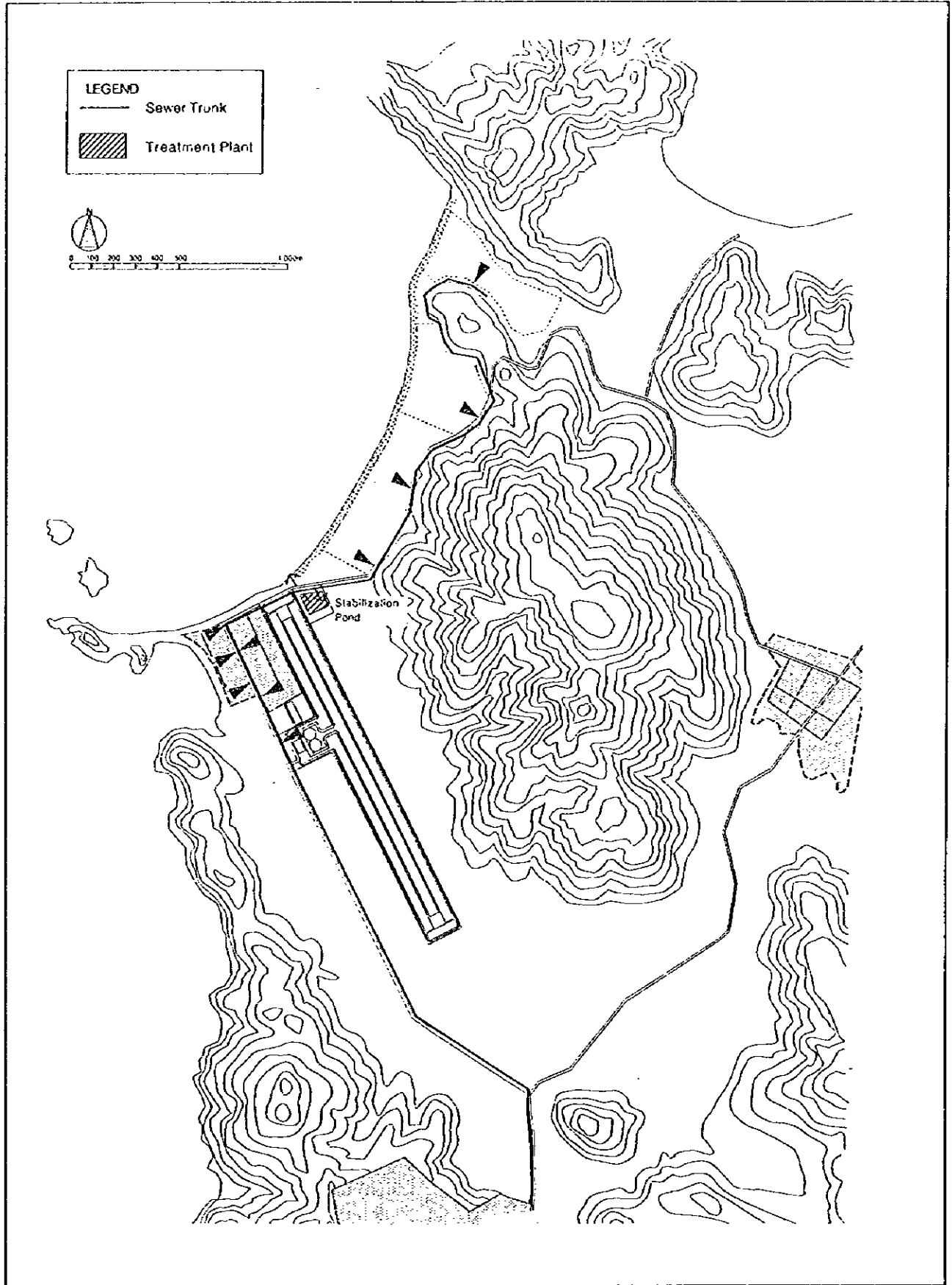
Source: Study Team

Figure 5-32 Sewerage System Plan: El Nido North/Base Bay Beach Resort



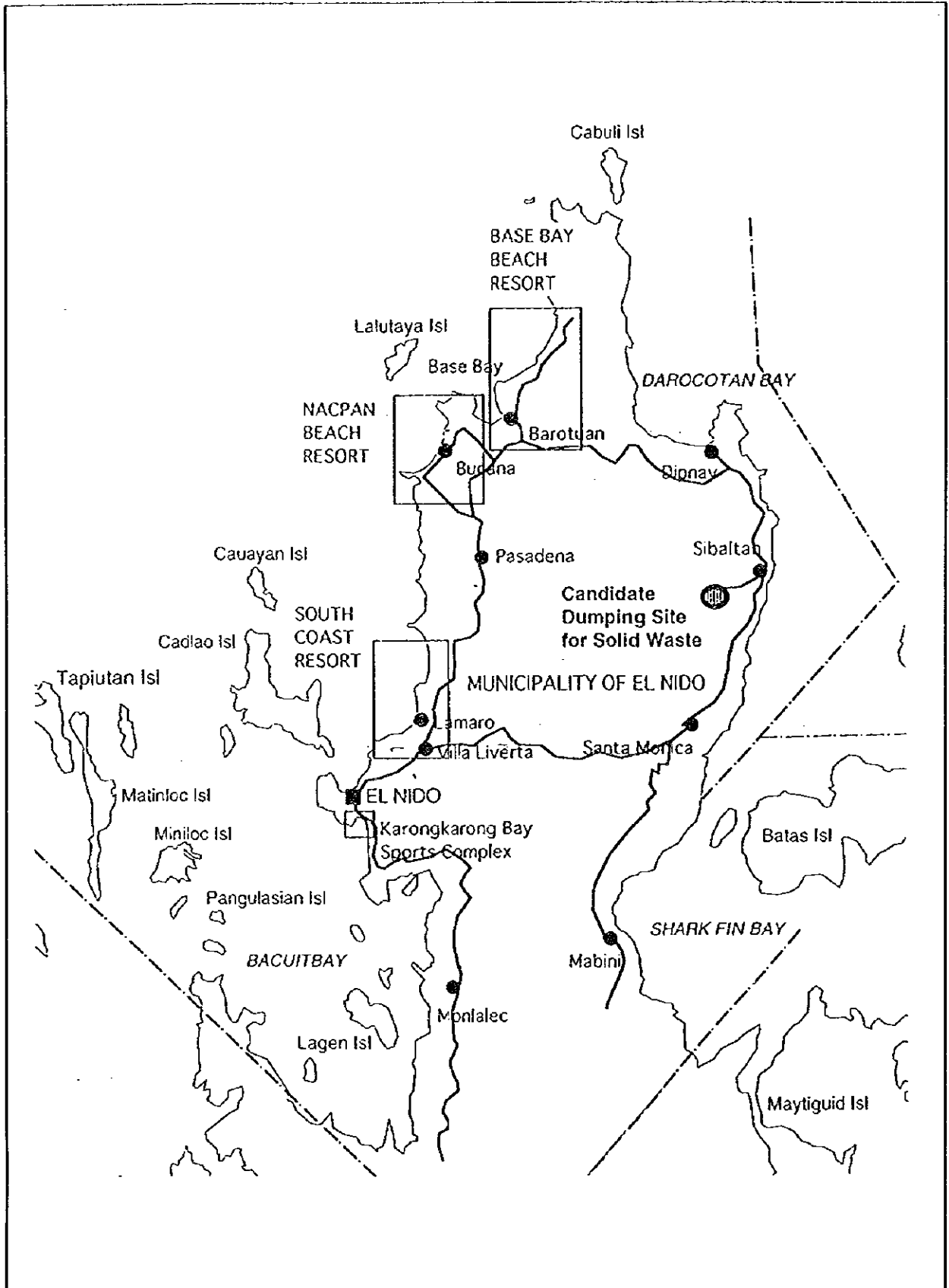
Source: Study Team

Figure 5-33 Sewerage System Plan: El Nido/Nacpan Beach Resort



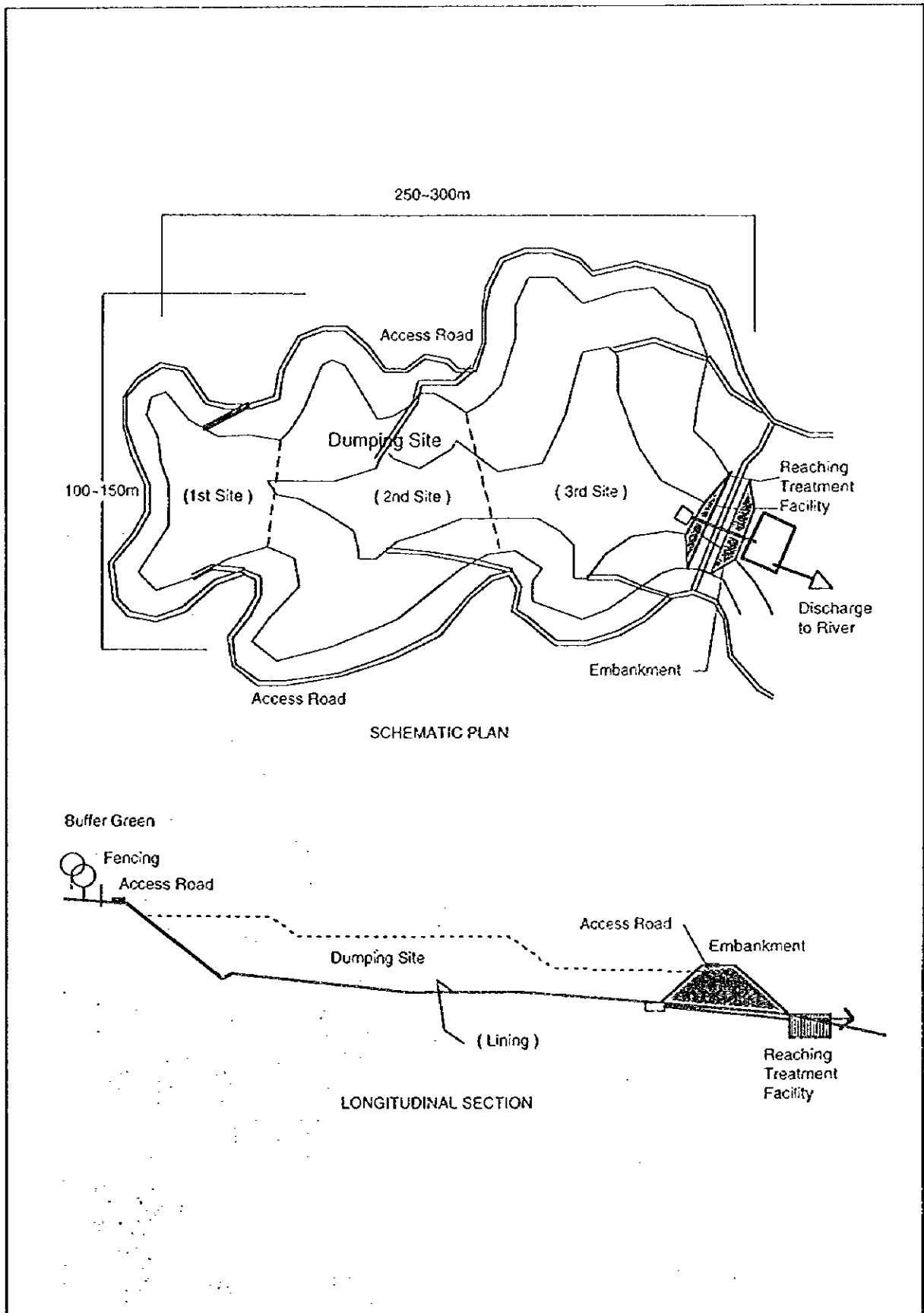
Source: Study Team

Figure 5-34 Candidate Dumping Site for Solid Waste in El Nido Municipality



Source: Study Team

Figure 5-35 Conceptual Plan for Solid Waste Dumping Site



Source: Study Team

5.5.3 Tourism Facilities

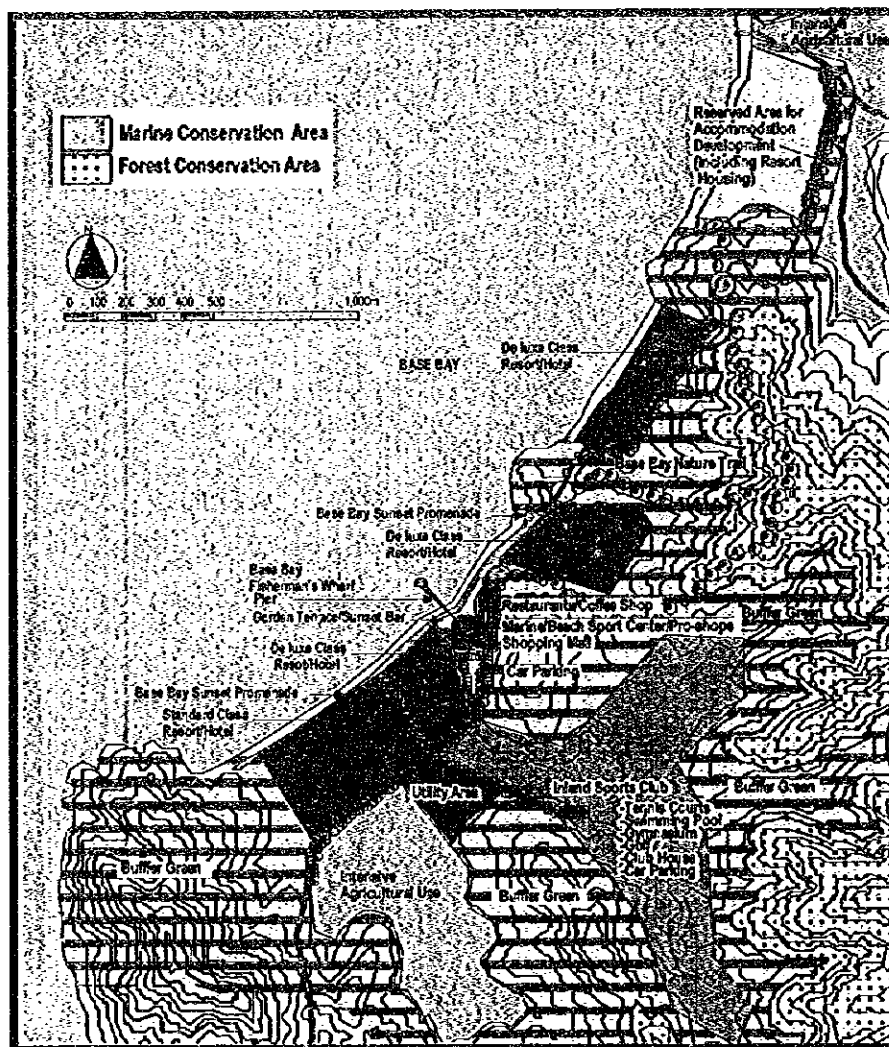
1) North Coast Resort Area

(1) Hotel and Accommodation Facilities

There are mainly four (4) types of beaches in this area according to geographical type. The southern beach close to Bucana has a 1 km shoreline and a depth of 400 m with gentle hind slope. The three northern beaches are divided by ridges and have different shapes. Some areas have slender or square shapes while another is rectangular-shaped.

In the future, these areas can be easily accessed with the improvement or construction of new roads in the vicinity of the El Nido feeder airport which is about 12 km away.

Figure 5-36 North Coast Resort Site Layout



Source: Study Team

The foregoing indicates that exclusive beach areas can correspond to various types of development. Development of accommodation facilities shall require a mix of de luxe and standard class development to match the needs of the diverse tourist market.

Consequently, there shall be development of about 500 standard-class cottage-type rooms built one or two stories high. Development density of accommodation facilities should be as low as 20 rooms/hectare to allow enough space for guests.

(2) Site Preparation of Resort Development Areas

Site preparation will start from phase 2 following construction of the access road (phase 1). High class hotels will be constructed in the southern area to correspond with the gate of the North Coast Resort and with an inland sports club. In phase 3, high class and middle class hotels will be mixed in the same area. The northern end of the area will be reserved for high class accommodation as it has the most exclusive space with good beach and hinterland.

In the development sites, landscaped area, equivalent to 30% of total area, should be required to serve as a buffer and should have enough plants and conserved natural vegetation to provide a relaxed and harmonized feeling with the natural environment.

(3) Tourism Facilities

Inland Sports Club: The main activities in this resort are marine sports and recreation. The inland sports club should offer an 18-hole golf course, tennis courts, swimming pool, gymnasium and other indoor sports facilities in order to diversify sports activities. It should also be located in the southern area because gentle slopes spread behind the resort area close to Bucana.

(Design Concept): This facility should be developed as a hill resort which fundamentally adapts natural elements into the landscape without large-scale alterations to the natural features of the area.

Base Bay Fisherman's Wharf and Shopping Center: A shopping mall is desired as a service facility for residents of this resort.

A fisherman's wharf should be added to the fish base in Diapila Bay and El Nido town. It will offer a wide variety of processed seafood, shopping, and develop new processed foods and healthy foods and dishes. Recipes of new seafood dishes can also be developed. Restaurants that offer seafood menus, a garden terrace and open-air bars showing a splendid sunset view and seaside atmosphere are to be located in the facility. In front of these facilities, it may be desirable to locate

5.5.3 Tourism Facilities

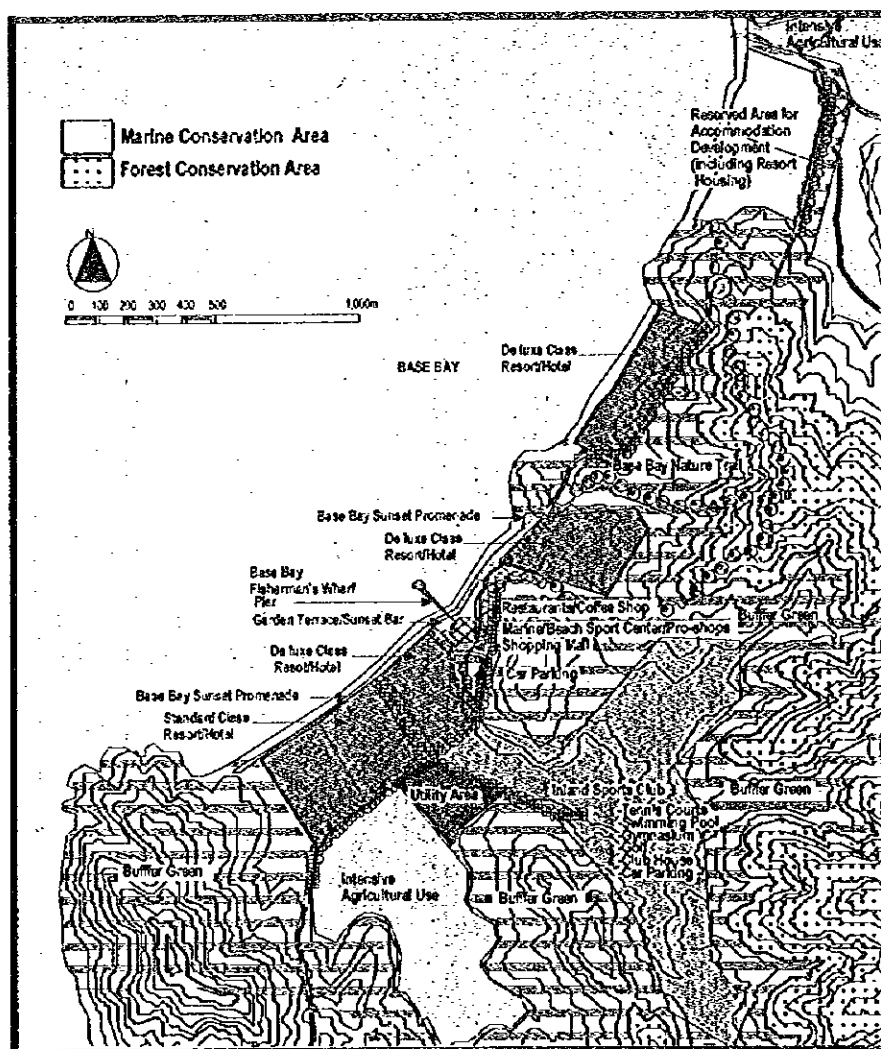
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(1) Hotel and Accommodation Facilities

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In the future, these areas can be easily accessed with the improvement or construction of new roads in the vicinity of the El Nido feeder airport which is about 12 km away.

Figure 5-36 North Coast Resort Site Layout



Source: Study Team

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flower parks and lawns where visitors can enjoy viewing the sunset and feeling the cool sea breeze.

(Design Concept): The shopping mall should be designed by locating small shops in a stair-like appearance so that the immediate surroundings and natural features such as gentle slopes at the back of the resort area can be seen. Each shop can utilize space on the ceiling of downstairs shops as open deck.. The mall should be accessible from both the beach side and the road side to attract more tourists.

Table 5-32 North Coast Resort Tourism Facilities Development

Area	Facilities	Type Dev't	Dev't Components	Size		Dev't Period		
				Floor	Area	2000	2005	2010
NORTH COASTAL RESORT					185 ha			
Base Bay Resort					56 ha			
	New		- Site Preparation of Resort Area:Phase-2 - Site Preparation of Resort Area:Phase-3 - Site Preparation for Resort Housing:Phase-3 - Park and Landscaping Area		28,400 sq.m 266,700 10,000 114,500			
Inland Sports Club					81 ha			
	New		- Golf Course(18 Hole) - Tennis Courts - Swimming Pool - Gymnasium and other Indoor Sport Facility - Club House - Car Parking (2 buses/18 cars)	200 sq.m 3,000	800,000 sq.m 2,400 900 500 5,000 800			
Base Bay Fisherman Wharf/Shopping Center					2 ha			
	New		- Shopping Mall - Restaurant/Coffee Shop - Garden Terrace and Sunset Bar - Flower/Lawn Park - Marine and Beach Sports Center and Pro-shops - Car Parking (10 buses/50 cars)	1,100 sq.m 900 300	1,400 sq.m 1,500 500 5,000 800 2,000			
Buffer Area/Other Facilities					46 ha			
	New		- Sewage Network/Treatment Plant/Irrigation Water Main		20000 sq.m			
	New		- Strolling Path (width:1.5 m, length:3km)		4,500			
	New		- Pocket Parks (Seaside Park X 1, Observatory Park X 4)		7,000			

Source: Study Team

2) Nacpan Beach Resort Area

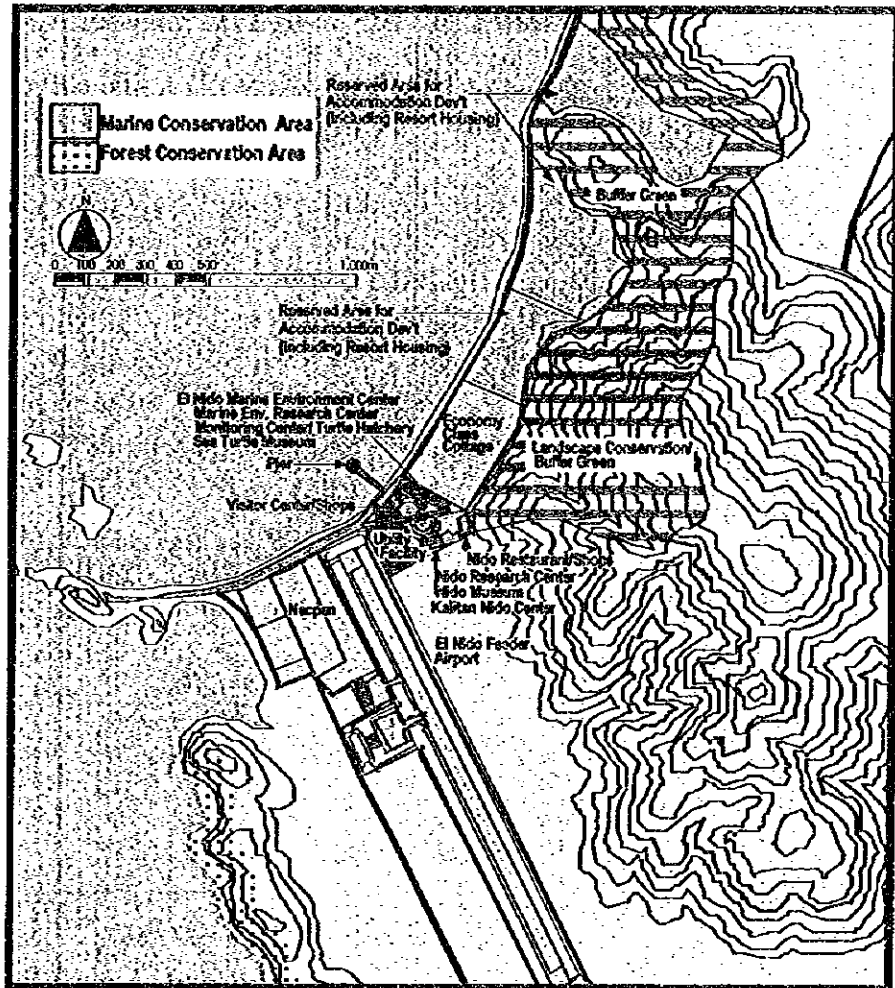
(1) Hotel and Accommodation Facilities

Beaches which are on average 2 km long and 300 m deep, are beautifully arch-shaped and are made up of white sand. The new El Nido feeder airport will be located between the North Coast Resort and the South Coast Resort where the major flow of tourists is expected.

The above-mentioned development indicates that these areas will be bustling with activity. Consequently, standard-class and small-scale

development of about 50 rooms in single-story structures are desired. The ideal development density of accommodation facilities is as low as 15 rooms/hectare to provide enough space for the guests in these resorts.

Figure 5-37 Nacpan Beach Resort Site Layout



Source: Study Team

(2) Site Preparation of Resort Development Areas

Construction of the access road to the resort area will be completed in the first stage. Site preparation will start at the second stage. during which, standard-class hotels will be constructed at the southern area adjoining El Nido Feeder Airport. A Palawan Environmental Resources Conservation Center, including a sea turtle/dugong museum and Nido Center, will also be constructed.

Landscaped area within developments sites, equivalent to 30% of total area, will serve as buffer area. Greenery and natural vegetation to provide a relaxed and harmonized feeling with the surrounding natural environment can be planted here.

flower parks and lawns where visitors can enjoy viewing the sunset and feeling the cool sea breeze.

(Design Concept): The shopping mall should be designed by locating small shops in a stair-like appearance so that the immediate surroundings and natural features such as gentle slopes at the back of the resort area can be seen. Each shop can utilize space on the ceiling of downstairs shops as open deck.. The mall should be accessible from both the beach side and the road side to attract more tourists.

Table 5-32 North Coast Resort Tourism Facilities Development

Area	Facilities	Type	Devt Components	Size		Devt Period		
				Floor	Area	2000	2005	2010
NORTH COASTAL RESORT					185 ha			
Base Bay Resort					56 ha			
		New	- Site Preparation of Resort Area Phase-2 - Site Preparation of Resort Area Phase-3 - Site Preparation for Resort Housing Phase-3 - Park and Landscaping Area		28,400 sq m 265,700 10,000 114,500			
Inland Sports Club					81 ha			
		New	- Golf Course(18 Hole) - Tennis Courts - Swimming Pool - Gymnasium and other Indoor Sport Facility - Club House - Car Parking (2 buses/18 cars)	200 sq m 3,000	800,000 sq m 2,400 900 500 5,000 800			
Base Bay Fisherman Wharf/Shopping Center					2 ha			
		New	- Shopping Mall - Restaurant/Coffee Shop - Garden Terrace and Sunset Bar - Flower,Lawn Park - Marine and Beach Sports Center and Pro-shops - Car Parking (10 buses/50 cars)	1,100 sq m 900 300	1,400 sq m 1,500 500 5,000 800 2,000			
Buffer Area, Other Facilities					46 ha			
		New	- Sewage Network/Treatment Plant/Irrigation Water Main		20000 sq m			
		New	- Strolling Path (width: 1.5 m, length:3km)		4,500			
		New	- Pocket Parks (Seaside Park X 1, Observatory Park X 4)		7,000			

Source: Study Team

2) Nacpan Beach Resort Area

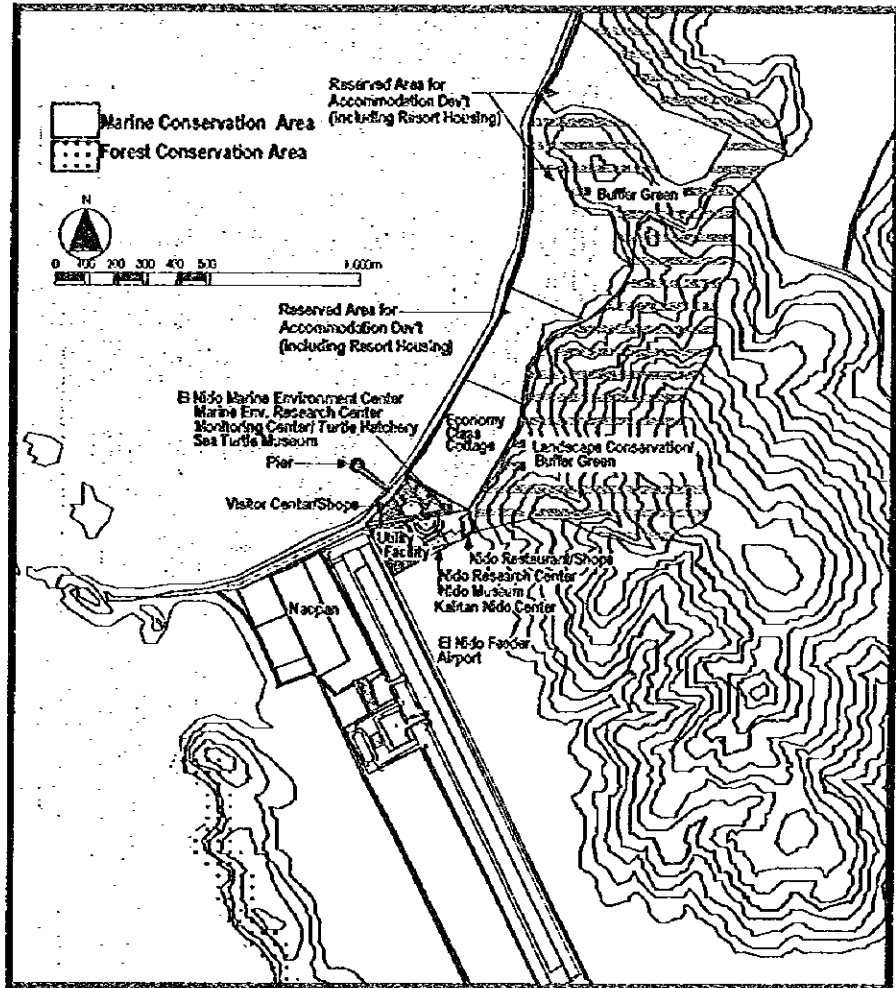
(I) Hotel and Accommodation Facilities

Beaches which are on average 2 km long and 300 m deep, are beautifully arch-shaped and are made up of white sand. The new El Nido feeder airport will be located between the North Coast Resort and the South Coast Resort where the major flow of tourists is expected.

The above-mentioned development indicates that these areas will be bustling with activity. Consequently, standard-class and small-scale

development of about 50 rooms in single-story structures are desired. The ideal development density of accommodation facilities is as low as 15 rooms/hectare to provide enough space for the guests in these resorts.

Figure 5-37 Nacpan Beach Resort Site Layout



Source: Study Team

(2) Site Preparation of Resort Development Areas

Construction of the access road to the resort area will be completed in the first stage. Site preparation will start at the second stage, during which, standard-class hotels will be constructed at the southern area adjoining El Nido Feeder Airport. A Palawan Environmental Resources Conservation Center, including a sea turtle/dugong museum and Nido Center, will also be constructed.

Landscaped area within developments sites, equivalent to 30% of total area, will serve as buffer area. Greenery and natural vegetation to provide a relaxed and harmonized feeling with the surrounding natural environment can be planted here.

(3) Tourism Facilities

Sea Turtle and Dugong Museum at PNRCC: The museum, in cooperation with the PNRCC and Busuanga aquarium, shall serve to showcase the ecology of sea turtles and dugongs through videos, pictures and a diorama.

Souvenir shops shall sell such products as T-shirts, accessories, handicrafts and pictures that feature sea turtle and dugong characters. A visitor center, kiosk and coffee shop will also be set up for tourists.

Kalitang Nido Center and Restaurant: New processed foods and dishes made of bird nests shall be developed to preserve the name of El Nido. A nido restaurant shall serve health-conscious dishes made of nido. The nido center shall show, by means of video, pictures and diorama, the manner of hunting bird nests and its features as a healthy food substitute.

Table 5-33 Nacpan Beach Resort Tourism Facilities Development

Area	Facilities	Type Dev't	Dev't Components	Size		Dev't Period		
				Floor	Area	2000	2005	2010
NACPAN AIRPORT AND BEACH RESORT AREA					46 ha			
El Nido Marine Environment Center					2 ha			
	New	- Marine Environmental Research Center - Monitoring Center and Turtle Hatcheries - Marine and Terrestrial Patrol Station (Bantai El Nido) - Training Center for Park Ranger and Guide (Environment) - Sea Turtle and Dugong Museum (Picture/Video Display) - Visitor Center/Kiosk/Coffee Shop - Souvenir Shop for a Product Featuring a Character - Car Parking (7 buses/40 cars)	600 sq.m 200 500 200 700 300 400	1,500 sq.m 500 1,000 500 900 1,000 1,400				
Kalitang Nido Center/Restaurant					1 ha			
	New	- Nido Research Center for Food Science - Nido Museum (Displaying how to make & hunt the nido) - Nido Restaurant/Souvenir Shop - Car Parking (6 buses/27 cars)	500 sq.m 700 400	1,300 sq.m 900 1,400 1,400				
Nacpan Beach Resort					41 ha			
	New	- Inner Road Network and Roadside Landscaping - Site Preparation for Resort Housing Phase-2 - Site Preparation for Resort Housing:Phase-2 - Site Preparation for Resort Housing:Phase-3 - Buffer Green and Forest Reserve	2 km	24,000 sq.m 28,400 66,700 133,400 98,000				
Sewage Treatment					2 ha			
	New	Sewage Network and Treatment Plant						

Source: Study Team

3) South Coast Resort

(1) Hotel and Accommodation Facilities

Very long beaches which have a total length of about 5 km and depth of 300 m - 500 m, on the average, are located in this area. Extensive flat

hinterland characterize the southern area where Lio airstrip is located now.

The existing road will be improved as the national road runs along the area. The area is easily accessible because it is only about 13 kms away from the proposed El Nido feeder airport. Moreover, it is accessible to Corong-corong Marina (about 6 km away) which is the base for marine activities in Bacuit Bay.

These characteristics indicate that the area offers diverse potentials for development. Development of accommodation facilities requires mixing high class and middle class development to cater to these diverse tourists.

Mid-scale one story villa type rooms shall be developed to provide a spacious, calm and comfortable ambiance in the resort area. Density of accommodation facilities shall be 15 rooms/hectare.

(2) Site Preparation of Resort Development Areas

Site preparation shall start from the first stage as the existing airstrip can be used until the new feeder airport is completed.

Standard-class hotels at the right side of Pancalao River will be constructed during phase 2. From phase 2 to phase 3, de luxe hotels will be built from the left side of Pancalao River to the west bottom where there is exclusive space enclosed by hills and a river. Additional standard hotels with special amenities like shopping centers and inland sports clubs will be constructed in the northeast.

In the development sites, landscaped area, which is equivalent to 30% of total area, shall be required as buffer. It will be planted with grass and other natural vegetation.

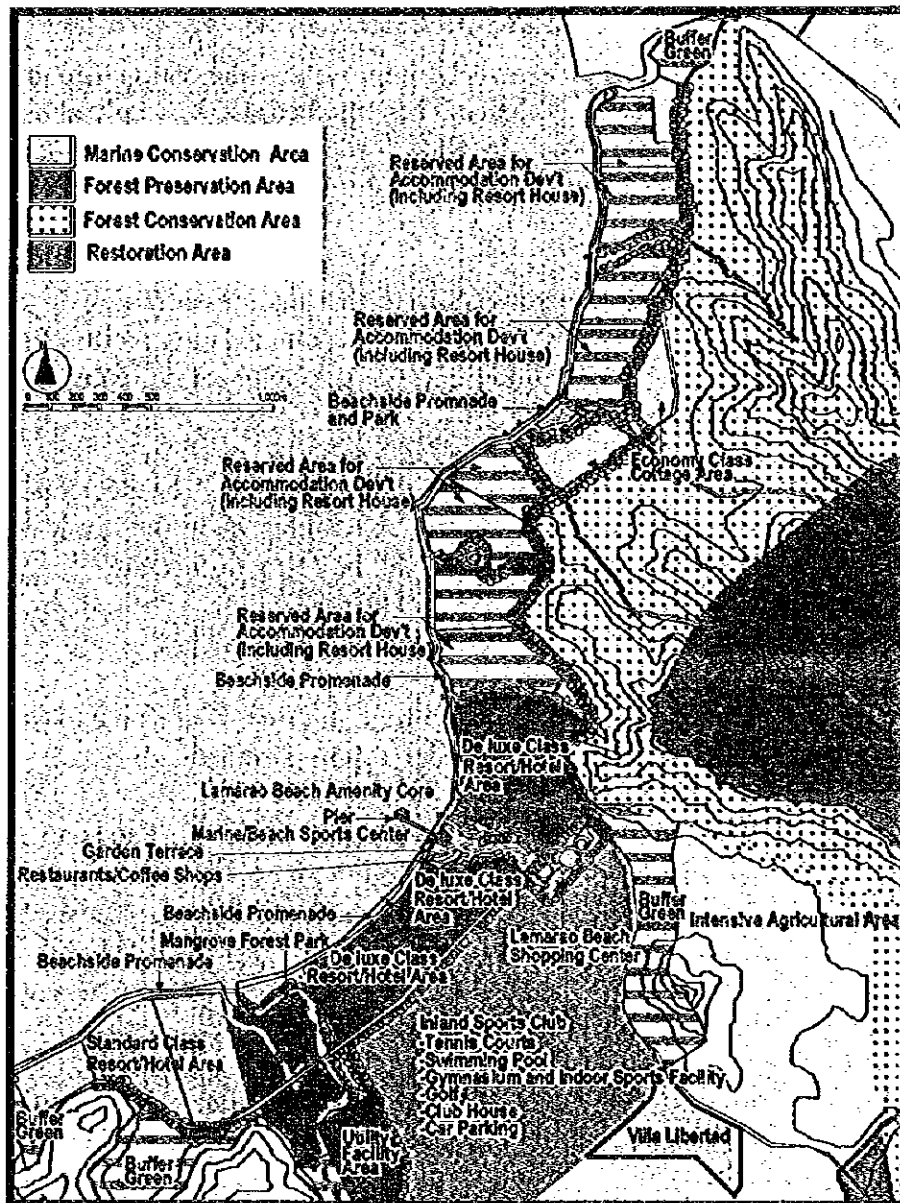
(3) Tourism Facilities

Inland Sports Club: Main activities in this resort are marine sports and recreation. The inland sports club shall consist of a golf course (18 hole), tennis courts, swimming pool, gymnasium, and other indoor sports facilities in order to diversify and increase activities to choose from.

Sports complex shall be located in the southern area, where the airstrip is also located, because of the extensive flat land spread behind the resort area.

(Design Concept): This facility shall not require large scale earthwork because of its flat natural features. However, it shall fully adapt natural components such as rivers and natural vegetation into its landscape.

Figure 5-38 South Coast Beach Resort Site Layout



Source: Study Team

Lamarao Beach Shopping Center

Shopping Area

A shopping mall shall cater not only to residents of the resort but also to outside tourists who stop on their way to enjoy the amenities offered Bacuit bay marine activities or inland sports club, and to tour groups from outside of El Nido.

(Design Concept): The shops shall only be one (1) to two (2) stories high,

and shall locate intensively to accommodate a great number of people and to achieve a space-saving effect.

On the west side, a backdrop of the rocky shape of Cadlao Island and the scenic sunset can provide the mall a panoramic view of the immediate surroundings. Some parts of the restaurants and coffee shops may also be extended by using open terraces and second floor decks to similarly take advantage of the beautiful scenery.

At the center of the mall, a terraced garden planted with tropical flowers is desired to produce a cool and relaxing effect at the open-air restaurant and coffee shops.

(Design Concept): In constructing the terrace stretching out to the beach, the least possible effect on the beaches should be considered by making use of board terrace with piers.

Marine Area

As a transportation facility, the pier provides direct access to various marine activities in Bacuit Bay from the resort area. A marine sports center and shops renting or selling products or services related to marine and beach recreation may be located at the foot of the pier, set back from the beach.

Table 5-34 South Coast Resort Tourism Facilities Development

Area	Facilities	Type Dev't	Dev't Components	Size		Dev't Period		
				Floor	Area	2000	2005	2010
SOUTH COAST RESORT					286 ha			
Lamarao/Lio Beach Resort					121 ha			
	New	- Inner Road Network with Roadside Landscape - Site Preparation of Resort Area:Phase-1 - Site Preparation of Resort Area:Phase-2 - Site Preparation of Resort Area:Phase-3 - Site Preparation for Resort Housing:Phase-2 - Site Preparation for Resort Housing:Phase-3 - Park and Landscaping Area	4.0 km	48,000 sq.m 53,400 135,000 78,400 133,400 200,000 257,300				
Inland Sports Club					101 ha			
	New	- Golf Course(18 Hole) - Tennis Courts - Swimming Pool - Gymnasium and other Indoor Sport Facility - Club House - Car Parking (2 buses/21 cars)	200 3,000'	900,000 sq.m 2,400 900 500 5,000 900				
Lamarao Beach Shopping Center					3 ha			
	New	- Shopping Mall - Restaurants/Coffee Shops - Garden Terrace - Pier - Marine and Beach Sports Center and Pro-shops - Car Parking (6 buses/30 cars)	800 sq.m 700 300 300	2,700 sq.m 2,400 5,000 800 2,100				
Buffer Area/Other Facilities					62 ha			
	New	- Sewage Network/Treatment Plant/Irrigation Water Main		20,000				
	New	- Strolling Path (width:1.5 m, length:5km)		7,500 sq.m				
	New	- Riverside Pocket Parks and Magrove Park		130,000				

4) Inland Recreation Area

(1) Pasadeña Agro-Hill Park

a) Spa Resort

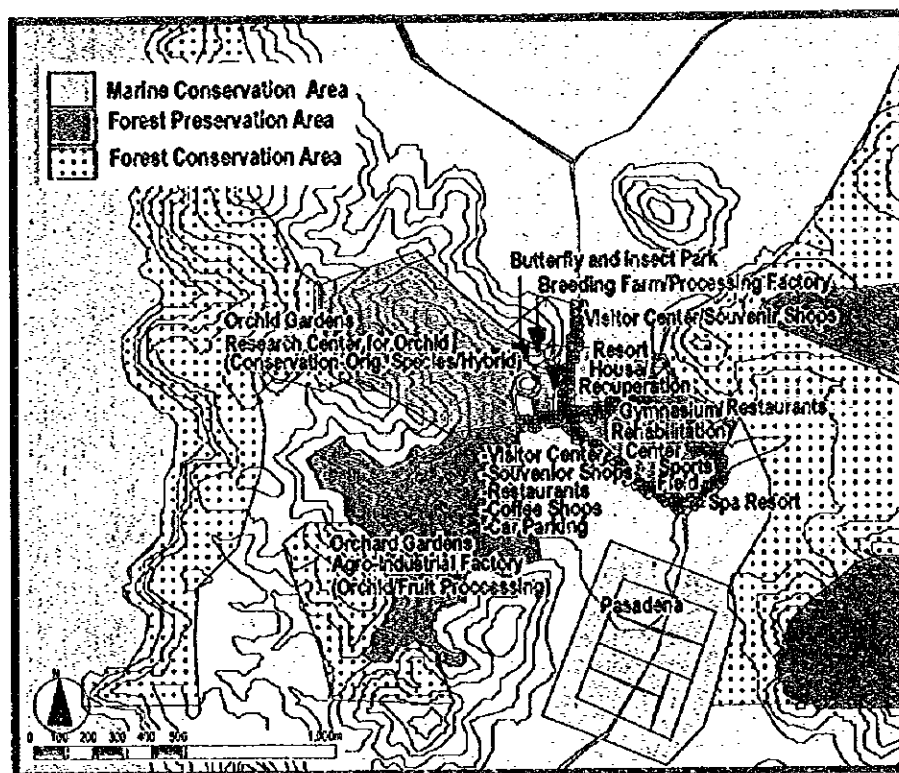
The hot spring therapy center shall provide natural healing or treatment of various illnesses and their symptoms by making use of hot springs and health spas.

Resort houses are needed for long stay-recuperation, as are sports facilities such as a gymnasium and tennis courts. These facilities should assist the recovery process by combining hot springs with physical therapy.

The restaurant offering healthy meals, shall be provided not only to residents but to visitors as well. It shall operate jointly with the orchid/orchard gardens and Kalitang nido center.

(Design Concept): Buildings should basically be one story high. However, accommodation facilities can be two storied. The area shall be planted with trees and greenery and shall maintain a quiet and restful atmosphere for recuperating guests. Furthermore, accommodations shall be distanced apart so as to attain privacy.

Figure 5-39 Pasadena-hill Agro Park Site Layout



Source: Study Team

b) Orchid and Orchard Gardens

Garden Area: The orchid gardens will be open to the public and will mainly serve as botanical gardens where diverse indigenous species of orchids are preserved and produced on a commercial basis.

Furthermore, orchid farms shall cultivate and develop different varieties of orchids to be used in landscaping. Orchid gardens also attract special attention not only in hotels but also along the streets in tourist towns.

In the same way, orchard gardens can serve as research facilities where fruit varieties can be improved to match the climate and, thus, increase the supply of food to local communities. These shall also be open to tourists.

(Design Concept): Orchid and orchard gardens should be located on gentle slopes which are well drained in accordance with natural features.

Research and Factory Area: The research center shall conserve original species and cross-breed indigenous species. Furthermore, an agro-industrial factory shall be established to produce and market the following: 1) decorative orchids; 2) aromatic products with the scent of orchids; 3) handicrafts with orchid motifs, and 4) processed goods, dishes and desserts made of fruits.

(Design Concept): The research and factory area should be located on the outskirts of the gardens. The building should not be too high, maybe just one or two stories high. It should be surrounded with plants and greenery.

Tourist Service Area: The factory shall also have a visitor center, souvenir shops, and restaurants/coffee shops.

(Design Concept): Souvenir shops and restaurants which many tourists will patronize should be located beside the national road to ensure good access, and in a place where the orchid and orchard gardens can be seen. The building should just be one or two stories high housing the restaurants on the second floor from which views of the orchid and orchard gardens can be had.

c) Butterfly and Insect Park

Research and Factory Area: The butterfly and beetle garden will mainly serve as a facility for preservation and research on

butterflies, beetles and indigenous species similar to the Busuanga Bird Park. It shall also be open to tourists. Breeding farms to increase indigenous species and a souvenir processing factory to develop new souvenirs such as clothes, accessories and handicrafts designed with butterfly or beetle motifs may be developed

(Design Concept): In cooperation with the botanical garden, an exhibition of insect specimens can be provided to tourists. These real insects can be displayed in lush tropical vegetation which tourists can admire.

Tourist Service Area: A visitor center, including an information bulletin which illustrates the insects, a kiosk, resting room and souvenir shops are to be provided.

(Design Concept): The visitor center should be located along the national road for good accessibility and to serve as buffer area between roads and parks. The building should be one just story high.

Table 5-35 Pasadena Agro-hill Park Tourism Facilities Development

Area	Facilities	Type Dev't	Dev't Components	Size		Dev't Period		
				Floor	Area	2000	2005	2010
PASADENA AGRO-HILL PARK					22 ha			
Spa Resort					1 ha			
	New		<ul style="list-style-type: none"> - Hot Spring Therapy Center - Resort House for Recuperation - Gymnasium and Rehabilitation Center - Sports Fields (Tennis Courts) - Restaurant (healthy foods preparation)/Coffee Shop - Car Parking (3 buses/16 cars) 	500 sq.m 800 200 200	700 sq.m 1,000 300 1,200 700 700			
Orchid and Orchard Gardens					8.6 ha			
	New		<ul style="list-style-type: none"> - Orchard Gardens - Orchard Gardens - Visitor Center and Souvenir Shop - Restaurant/Coffee Shop - Research Center (conservate-original sp., hybrid sp.) - Agro-industrial Factory (for Orchid/Fruit Processing) - Car Parking (5 buses/22 cars) 		20,000 sq.m 20,000 800 1,000 800 1,300 1,200			
Butterfly and Insects Park					13 ha			
	New		<ul style="list-style-type: none"> - Butterfly Garden - Beattie Garden - Other Indigenous Insects Gardens - Visitor Center (Information/Kiosk/Resting Room) - Souvenir Shops - Breeding Farms and Souvenir Processing Factory - Car Parking (4 buses/20 cars) 	1,000 sq.m (same area of butterfly garden) 300 300 500	50,000 sq.m 10,000 800 800 1,300 sq.m 900			
El Nido Mountain and Waterfall Trail								
	Imp.		<ul style="list-style-type: none"> - Trail (width: 1.5 m, length: 12km) - Resting Place (2 spots) 	100	18,000 sq.m 400			

Source: Study Team

d) El Nido Mountain and Waterfall Trail

A trekking route is required to monitor the condition of vegetation in primary forests and the habitats of Philippine cockatoo, butterfly and other

indigenous species. At the same time, the trekking path may be used for trekking or nature study tours with well trained guides whose destinations are the Bulucacao and Nag Kalit waterfalls.

(Design Concept): The trekking route should be one lane wide with a minimum width of 1.5 m in which hikers can pass one another. The path may be made of gravel.

Two wooden cottages may be constructed at a site close to the two waterfalls to serve both as a resting place and as a bird watching shed. These structures should not detract from surrounding nature.

(2) Corong-corong Marine Sports Complex

a) Corong-corong Marine Sports Complex

Corong-corong Bay is a small bay situated south of El Nido Town. The bay is suited to the marina because it has a calm sea breeze where local fishermen can seek refuge. The depth of water is more than 5 m.

The marina can also serve as a base for commercial or glass bottom boats, Scuba diving, snorkeling, cruising, yachting, fishing and island hopping in Bacuit Bay. It also has superior natural marine tourism resources and is an excellent mooring unlike Dipnay marina which functions as a base for marine activities in the Sulu Sea area represented by Linapacan islands and the offshore islands of Taytay with its beautiful coral reef.

(Design Concept): Breakwater may be needed particularly when the southeast monsoon prevails because the impact of stiff winds makes it difficult to maintain calm conditions.

However, a floating type of breakwater may be desired after due consideration of the natural environment is taken and after a detailed study on the calmness of the seas. A floating pier, which may have less adverse impact on the natural environment, should be used as a mooring facility.

(Design Concept): The club house should provide shower rooms not only to members who have their own boats in the marina but also to tourists who come back from marine activities. It should also have a pro-shop for renting or selling different items such as souvenirs or services such as guidance on marine and beach sports/recreation.

However, space exclusively for members should be provided to maintain privacy. The building should be just be one to two stories high with plants in its surroundings.

Seaside restaurants and coffee shops serve as rest areas before going to and after coming back from marine activities. These are also the areas where one can enjoy food and drinks and the view of Bacuit Bay even without indulging in marine activities.

(Design Concept): The restaurants and coffee shops can occupy the second floor and the open terrace should front the seaside.

Table 5-36 Corong-corong Marine Sports Complex Tourism Facilities Development

Area	Facilities	Type Dev't	Dev't Components	Size		Dev't Period		
				Floor	Area	2000	2005	2010
Corong-corong	Complex				2 ha			
	Marine Sport Complex				2 ha			
	New		- Breakwater	100 m				
			- Mooring Facilities (Floating Pier for 50 Boats)	800 sq m				
			- Mooring Space					
			- Pleasure Boat Rack Area (50 Boats)		5,000 sq.m			
			- Boat Lifter	2 lifts				
			- Landscape Areas and Seaside Park/Promenade		5,000			
			- Clubhouse/Pro-shop and Shopping Center	1,000 sq m	2,300			
			- Seaside Restaurants/Coffee Shops	700	1,600			
			- Repair / Maintenance House	200	400			
			- Car Parking (12 buses/59 cars)		3,300			

Source: Study Team

5) Tourism Support Facilities

(1) Tourist Center

A Tourist Center, managed by El Nido municipality, will provide information on accommodation facilities and tourism activities in El Nido North Tourism Area at Pasadeña. The Tourist Center will also be active in explaining guidelines on various tourism activities and will also serve as a weather information center.

(2) Information Center

An Information Center, to be managed by DOT, will provide information on accommodations and tourism activities not only in the El Nido North Area but also in the adjoining Taytay and Linapacan islands, and Busuanga island, Puerto Princesa and Palawan island with the El Nido feeder airport as gateway to the area.

Likewise, another information center will be put up at the North Coast Resort (Base Bay) and South Coast Resort (Lio/Lamarao Beach) which many international and domestic tourists are expected to visit.

(3) Tourist Security Office

Tourist security offices will also be set up at each information center to maintain peace and order in the area, and to provide assistance during emergency situations.

Table 5-37 Tourism Support Facilities Development

TOURISM SUPPORTING FACILITIES			0.4 ha			
Tourist Office			0.1 ha			
New	- Pasadena Tourist Office - Car Parking(3cars)	100 sq.m	200 sq.m	100		
Information Center			0.3 ha			
New	- El Nido Feeder Airport Information Center - Tourist Security Office - Car Parking(12cars)	100 sq.m 100	200 sq.m 200	100 sq.m		
New	- Lamarao Beach Resort - Tourist Security Office - Car Parking(7cars)	100 sq.m 100	200 sq.m 200	100 sq.m		
New	- Base Bay Resort - Tourist Security Office - Car Parking(7cars)	100 sq.m 100	200 sq.m 200	100 sq.m		

Source: Study Team

6) Beautification Projects

Beautification, such as paving roads and sidewalks, installing street lights, planting gardens in the front of houses, is necessary in this case study area, namely Salvacion, Old Busuanga, San Rafael, New Busuanga and Buluang.

Table 5-38 Beautification Projects

Facilities	Type Dev'l	Dev't Components	Size		Dev't Period		
			Floor	Area	2000	2005	2010
Beautification of Tourist Town and Settlements			3 ha				
	Imp.	- Concreting Road (W:10 m, el nido 1 km, 500 m each) - Sidewalk (el nido 1 km) - Street Lighting - Flower Trees Plantation (Street Tree) - Flower Tree Planting on front gardens of house	3 km 1 km 1,200 lamps 2,400 spots 3 km	30,000 sq.m 2,000 sq.m			

Source: Study Team

5.5.4 List of Project Component and Estimated Development Cost

The development of El Nido North as a comprehensive international tourism destination, all relevant components of the entire project have been identified and listed, and their development costs have been estimated (refer to Table 5-39).

Table 5-39 Estimated Development Cost

Area/Facilities	Location	Type Devt	Devt Components	Devt Period				Investment/Implementation			Operation/Maintenance			No of Employees
				2000	2005	2010	COST (P. million)		BODY	COST (P. million)		Body		
							Public	Private		Public	Private			
1 NORTH COASTAL RESORT													1,818	
Base Bay Resort							33.3	1,058.2		76.6	181.4		1,380	
Bucana	New	- Site Preparation of Resort Area Phase 2 - Site Preparation of Resort Area Phase 3 - Site Preparation for Resort Housing Phase-3 - Park and Landscaping Area				2.8	144.0	ETDA			ETOC/ (ETDA Investor)	105		
						26.7	515.2	(El Nido Tourism Devt Authority)				925		
						1.0		Private Investor				300		
						2.6						50		
Inland Sports Club							0.0	222.6			12.0		350	
Bucana	New	- Golf Course (18 Hole) - Tennis Courts - Swimming Pool - Gymnasium and other Indoor Sport Facility - Club House - Car Parking (2 buses/18 cars)					126.0	ETDA/ Private Investor			ETOC/ Private Investors	300		
							8.8					5		
							10.0					5		
							4.0					5		
							72.0					35		
							1.8							
Base Bay Fishermen Wharf/Shopping Center							3.6	46.0		1.1	9.9		65	
Bucana	New	- Shopping Mall - Restaurant/Coffee Shop - Garden Terrace and Sunset Bar - Flower Lark Park - Marine and Beach Sports Center and Pro-shops - Car Parking (10 buses/50 cars)				0.1	22.0	ETDA/ Private Investor			Private Investors/ ETOC	25		
Base Bay	New					0.1	18.0				25			
						0.2					5			
						1.1								
						0.1	6.0					10		
						2.0								
Buffer Area/Other Facilities							93.8	0.0		18.0			23	
Bucana	New	- Sewage Network/Treatment Plant/Irrigation Water Main				92.5		ETDA			ETOC	3		
Base Bay	New	- Strolling Path (width 1.5 m, length 3km)				0.2								
	New	- Pocket Parks (Seaside Park X 1, Observatory Park X 4)				1.1						26		
2 NACPAN AIRPORT AND BEACH RESORT AREA							167.6	98.0		36.5	60.5		582	
Kalwang Nido Center Restaurant							18.7	18.0		1.0	12.0		60	
Bucana	New	- Nido Research Center for Food Science - Nido Museum (Displaying how to make & hunt the nido) - Nido Restaurant/Souvenir Shop - Car Parking (6 buses/27 cars)				10.1		ETDA/ Private Investor			Private Investor ETOC	10		
Kalwang	New					6.9	10.0					10		
						0.1	8.0					40		
						1.6								
Nacpan Beach Resort							75.8	80.0		22.5	48.5		400	
Bucana	New	- Inner Road Network and Roadside Landscaping - Site Preparation for Resort Housing Phase 2 - Site Preparation for Resort Housing Phase 2 - Site Preparation for Resort Housing Phase 3 - Buffer Green and Forest Reserve				45.4		ETDA/ Private Investor			ETOC/ Private Investor	20		
(Nacpan)	New					2.8	80.0					80		
						6.7						100		
						13.3						200		
						6.5								
Sewage Treatment							12.6	0.0		5.0			2	
Bucana	New	- Sewage Network and Treatment Plant				12.6		ETDA			NDG	2		
3 PASADENA AGRO-HILL PARK							45.6	59.8		10.2	24.8		200	
Spa Resort							19.4	20.0		8.1	16.8		133	
Bucana	New	- Hot Spring Therapy Center - Resort House for Recuperation - Gymnasium and Rehabilitation Center - Sports Fields (Tennis Courts) - Restaurant (healthy foods preparation)/Coffee Shop - Car Parking (3 buses/16 cars)				10.1		ETDA/ Private Investor			ETOC/ (Pasadena Agro-Hill Devt Corp) Private Investor	30		
(near Pasadena town)	New					0.1	16.0					50		
						4.0						30		
						4.4						3		
						0.1	4.0					20		
						0.7								
Orchid and Orched Gardens							11.6	26.7		1.1	4.9		40	
Bucana	New	- Orched Gardens - Orchard Gardens - Visitor Center and Souvenir Shop - Restaurant/Coffee Shop - Car Parking (5 buses/22 cars)				2.4	13.0	ETDA/ Private Investor			ETOC/ (Pasadena Agro-Hill Devt Corp)	5		
(near Pasadena town)	New					2.4	7.6					5		
						5.5						5		
						0.1	6.1					25		
						1.2								
Butterfly and Insects Park							7.7	13.1			3.0		25	
Bucana	New	- Butterfly Garden - Beetle Garden - Other Indigenous Insects Gardens - Visitor Center (Information/Desk/Resting Room) - Souvenir Shops - Car Parking (4 buses/20 cars)				1.2	3.5	ETDA/ Private Investor			ETOC/ (Pasadena Agro-Hill Devt Corp) Private Investor	5		
(near Pasadena town)	New					1.8						5		
						5.5	1.8					5		
						0.1	8.0					5		
						0.9						5		
						1.9	0.0			1.0		2		
El Nido Mountain and Waterfall Trail							0.4					ETOC/Municipality	2	
Bolobocao	Imp	- Trail (width 1.5 m, length 12km) - Resting Place (2 spots)				0.4		ETDA/ Municipality				2		
Nag Kait	Imp					1.5								
4 SOUTH COAST RESORT							0.0	1,542.5		0.0	275.0		1,868	
Lamaran Uno Beach Resort							0.0	1,181.0			225.0		1,450	
Pasadena	New	- Inner Road Network with Roadside Landscape - Site Preparation of Resort Area Phase-1 - Site Preparation of Resort Area Phase 2 - Site Preparation of Resort Area Phase 3 - Site Preparation for Resort Housing Phase-2 - Site Preparation for Resort Housing Phase-3 - Park and Landscaping Area				92.0		Private Investor			Private Investor	5		
						170.1						155		
						487.1						465		
						372.6						305		
						13.3						200		
						20.0						300		
						25.7						30		
Inland Sports Club							0.0	221.6			22.0		350	
Pasadena	New	- Golf Course (18 Hole) - Tennis Courts - Swimming Pool - Gymnasium and other Indoor Sport Facility - Club House - Car Parking (2 buses/21 cars)					126.0	Private Investor			Private Investor	300		
							8.8					5		
							10.0					5		
							4.0					5		
							72.0					35		
							0.8							
Lamaran Uno Beach Shopping Center							0.0	45.0			10.0		65	
Pasadena	New	- Shopping Mall - Restaurants/Coffee Shops - Garden Terrace - Pier - Marine and Beach Sports Center and Pro-shops - Car Parking (6 buses/30 cars)				16.3		Private Investor			Private Investor	25		
Beach	New					14.2						25		
						1.5						5		
						5.0						5		
						6.1						10		
						1.9								

Table 5-39 cont.

Buffer Area/Other Facilities				2000				2005		2010		Investment/Implementation		Operation/Maintenance		No of
Area/Facilities	Location	Type Devt	Devt Components	Devt Period				COST (P.million)		BODY		COST (P.million)		Body	Employees	
				2000	2001	2002	2003	Public	Private	Public	Private					
Pasadena New								0.0	95.0				18.0		13	
Pasadena New									83.4	ETDA				Private Investor	3	
Pasadena New									1.0						10	
Pasadena New									10.6						10	
Corong-corong Complex								25.5	44.0			7.6			10	
Corong-corong Bay New								0.3		ETDA				ETDC		
Corong-corong Bay New								8.0		(Lease to Private Sector)				(ETDA + Investors) and Investors	3	
Corong-corong Bay New								11.0	7.0						5	
Corong-corong Bay New								3.2							5	
Corong-corong Bay New								20.0							45	
Corong-corong Bay New								14.0							35	
Corong-corong Bay New								3.0	3.0						10	
6 TOURISM SUPPORTING FACILITIES								13.4	0.0			2.3	0.0		57	
Tourist Office								1.9	0.0			0.3			5	
Pasadena New								1.8		El Nido Municipality				Municipal Tourist Office	5	
Pasadena New								0.1								
Information Center								11.5	0.0			2.0			50	
Airport New								1.8		DOT				DOT Region 4	4	
Airport New								1.8		ETDA				ETDC		
Airport New								0.4						Agent/Operator	20	
Lamarao New								1.8		DOT				DOT	2	
Lamarao New								1.8		ETDA				ETDC	2	
Lamarao New								0.2						Tour Operator	10	
Basa Bay New								1.8		DOT				DOT	2	
Basa Bay New								1.8		ETDA				ETDC	2	
Basa Bay New								0.2						Tour Operator	10	
7 IMPROVEMENT AND UPGRADING OF LOCAL COMMUNITIES								113.9	0.0			15.3	0.0		0	
Tourism Related Industry Development								21.4	0.0			0.0	0.0			
Orchard and Orchid Gardens								13.8	0.0			0.0	0.0			
Pasadena New								6.1						Private Investor	15	
Pasadena New								7.7							15	
Butterfly/Insects Park								7.7							15	
Human Resource Development								20.0	0.0			4.0	0.0			
Pasadena New								20.0		DOH/DOE		4.0		DOE/Municipality	50	
Beautification of Tourist Town and Settlements								82.9	0.0			10.0			0	
El Nido/Pasadena/Kalman/Bucana/Baroloan								60.0		Provincial DPWH				ETDC/Municipality		
El Nido/Pasadena/Kalman								3.4		Municipality				Barangay		
Bucana								18.0		Barangay						
Baroloan								0.5		ETDA						
Baroloan								1.0								
Social Services								31.0	0.0			5.3	0.0			
All barangay								1.0		DOH		0.3		DOH	4	
Pasadena New								30.0		DOH/Municipal		5.0		DOH	10	
8 TOURISM INFRASTRUCTURE								2 221.2	0.0			128.4	10.0		159	
Road Construction								1 219.0	0.0			27.0			0	
North Area																
Imp																
Imp/New								920.0		DPWH/ETDA				Province		
Imp/New								115.0						Municipality		
Imp/New								184.0						Municipality		
New El Nido Feeder Airport								417.8	0.0			21.0			75	
Bucana (Nacpan)								313.0		DOTC				DOTC	75	
Bucana (Nacpan)								21.0								
Bucana (Nacpan)								60.0								
Bucana (Nacpan)								3.6								
Bucana (Nacpan)								20.2								
Corong-corong Port								36.0	0.0			3.4			0	
Corong-corong Bay New										DOTC/Municipality				Municipality	5	
Corong-corong Bay New															15	
Water Resource Devt/Water Supply Main Pipeline								113.4	0.0			5.0			4	
Pasadena New										DPWH				ETDC/Municipality	2	
Pasadena New										Provincial						
Bucana New										BTDA						
Baroloan New															2	
Bucana New																
Power Supply Network								210.0	0.0			55.0			4	
Villa Licerad										NAPOCOR				NAPOCOR	4	
All																
Bucana New																
Bucana New																
Bucana New																
Telecommunication Network								150.0	0.0				10.0		4	
Pasadena New								0.0	0.0	Private				Private	4	
Waste Disposal								75.0	0.0			17.0			8	
Sitotlan New								70.0		DPWH/ETDA				ETDC/Municipality	2	
Pasadena New								5.0		Province/ETDA				ETDC/Municipality	6	
9 ENVIRONMENTAL CONSERVATION								60.5	0.0			8.0			120	
El Nido Marine Environment Center								12.2		PCSD/Municipality				PCSD/Municipality	30	
Bucana (Nacpan) New								3.7		DENR/ETDA				DENR	50	
Bucana (Nacpan) New								9.1		Private Investor				Private Investor	10	
Bucana (Nacpan) New								3.7							10	
Bucana (Nacpan) New								16.9							10	
Bucana (Nacpan) New								5.5							5	
Bucana (Nacpan) New								8.1							10	
Bucana (Nacpan) New								1.4								
Totals El Nido								2 712.9	3 072.1			276.9	551.7		4 743	

5.6 Feasibility of the Proposed Development

1) Economic Aspect

The proposed development has been evaluated similarly to the Master Plan, and a significant EIRR of 23% from the national economic viewpoint is expected. However, as to the economic impact on the local economy at the provincial/municipal level, this depends on how the local economic system will be integrated with the proposed development. It is indicated from the analysis that government should start working to help the regional/local supply of human resources, materials and services match the demand adequately.

2) Financial Aspect

The proposed development, which will produce a total of 92 ha of building sites with complete infrastructure, includes the costs for regional infrastructure, tourism facilities, environmental management, and tourism area development, excluding hotel/accommodations and other commercial facilities. When all the development costs are charged to the building sites, it will cost P7,200 per sq.m. On the other hand, when a half of the regional infrastructure is shared with industry outside of the tourism sector, it will cost P6,000 per sq.m.

With the level of infrastructure provided in the development, it is likely that resort operators will be able to absorb the level of costs.

An important financial aspect is that environmental fees/contributions to be collected from the tourists in this case study area should be brought to the area where environmental restoration/conservation needs are significant, because the El Nido area with relatively superior environment requiring less restoration cost should cross-subsidize other unfavorable areas.

3) Social Aspect

In the proposed development plan, tourism developments are not isolated from existing settlements but rather are integrated to expect mutual benefits such as shared infrastructure/services and exchange of needed resources. Workers can commute easily without developing separate settlements. Various tourism facilities based on local environmental/cultural resources may provide opportunities for local communities as well as ICCs to participate in the developments.

4) Environmental Aspect

Proposed developments have been assessed by area/facility from environmental viewpoints (refer to Table 5-40). The results indicate that positive impacts are expected. Negative impacts, if any, are negligible. However, a number of project components such as roads, port and marine sports complex at San Nicolas, waste disposal facility, etc. should be carefully assessed with particular regard to the ecology in the area.

In order to ensure that the proposed developments do not adversely affect the environment, a number of mitigation measures for relevant areas and aspects will be implemented (refer to Table 5-41).

5) Development and Management Aspects

In order to assure the sustainability of the development, a number of conditions will have to be met. First, the benefits that are received should arise from the development and not from land transactions. Second, the benefits should be equitably distributed among stakeholders according to their contributions or responsibilities, and at the same time, equally shoulder the costs as well. If this process is maintained over the years, the development areas will be adequately managed.

The conventional way that private developers construct resorts of different sizes and quality even with development permission, including EIA from the government, may not work effectively in a way that a sustainable tourism concept is assured. Developments may not take place as planned even with an effective ECAN zoning. More concrete measures are necessary with particular regard to effective control over lands and developments both on physical and management aspects.

In order to ensure the physical quality not only of the direct project site but also to have the development shoulder an adequate share of the external infrastructure and environmental conservation costs from which the development will be benefited, at the least, the following measures are needed: statutory land use plan (e.g. effective ECAN Zoning), strict development permit system including EIA based on workable guidelines, and enforcement charges.

Even after individual resorts have been constructed initially according to the set standards, the collective resorts may not function as an integrated resort complex nor sustain the quality as a whole. Therefore, it is considered that a single development organization to manage the development is necessary.

Table 5-40 Assessment of Possible Environmental Impacts of Proposed Development

Environmental Element Project Component		Physical & Chemical Effects					Ecological Effects			Aesthetic Effects					Socioeconomic Effects						
		Water	Groundwater	Air Characteristics	Wind	Inversion	Vegetation	Terrestrial Wildlife	Aquatic Species & Habitats	Land	Atmosphere	Water	Flora & Fauna	Man-Made Objects	Demography	Manpower	Transportation	Housing and Community Infrastructure	Education, Health & Social Services	Lifestyle of Communities	Indigenous Cultural Communities
1	NORTH COASTAL RESORT																				
	1) Base Bay Resort	C	-	-	-	-	-	-	C	-	-	-	-	C+	B+	-	-	-	-	-	-
	2) Inland Sports Club	C	-	-	-	-	C	-	B	-	-	B	-	-	C+	-	-	-	-	-	-
	3) Base Bay Fisherman Wharf/Shopping Center	C	-	-	-	-	-	-	C	-	C	-	-	-	C+	-	-	-	-	-	-
	4) Buffer Area/Other Facilities	B+	-	-	-	-	A+	C+	C+	B+	-	B+	B+	-	B+	-	-	-	-	-	-
2	NACPAN AIRPORT AND BEACH RESORT AREA																				
	1) El Nido Marine Environment Center	A+	-	-	-	-	C	-	A+	-	-	-	-	-	-	-	-	-	-	-	-
	2) Nacpan Beach Resort	C	-	-	-	-	C	-	-	-	-	-	-	C+	B+	-	-	-	-	-	-
	3) Sewage Treatment	B+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B+	B+	-	-	-
3	PASADENA AGRO-HILL PARK																				
	1) Spa Resort	B-	-	-	-	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2) Orchid and Orchard Gardens	-	-	-	-	-	B+	-	B+	-	-	-	-	-	B+	-	-	-	-	-	-
	3) Butterfly and Insects Park	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4) El Nido Mountain and Waterfall Trail	-	-	-	-	-	B-	C	-	C	-	C	-	-	B+	-	-	-	-	-	-
4	SOUTH COAST RESORT																				
	1) Larama/Lio Beach Resort	A-	-	-	-	-	B-	-	C	B-	-	C	-	C+	B+	-	-	-	-	-	-
	2) Inland Sports Club	C	-	-	-	-	C	-	C	-	-	-	-	-	C+	-	-	-	-	-	-
	3) Larama/Lio Beach Resort	C	-	-	-	-	-	-	B-	-	B-	-	-	-	C+	-	-	-	-	-	-
	4) Buffer Area/Other Facilities	B+	-	-	-	-	B+	B+	-	C+	-	B+	-	-	B+	-	-	-	-	-	-
5	TOURISM SUPPORTING FACILITIES																				
	1) Tourist Office	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2) Information Center	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	IMPROVEMENT AND UPGRADING OF LOCAL COMMUNITIES																				
	1) Beautiful Settlements	-	-	-	-	-	-	-	-	C+	-	B+	A+	C+	B+	E+	B+	A+	B+	-	-
	2) Medical Care/Health Facility	-	-	-	-	-	-	-	-	-	-	-	-	C+	-	-	-	A+	-	-	-
7	TOURISM INFRASTRUCTURE																				
	1) Road Construction	A+	-	-	-	-	-	B+	B+	-	-	-	A+	-	B+	A+	A+	-	B+	-	-
	2) New El Nido Feeder Airport	-	-	-	-	-	C	-	B-	-	C	C	-	-	B+	A+	B+	-	-	-	-
	3) Corong-corong Marine Complex	B-	-	-	-	-	C	-	C	-	B-	-	-	-	B+	B+	B+	-	-	-	-
	4) Corong-corong Port	C	-	-	-	-	-	-	C	-	C	-	-	-	B+	B+	-	-	-	-	-
	5) Water Supply Main Pipeline	B+	-	-	-	-	?	?	-	?	-	C	C	-	C+	B+	B+	A+	A+	A+	-
	6) Power Supply Network	-	-	C	-	-	-	-	-	C	-	-	-	-	C+	-	A+	A+	A+	-	-
	7) Telecommunication Network	-	-	-	-	-	C	-	-	-	-	B-	-	-	C+	C+	A+	-	A+	-	-
	8) Waste Disposal	B+	B+	-	-	-	B-	C	-	B-	-	B+	-	-	-	-	A+	A+	-	-	-

Source: Study Team

A+: Significant Positive Impact
 B+: Moderately Positive Impact
 C+: Negligible Positive Impact
 ? : Unclear

A-: Significant Negative Impact
 B-: Moderately Negative Impact
 C-: Negligible Negative Impact

Table 5-41 Environmental Mitigation Measures in Busuanga West Case Study Area

Parameter	Baseline Conditions	Probable Negative Impact without Mitigation Measures	Mitigation Measures
Water quality	<ul style="list-style-type: none"> - Water quality is relatively conserved. - There are coral reefs, seagrass. - There are habitats of Dugong, sea turtles - Water pollution sources are limited. 	<ul style="list-style-type: none"> - Generating waste water, such as sewage will cause water pollution. - Discharged soil into the sea will cause water pollution 	<ul style="list-style-type: none"> - Closed sewage treatment system is required (waste water will be treated, and treated waste water is used as irrigation water.)
Water demand	<ul style="list-style-type: none"> - Water consumption will increase. 	<ul style="list-style-type: none"> - water supply for communities will be lacked. 	<ul style="list-style-type: none"> - Water resources development is required. - Water is recycled after use for saving.
Odor	<ul style="list-style-type: none"> - Population density is relatively low 	<ul style="list-style-type: none"> - Generating odor from sewage treatment facility will cause deterioration of living environment. 	<ul style="list-style-type: none"> - Sewage treatment facility is constructed far from communities and accommodation facility. - Sewage treatment facility is surrounded with wall and plant.
Vegetation and Terrestrial Wildlife	<ul style="list-style-type: none"> - Forest area has been decreased. 	<ul style="list-style-type: none"> - Decreasing forest cause decreasing habitat for terrestrial wildlife. 	<ul style="list-style-type: none"> - Arrangement of facilities are considered for minimizing lose of forest. - Alternative forest is established as substitute for lost forest. - Reforestation is promoted.
Aquatic habitat	<ul style="list-style-type: none"> - Coral reefs are distributed. There are relatively conserved coral reefs. - Coral reefs has been deteriorated by siltation. - There are Dugong habitats and sea turtle nesting sites. 	<ul style="list-style-type: none"> - Discharged soil into the sea will cause extinction of coral and other aquatic habitats. - Generating waste water, such as sewage will cause deterioration of coral reefs, seagrass beds and wildlife habitats. 	<ul style="list-style-type: none"> - Measurement of soil erosion is presented in "Soil Erosion" - Closed sewage treatment system is required (waste water will be treated, and treated waste water is used as irrigation water.)
Soil erosion	<ul style="list-style-type: none"> - In appropriate infrastructure causes soil erosion in Northern Palawan. - There are bare lands by slash-and-burn and cutting trees. 	<ul style="list-style-type: none"> - Soil erosion causes deterioration of terrestrial environment such as forest, wildlife habitats and landscape. - Soil erosion causes deterioration of marine environment especially coral reef. 	<ul style="list-style-type: none"> - Steep slope area is not developed. - Construction methods are adopted for minimizing soil erosion. - Slope protection is carried out. - In rainy season, slope area is not constructed, or measurement of soil erosion is done.
Beach erosion and Sedimentation	<ul style="list-style-type: none"> - Potential shoreline of beach erosion and sedimentation has never found in around project sites. However, occurrence of them is unknown. 	<ul style="list-style-type: none"> - Beach erosion causes decreasing sandy beach, and collapsed structures. - Sedimentation causes river-mouth clogging. 	<ul style="list-style-type: none"> - Structure design is considered for currents and drift sand.

Source: Study Team

The development organization acts as the implementing body of the developments to undertake activities such as acquiring/consolidating lands, developing common infrastructures, preparing development sites which then will be sold or leased to private developers, approving development and management plans of the private sector, managing common space and infrastructures based on collection of association dues and so on. A critical area is how to control lands wherein if acquisition is difficult, the concept of land readjustment may be applied.