

Table 3.4 Accommodation supply program

Development area	Exit. rms	1996 - 2000					2001 - 2005					2006 - 2010				
		Additional rms			Add. rms	Total rms	Additional rms			Add. rms	Total rms	Additional rms			Add. rms	Total rms
		H	M	E			H	M	E			H	M	E		
Gamboa	0	120	0	0	120	120	300	80	0	380	500	0	150	0	150	650
Sunmit	0	0	250	0	250	250	0	75	0	75	100	0	30	0	30	130
Colon/Punta Toro	572	0	0	0	0	572	150	230	0	380	952	0	150	0	150	1,102

Note: H = High standard, M = Medium standard, E = Economy
 Number of additional rooms are rounded off from the required number
 Exist. rms = Available at present but mostly categorized as economy standard

(3) Characteristics of tourism development

The Panama Canal area aims to conserve and develop the historical and natural site into an educational center for science and technology with emphasis on the series of locks, natural science and other related fields, as well as places for pleasure outings of the tourists and residents.

The creation of a continuous string of tourist attractions in places of natural beauty and historical interest through the development of 10 Panama Canal focal spots recommended.

The characteristics of the Gamboa, Summit and Punta Toro areas identify them as centers for accommodation, tourist attraction and educational centers which will enhance the role of tourism in Panama Canal Area as an attraction of national importance.

3.4 Focal Areas Development Plan

3.4.1 Gamboa Area

(1) Land Use Plan in Gamboa

Land use in the entire 150 ha area is planned and integrated as shown in Figure 3.9.

(2) Tourism Facilities Plan

1) Development components

Gamboa area is a focal place where an observation tower and Canal Museum, in commemoration of reversion of the Canal from the United State of America in the year 1999, will be located. The development components will be the introduction of hotel accommodation, Canal museum, and observation tower. From the top of the sky tower, a spectacular view of the Pacific ocean and Caribbean sea will be observed. The site is selected for its topography, having the highest elevation along the canal at about 240 meters above mean sea level.

2) Hotel accommodation

The first hotel which will be built in the Gamboa area will integrate the existing detached houses to be utilized as cottages for tourists. This project would serve as a pioneer for integrated tourism development in the Panama Canal zone.

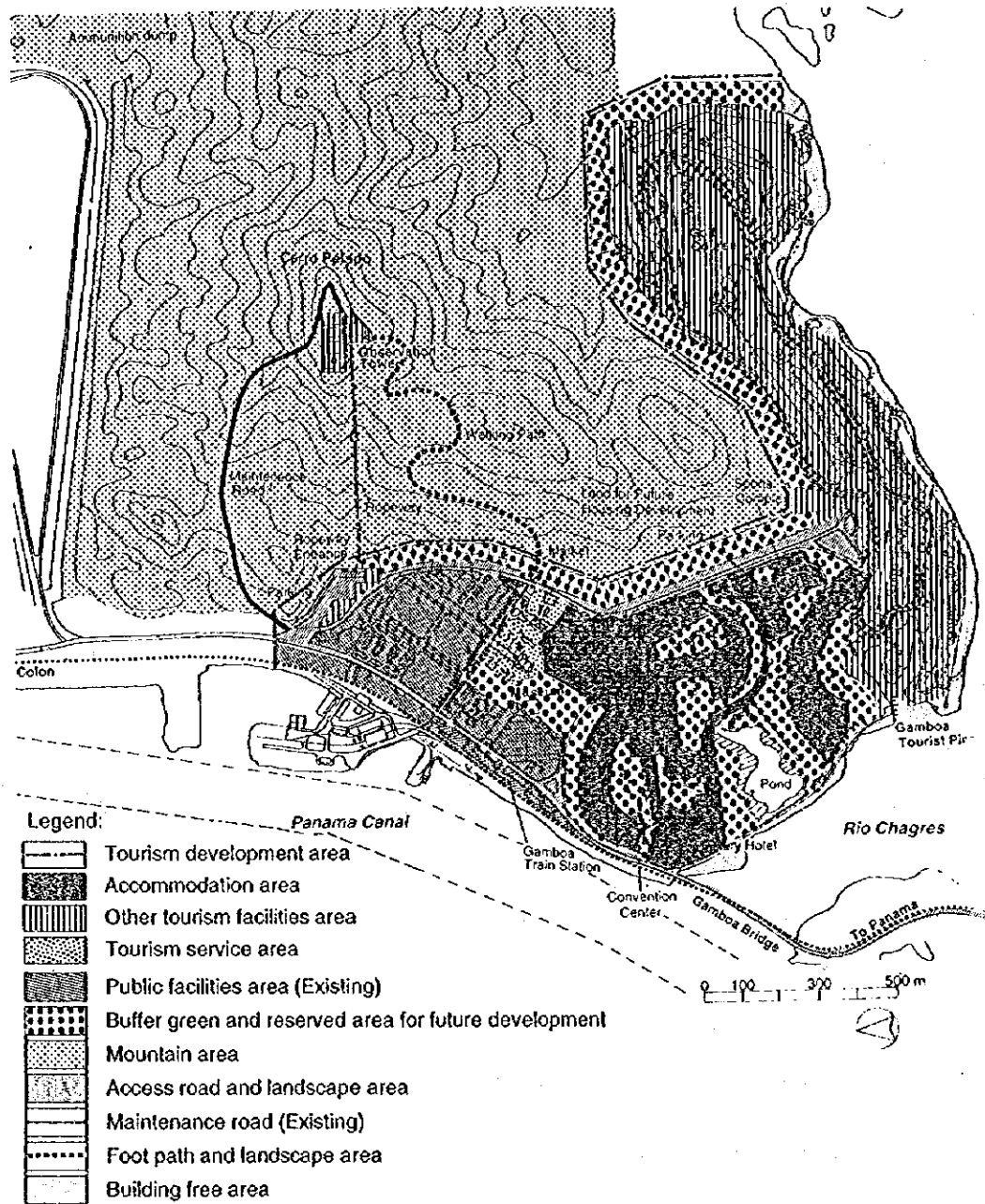


Figure 3.7 Land Use Plan of Gamboa Area

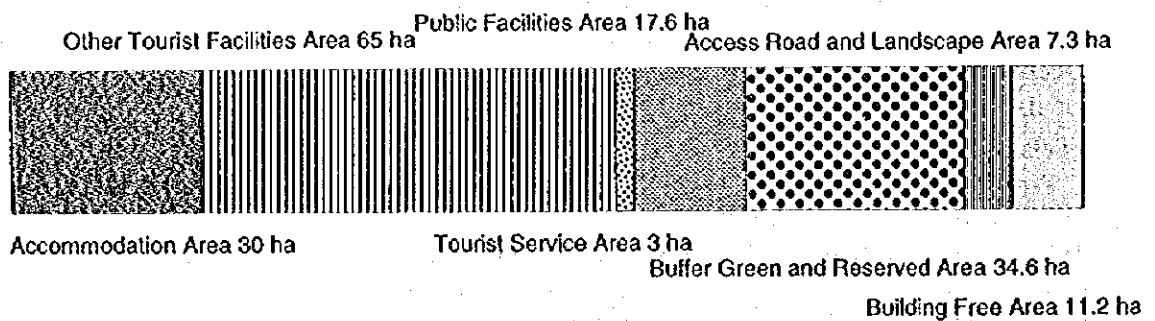


Figure 3.8 Land Use Area of Gamboa

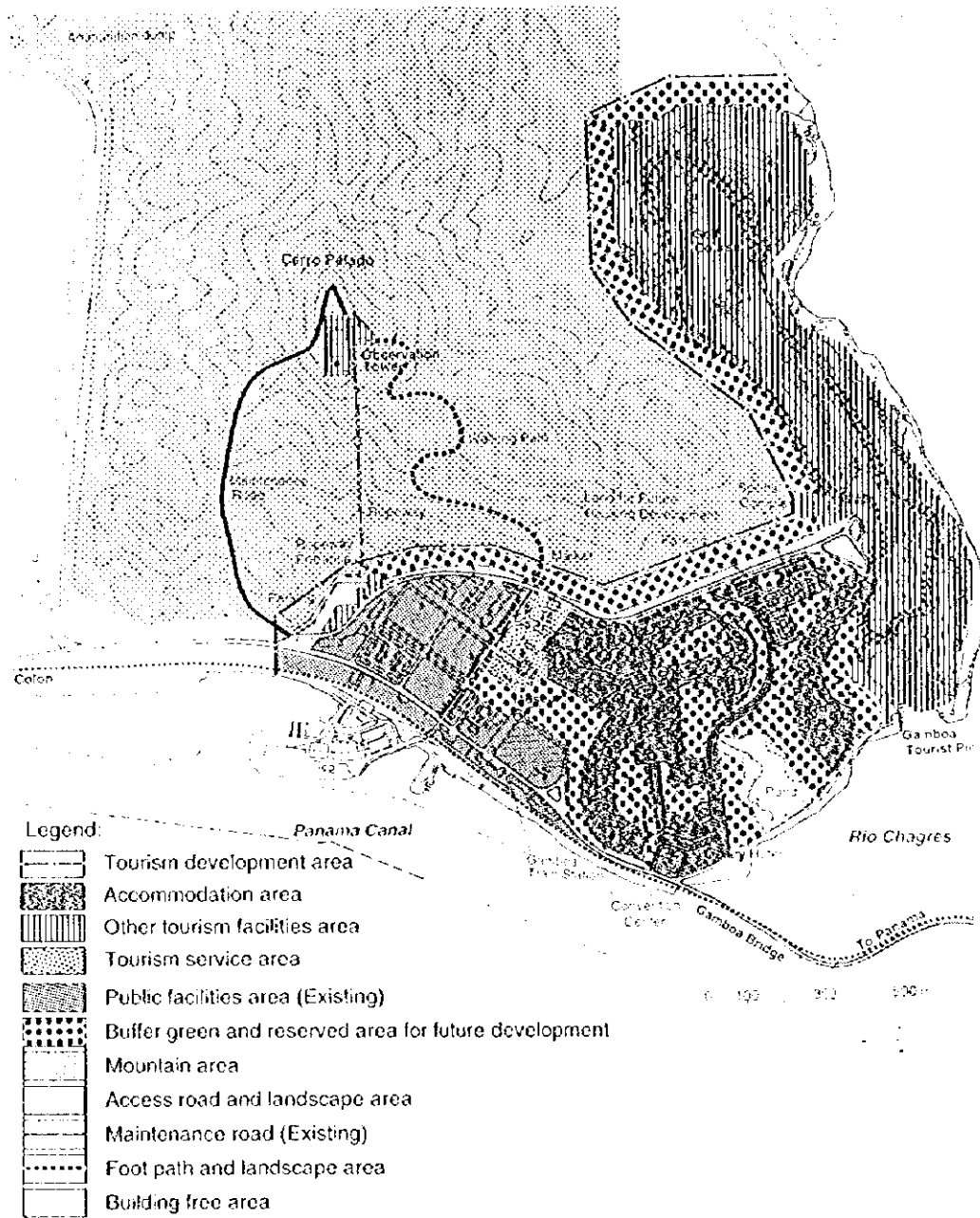


Figure 3.7 Land Use Plan of Gamboa Area

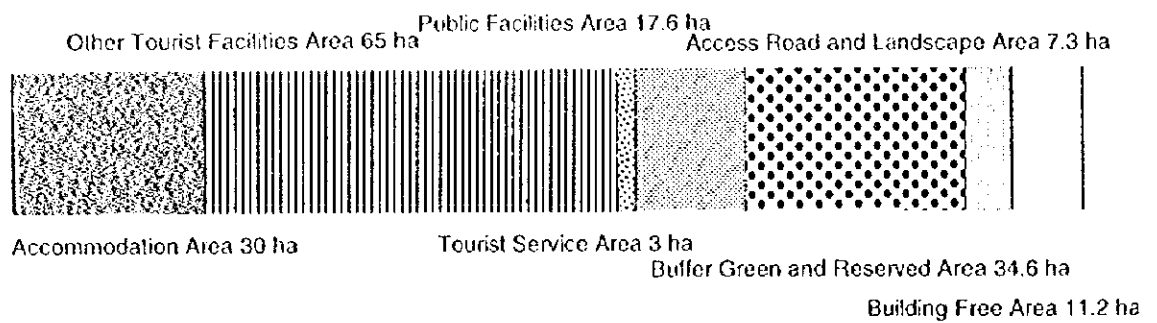


Figure 3.8 Land Use Area of Gamboa



Figure 3.9 Gamboa Tourism Area Development Plan

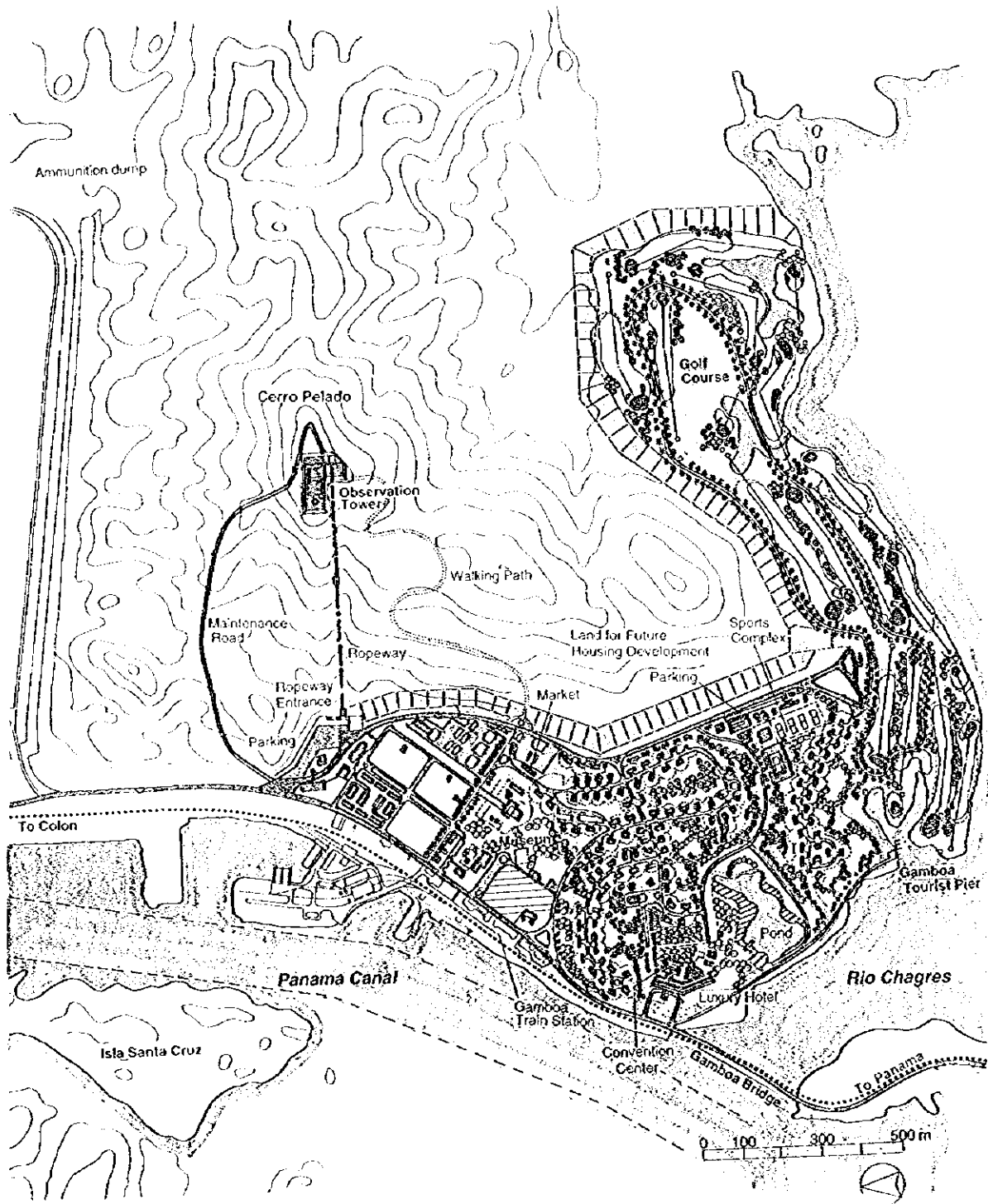


Figure 3.9 Gamboa Tourism Area Development Plan



Figure 3.10 Image Sketch of Gamboa Area

This hotel would be of high standard with all necessary facilities adequately provided. The hotel building, both its features and layout, should be carefully examined and harmonized with the natural conditions of the area.

The unregistered resident housing located at Punta Toro shall be improved and utilized for accommodation development. Additional hotel accommodation shall be mixed with these improved housing units for tourist accommodation.

There is one lot in the hinterland with a view on the sea. An area of 13 hectares is required and development of a medium standard hotel of 380 rooms by the year 2005 and 150 additional rooms by 2010 is recommended. Providing a mix of cottages with low rise buildings is envisioned.

3) Observation Tower Development

In the feasibility study, two alternative location strategies were considered and are identified. A comparative analysis is made for the two alternative locations to assess their suitability for development. Cerro Pelado seems to be more appropriate in terms of investment on infrastructure, environmental impact and the possibility of combining with other tourism development opportunities in the future.

A supporting sub-component to be developed in this area is a rope-way from the proposed Canal Museum area to the ground level of the observation tower, about 600 meters long with 220 meters difference in altitude.

4) Panama Canal Museum

The museum shall showcase the history of the Panama Canal construction and its operation up to the present, and shall be located at a central area in Gamboa, comprising the following development components:

- Museum building: the rooms are grouped around a courtyard including an entrance hall, lavatories, offices, cafe terrace, exhibition gallery, auditorium with seating for 100 persons, and a courtyard.
- Outdoor exhibition area with landscaping.
Total floor area of the building will be 220 square meters on a 10 ha plot. Space will be provided for a large garden area, display of historical items, trains, cafe terrace extended space, etc.

5) Tourist Information Center

The tourist information center is located at the intersection of the access road to Gamboa and the central road of Gamboa district, close to the railway station and noticeable from the main transportation route. Besides public relations service, the center shall serve as a transport hub and provide areas for bus parking, including rest areas, and toilet facilities.

(3) Access Road and Bridge Plan

1) Road development

The access road leading from the street area to the Gamboa area is provided with two lanes, but the bridge crossing the Rio Chagres is used also as a railway bridge, and the bridge portion is provided with only one lane.

The following Table shows an estimated average daily traffic volume for 2010 based on the total number of tourists and of tourists staying overnight.

Table 3.6 Traffic Volume

Average daily traffic volume	Estimated Values for 2010	
	Bus	Passenger car
Foreign tourists	40	480
Foreign tourists staying overnight	15	170
Domestic tourists	65	650
Domestic tourists staying overnight	5	50
Induced traffic volume	50	540
Total	175	1,890

As a result, the average traffic volume available at the Gamboa Bridge for 2010 registers 2065 cars. When traffic concentration during the dry season is taken into account, it is recommended to build a two lane bridge over the Rio Chagres.

2) Bridge construction project

Two lanes with a road width of 7 meters will be built on the upstream side of the existing bridge. The existing road bridge used also as a railway bridge will be used exclusively for pedestrians.

- Bridge length and width: 100 meters long with 9m width

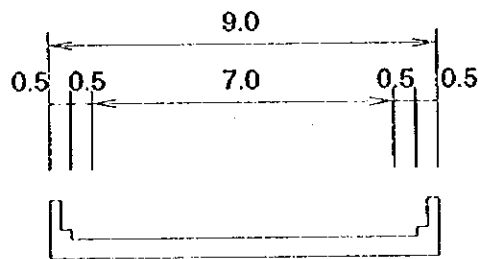


Figure 3.11 Gamboa Bridge Section

3.4.2 Summit Area Tourism Development

(1) Land use plan

Land use in the entire 108 ha area is planned and integrated as shown in Figure 3.13. The areas which are dominant as far as nature study and ecology are concerned are to be emphasized.

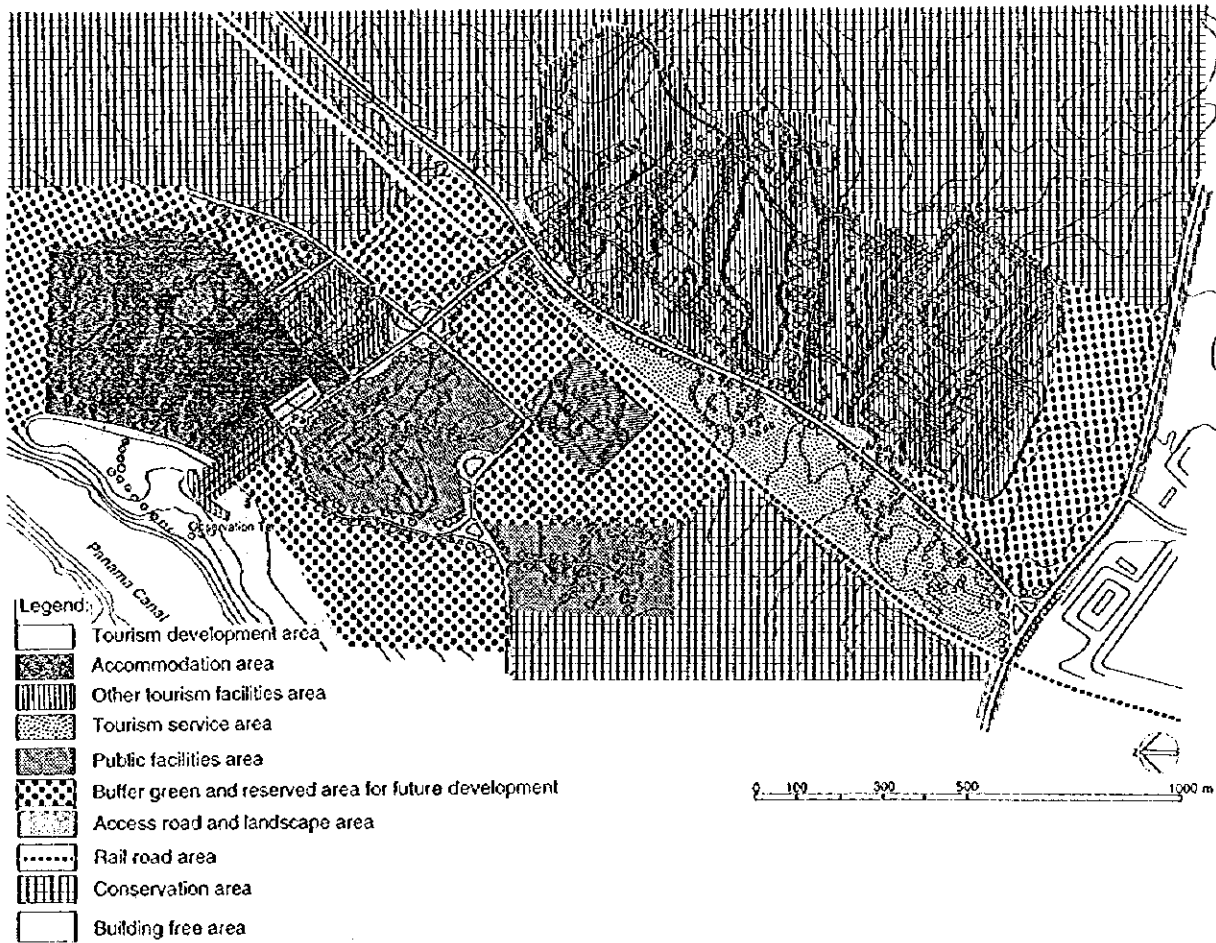


Figure 3.12 Land Use Plan of Summit Area

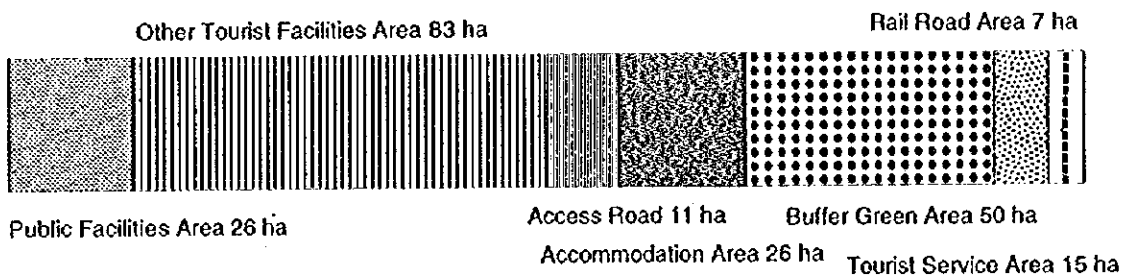


Figure 3.13 Land Use Area

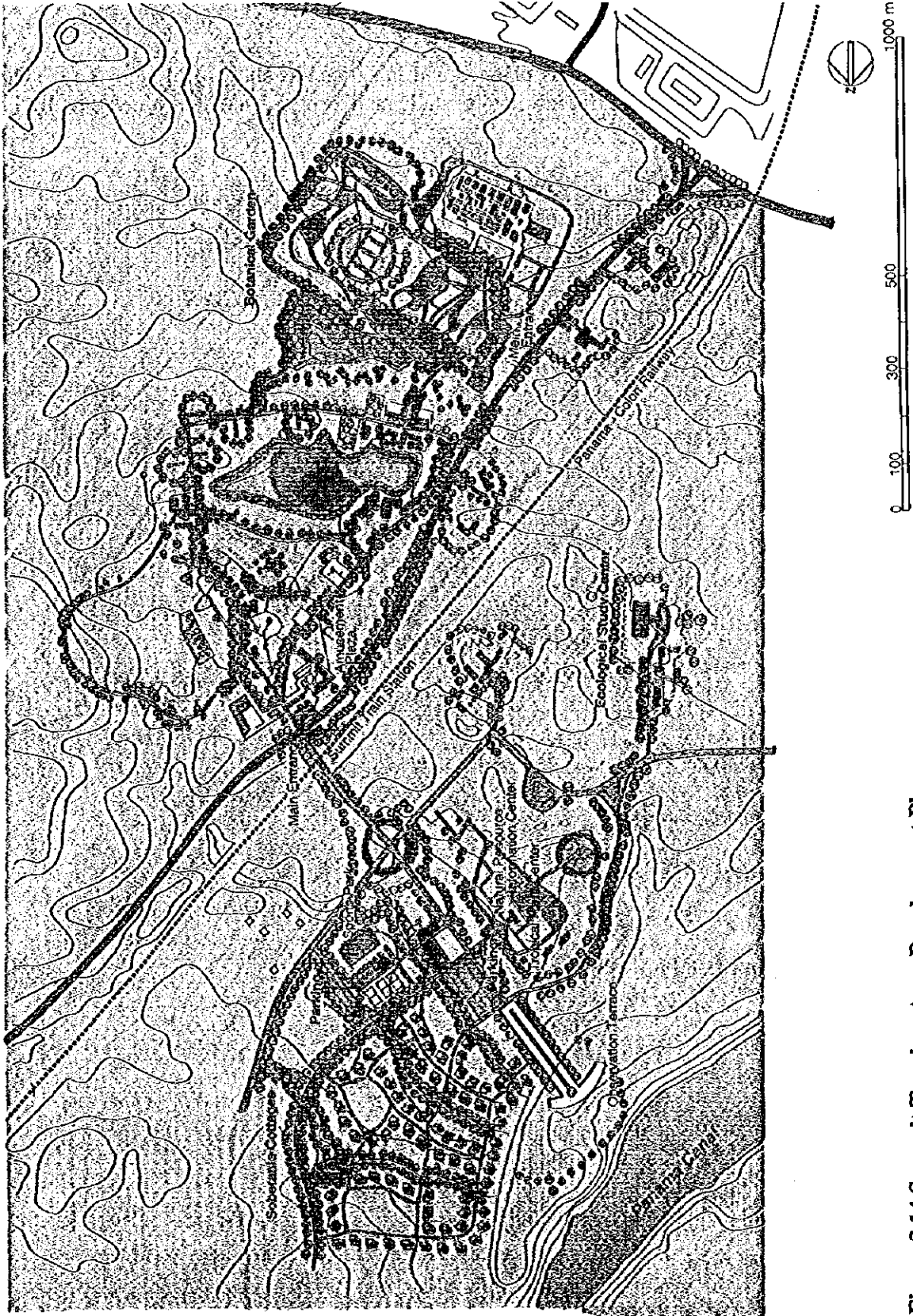


Figure 3.14 Summit Tourism Area Development Plan

(2) Tourism Facilities Plan

1) Development Components

Summit area should be a short time recreation center, as well as eco-tourism center. It also serves a specific purpose such as an animal and botanical observation and study center.

2) Hotel Accommodation

As a measure to attract more nature lovers and domestic tourists to the Panama Canal area, cottages should be built in the Summit area. The first medium standard cottages of 130 rooms should be constructed on a lot of 5 hectares by the private sector. Development can be divided into three phases, 25 rooms up to year 2000, another 75 rooms up to year 2005 and another 30 rooms up to year 2010. The cottages should be a complex with related amenity facilities.

3) Botanical Garden

Some tourists who have not enough time to take ecological field trips can understand the importance of the ecological system by seeing the exhibition shown at this existing facility to stimulate interest and encourage future cooperation in nature conservation.

Thus, the existing Botanical Garden is important and should be much improved for international tourists, as well as domestic tourists.

A multi-purpose recreational ground will be situated at the center of the Garden around which various types of plants will be grown and signs posted mainly to explain the surrounding vegetation.

All kind of plants available in Panama will be added according to scientific concepts.

A certain area will be organized as a cactus garden and another area will be provided for picking of garden flowers, as a focal space of this garden.

A botanical library, guide center, class room and audio visual room to accommodate 100 persons, and cafe terrace will also be provided.

4) Zoological Park

The existing zoo area will be improved to attract international tourists as an activity of the zoological research and recreational unit. It is possible to have a butterfly pavilion, entomological pavilion, golden frog pavilion etc., as new educational and amenity spots in the Canal zone.

A transport system will be recommended. Colored asphalt roads in the park should be provided for rental carts and walking.

5) Ecological Study Center

The area South of the Zoological park will be provided for use by institutions for nature oriented studies. To stimulate the love of nature and nature conservation in youth and tourists, the Summit area should be developed as a source for ecology and nature study and a home for related institutions.

This center consists of 1)Tropical plant center, 2) Useful plant/biological study center, 3) Nature resource information center etc.

(3) Road Improvement

The junction of Gaillard road branching into Gamboa forms a three-forked road. The current junction is located on a steep curve which is very dangerous. Sidewalks will be improved on the roads leading to the zoological and botanical gardens and restaurants.

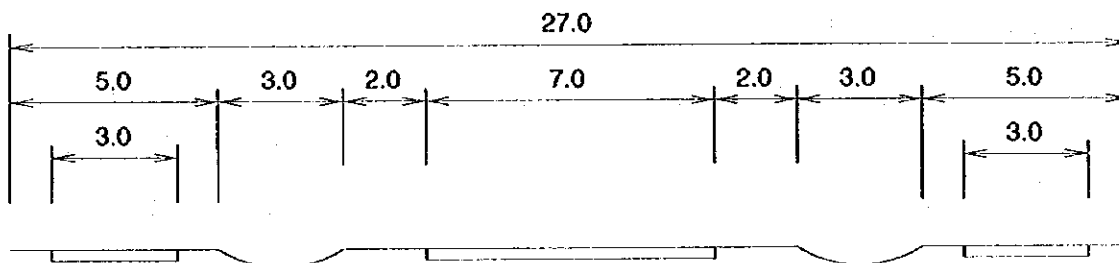


Figure 3.15 Road Section (Summit Botanical Garden Area)

3.4.3 Outdoor museum system

(1) General

Museum parks shall be designated for the public as landmarks of the specific areas along the Panama Canal. The outdoor site museum will consist of a monument(s), water garden, parking, toilet, etc. The sites shall be selected considering the Canal history, including illumination of the American bridge.

(2) Development Components

Development components for 10 spots outdoor museum are listed in Table 3.8

Table 3.6 Development Components list

No.	Name of park	Contents
1	Amador	Gateway monument facing Ocean
2	American bridge	Light up of bridge form (2km long) Parking, observation terrace at west end
3	Miraflores and locks	Observation terrace
4	Contractor's hill	Historical site museum for Canal construction Observation park of Gaillard Cut
5	Ruin	Archeological water garden
6	Panama Canal Tower	Observation terrace at Cerro Perado
7	Panama Canal Museum	Panama Canal Miniature model garden
8	Gatun Locks and Gatun Dam	Observation monument park
9	Punta Toro	Gateway monument face to Carribean Sea
10	San Lorenzo	Observation terrace

(3) American Bridge Light Up

The American bridge is a landmark of the Panama Canal, being an important gateway to Panama city. It is recommended to lights up the bridge form with 130 high beam lights, as a Gateway symbol. At the western end of bridge, existing parking and observation terrace, should be improved.

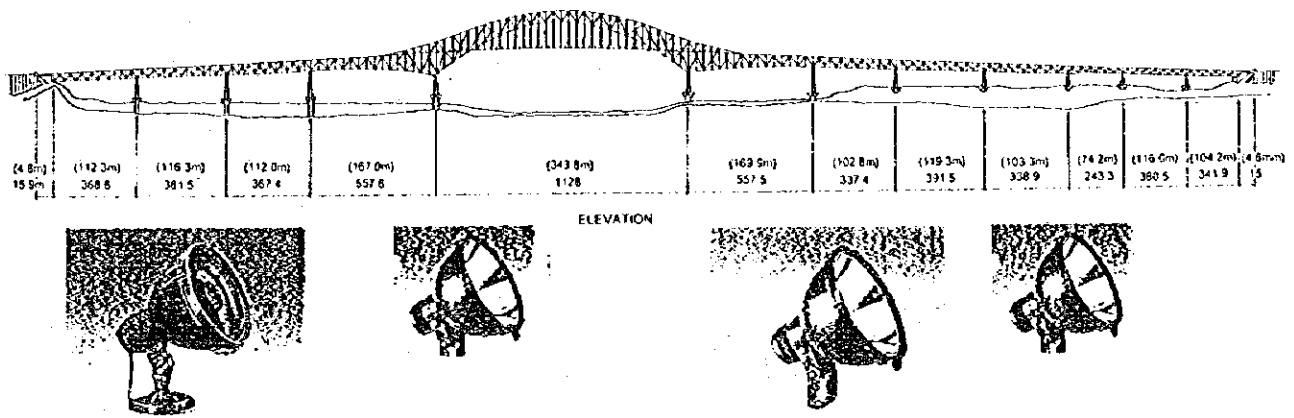


Figure 3.16 American Bridge Light up

(4) Ruins Water Garden

The target for development of the ruins area is to conserve and develop the historical site into an educational and recreational park with partial restoration of the historical site, as well as a place for pleasure outings for local residents and tourists.

The site area will not be ready for tourism during the short and medium term, because of the lack of detailed information. Therefore, a detailed site survey and site planning shall be implemented during the short and/or medium term. The site will be constructed and opened during the long term development.

The recommended development components will include a monument, reflecting water pond, gardens and lawns around the historical site and extended walking passages along the Rio Chagres.

A boat pier will be provided at the Rio Chagres, in order to make available a water transport service between Balboa area and the Ruin Water Garden.

(5) Other spots

All other Museum parks shall be a part of public space, and designated as landmarks of the specific areas. The outdoor site museum will be composed of a monument(s), water garden, parking, toilet, etc. The sites are selected with importance regard to their importance in the history of the Canal.

3.4.4 Public Utilities Development of Focal Development Areas

(1) Water Supply

The additional water demand is forecast as follows :

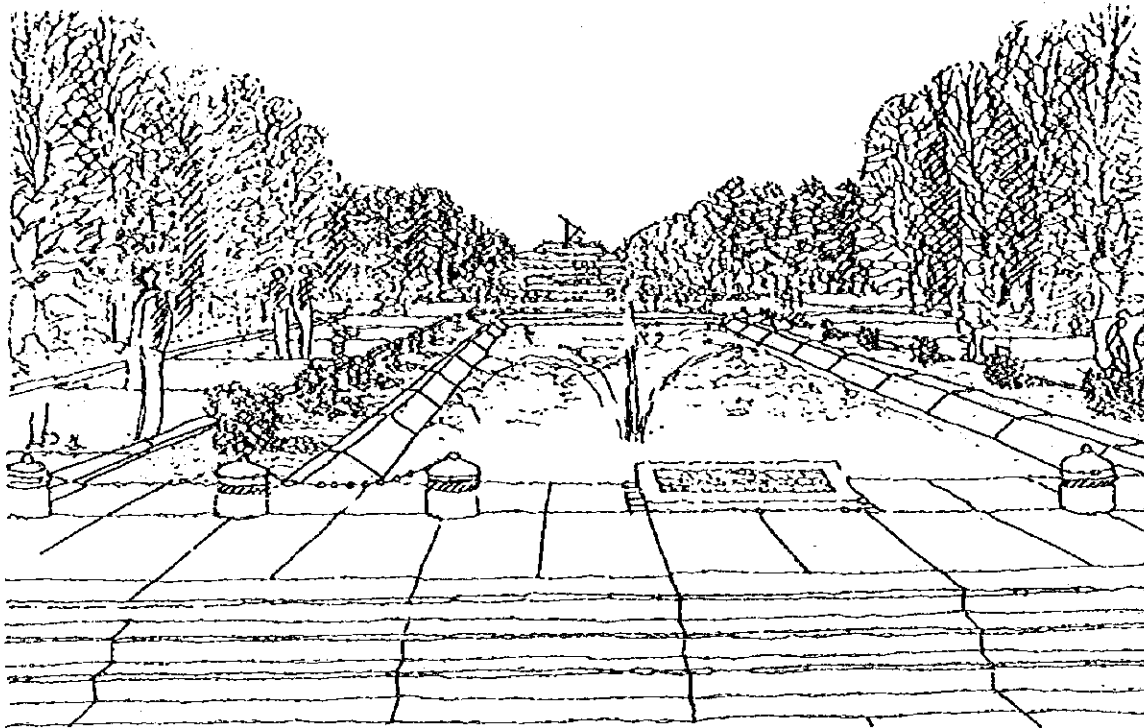


Figure 3.17 Water Garden at Ruin Area

Table 3.7 Water Demand Forecast

Area	(m ³ / day)		
	~2000	~2005	~2010
Gamboa	570	450	150
Summit area	140	140	440
Ruins area	0	0	10
Punta Toro	10	420	150

Table 3.8 Water Supply Demand

Year	(m ³ /day)		
	Gamboa	Summit Area	Punta Toro
2000	579	196	200
2005	1,019	408	411
2010	1,169	871	561

The water supply facilities are planned as follows:

Table 3.9 Water Supply Facility Plan

Facility	unit	~2000	~2005	~2010
Gamboa				
Well, Pump, (300 m ³ / day) , Reservoir,	unit	2	1	1
Piping	m	4000	1,000	1,000
Summit Area				
Well, Pump, (300 m ³ / day) , Reservoir,	unit	1	1	1
Piping	m	4,000	1,000	1,000
Ruins Area				
Well, Pump, (10 m ³ / day) , Reservoir,	unit	0	0	1
Piping	m	0	0	1000
Punta Toro				
Well, Pump, (300 m ³ / day) , Reservoir,	unit	0	2	0
Piping	m	0	2000	1000

(2) Sewerage

A Sewage treatment tank with sedimentation tanks, aeration tanks with fine materials will treat sewage under B.O.D. 30 pm. The amount of sewage will be nearly equal to that of water supply and the sewage treatment tank will have a capacity of 4 days for treatment. The treated water will be discharged to the combined system under the roads leading to Panama Canal. Required demand of sewage treatment will be as follows:

Table 3.10 Demand of Sewage Treatment

Sewage Treatment

Year	Gamboa	Sunmit Aria	Punta Toro
2000	836	183	500
2005	2,596	1,030	1,643
2010	3,196	1,402	2,243

Table 3.11 Sewage Facility Plan

Facility	unit	~2000	~2005	~2010
Sewage treatment tank	m ³	1360	4010	1500
Piping	m	13000	2000	2000

(3) Solid Waste

The forecast amount of waste in the project area is as follows:

Table 3.12 Unit Generation of Solid Waste

Amount of waste	unit	~2000	~2005	~2010
Average daily amount	kg/day	1650	6570	10690
Accumulation	ton	1500	7500	15800

The sanitary landfill site of Cerro Patacon for Panama city and Mont Hope for Colon will be used. Collection vehicles and their garages and offices will be prepared. The operation will be done by DIMA.

3.4.5 Electricity and Telecommunication Development

(1) Development of Electric Power Supply

1) Electric Power Demand

Table 3.13 shows the electric power demand for the years ending 2000,2005 and 2010 in the two development areas.

Table 3.13 Electric Power Demand

Year	Gamboa	Summit Area
2000	2.60	0.30
2005	5.00	0.40
2010	6.00	0.40

2) Electric Power Supply Plan

The power supply plan for each development area is summarized in Table 3.14.

Table 3.14 Power Supply Development Plan

Item	Summit Theme Park	Soberania National Park	Gamboa Tourism	Ruin Area
Distance of Distribution Line	20 km from Calzada Larga Substation	10 km from La Tablita Substation (new)	6 km from Soberania National Park	10 km from Summit Theme Park
Distribution Voltage	13.8 kv	13.8 kv	13.8 kv	13.8 kv
Conductor Size	477 MCM ACSR	477 MCM ACSR	477 MCM ACSR	477 MCM ACSR
Transformer	A new 1 MVA, 13.8 kv, 3 phase in Calzada Larga Substation is required	<ul style="list-style-type: none"> • One set of 1 MVA, 13.8 kV/208-120V, 3 phase until 2000 year. • One set of 0.5 MVA, 13.8 kV/208-120V, 3 phase until 2005. • One set of 0.5 MVA, 13.8 kV/208-120V, 3 phase until 2010. 	<ul style="list-style-type: none"> • One set of 3.5 MVA, 13.8 kV/208-120V, 3 phase until 2000 year. • One set of 3 MVA, 13.8 kV/208-120V, 3 phase until 2005. • One set of 0.5 MVA, 13.8 kV/208-120V, 3 phase until 2010. 	<ul style="list-style-type: none"> • One set of 3.5 MVA, 13.8 kV/208-120V, 3 phase until year 2010.

(2) Development of Telecommunications Network

1) Demand Forecast of Telecommunications Subscribers

Table 3.15 shows the demand for telecommunication subscriber for the years ending 2000, 2005 and 2010 in the development areas.

Table 3.15 Demand Forecast on Telecommunications Subscriber

Year	Gamboa	Summit Area
2000	60.00	20.0
2005	140.00	20.0
2010	170.00	20.00

2) Planning of Telecommunications Network

The telephone network for each development area is considered as follows.

a. Summit Area

A new telephone exchange with 384 lines will be developed in Summit by 1996. This new exchange will be connected to subscribers in the Summit Area.

b. Gamboa Tourism

A new telephone exchange with 1,024 lines will be developed in Gamboa by 1996. This new exchange station will connect to subscribers in Gamboa Tourism.

c. Ruins Area

A new telephone exchange with 384 lines will be developed in Summit by 1996. This new exchange will be connected to subscribers in the Ruins Area.

3.5 Cost Estimation

The results of cost estimation by facilities are shown in Table 3.16. Total project cost reaches 196.4 million balboas, of which 115.6 million balboas are for accommodation development project, 4.2 million balboas for land and marine transportation development, 30.3 million balboas for Gamboa tourism development project including observation tower etc., 17.7 million balboas for Summit/Soberania development including botanical gardens, zoological park and ecological center etc., 2.5 million balboas for Punta Toro beach development.

The remaining 26.6 million balboas are for a monument park development project, which is composed of ten monument parks, including the of Panama Canal Tower terrace, ruins of San Lorenzo etc.

Table 3.16 Project Cost of Panama Canal Tourism Development Plan

No.	Project Description	unit	AMOUNT	Total Cost Financial	Cost Portion		Land & Compensation		
					Foreign Currency	Local Currency Financial	Economic	Financial	Economic
	Units: 1,000 Balboas								
1	Accommodation Development			164,425	80,051	22,500	14,806	61,874	60,538
	1) Gamboa (0/M80/M150) renovation	room	230	12,097	4,234	1,815	1,194	6,049	5,428
	2) Gamboa (H120/H300/0) (new)	room	420	49,084	39,267	9,817	6,458		
	3) Punta Toro (0/M230/M150)(new/renovation)	room	380	20,902	9,756	4,181	2,751	6,965	6,250
	4) Punta Toro (0/H150/0) (new)	room	150	17,530	14,024	3,506	2,307		
	5) Soberania N.P.(M25/M75/M30)	room	130	15,193	12,154	3,039	1,999		
	6) Site Preparation(Summit)	ha	27.2	1,765	329	76	52	1,360	1,360
	7) Site Preparation(Punta Toro)	ha	37.0	18,638	112	26	18	18,500	18,500
	8) Site Preparation(Gamboa)	ha	58.0	29,216	175	41	28	29,000	29,000
2	Marine Transport Development			900	547	353	284	0	0
	1) Colon Marina	boat	150	750	456	294	237		
	2) Gatun Marina	boat	30	150	91	59	47		
3	Land Transport Development			3,268	2,080	1,187	1,029	0	0
	1) Gamboa Bridge	m	100	1,960	1,285	675	675		
	2) B.Garden Road Improvement	m	2,500	1,308	795	512	354		
4	Gamboa Tourism Development			34,984	21,606	8,468	6,195	4,910	4,910
	1) Tourist Information Center	sq.m	100	650	390	260	171		
	2) Museum	ha	2.2	2,524	1,818	596	398	110	110
	a. Museum Building	sq.m	210	1,500	1,151	349	230		
	b. Parking	sq.m	1,200	164	91	73	53		
	c. Landscaping	ha	2.2	360	192	58	39	110	110
	d. Cafe Terrace	sq.m	170	500	384	116	76		
	3) Observation Tower	ha	4.5	18,971	14,350	4,396	3,235	225	225
	a. Tower	Deca.m	2.70	10,000	7,670	2,330	1,533		
	b. Information Center	sq.m	16	200	153	47	31		
	c. Cafeteria	sq.m	170	520	399	121	80		
	d. Toilet	sq.m	90	76	38	38	25		
	e. Cableway	set	1.0	7,600	5,829	1,771	1,505		
	f. Station	sq.m	200	200	153	47	31		
	g. Foot Path	km	2.0	33	18	15	12		
	h. Landscaping	ha	4.5	342	90	27	18	225	225
	4) Gamboa Tourist Pier	ha	0.5	278	175	78	59	25	25
	a. Pier improvement	m	50	165	127	38	32		
	b. Toilet	sq.m	90	76	38	38	25		
	c. Landscaping	ha	0.5	38	10	3	2	25	25
	5) Golf Course	ha	90	9,008	2,945	1,562	1,097	4,500	4,500
	a. Golf course 18 holes	ha	90	7,681	2,031	1,149	799	4,500	4,500
	b. Club house	sq.m	2,000	750	575	175	115		
	c. Swimming Pool	sq.m	200	577	339	238	183		
	6) Public utilities	ha	0.5	3,554	1,928	1,576	1,234	50	50
	a. Water supply	set	1.0	1,085	511	524	397	50	50
	b. Sewerage	set	1.0	1,673	872	801	663		
	c. Solid waste disposal	set	1.0	278	202	76	50		
	d. Electricity	set	1.0	432	294	138	94		
	e. Telecommunication	set	1.0	86	49	37	30		

No.	Project Description	unit	AMOUNT	Total Cost			Land & Compensation			
				Financial	Foreing Currency	Local Currency	Financial	Economic	Financial	Economic
5	Summit/Soberania Development			24,004	12,266	5,463	3,846	6,275	19,675	
	1) Botanical Garden	ha	30.0	3,629	2,712	917	631	0	1,500	
	a. Botanical garden area	ha	27.0	1,500	1,151	349	236	0	1,500	
	b. Entrance/administration	sq m	160	500	384	116	76			
	c. Audio-visual center	sq m	260	300	230	70	46			
	d. Multi purpose ground	ha	3.0	214	147	67	49			
	e. Shops	sq m	100	150	115	35	24			
	f. Cafe terrace	sq m	370	150	115	35	23			
	g. Parking	sq m	3,600	164	91	73	53			
	h. Toilet	sq.m	90	76	38	38	25			
	i. Landscaping	ha	15	375	288	87	59			
	j. Transport System	km	1.5	200	153	47	40			
	2) Summit Zoological Park	ha	30	3,489	2,623	867	586	0	1,500	
	a. Entrance/administration	sq m	160	500	384	116	76			
	b. Parking	sq m	3,600	164	91	73	53			
	c. Toilet	sq m	90	76	38	38	25			
	d. Zoological zone	ha	30	1,500	1,151	349	230	0	1,500	
	e. Landscaping	ha	15	375	288	87	59			
	f. Audio-visual center	sq m	260	300	230	70	46			
	g. Amusement plaza	sq m	2,500	75	58	17	11			
	h. Shops	sq.m	100	150	115	35	23			
	i. Cafe terrace	sq.m	370	150	115	35	23			
	j. Transport system	km	1.5	200	153	47	40			
	3) Food Entertainment	ha	3.5	3,078	991	337	225	1,750	1,750	
	a. Restaurants	sq.m	1,100	2,950	920	280	184	1,750	1,750	
	b. Parking	sq.m	2,800	128	71	57	41			
	4) Golf course	ha	90	6,836	1,494	842	527	4,500	4,500	
	a. Golf course 18hole	ha	90	5,409	580	328	228	4,500	4,500	
	b. Club House	sq m	2,000	750	575	175	115			
	c. Swimming pool	sq.m	200	678	339	339	183			
	5) Ecological study center	ha	20.8	3,000	2,301	699	460	0	10,400	
	a. Tropical plant center	sq.m	400	1,000	767	233	153	0	10,400	
	b. Useful plant/biology center	sq.m	200	1,000	767	233	153			
	c. Natural resource inf. center	sq.m	200	1,000	767	233	153			
	6) Public utilities			3,971	2,145	1,801	1,416	25	25	
	a. Water supply	set	1.0	922	442	470	359	10	10	
	b. Sewage	set	1.0	1,340	638	687	573	15	15	
	c. Solid waste disposal	set	1.0	0	0	0	0	0	0	
	d. Electricity	set	1.0	1,531	977	554	407			
	e. Telecommunication	set	1.0	178	88	90	77			
6	Monument Park Development	ha		9,534	6,886	2,648	2,074	0	1,213	
	1) Amador monument	ha	1	400	307	93	63	0	50	
	2) American bridge monument	km	2.0	400	307	93	63	0	0	
	3) Miraflores monument	ha	1	400	307	93	63	0	50	
	4) Contractor's hill monument	ha	1	400	307	93	63	0	50	
	5) Ruina	ha	2	2,177	1,551	626	563	0	100	
	6) Canal museum park monument	sq m	625	400	307	93	63	0	313	
	7) Panama Canal Tower	ha	1	1,800	1,360	440	325	0	50	
	8) Gatun locks monument	ha	1	400	307	93	63	0	50	
	9) Punta Toro monument	ha	1	400	307	93	63	0	500	
	10) San Lorenzo	ha	1	2,200	1,500	700	560	0	50	
	11) Landscaping	ha	6	150	115	35	24	0	0	
	12) Public utilities			407	211	196	162			
	a. Water supply	set	1.0	96	41	55	44			
	b. Sewerage	set	1.0	87	35	52	42			
	c. Solid waste disposal	set	1.0	0	0	0	0			
	d. Electricity	set	1.0	160	104	56	48			
	e. Telecommunication	set	1.0	64	31	33	28			
7	Punta Toro Beach Development	ha	4	2,710	1,341	1,170	886	200	200	
	1) Beach Improvement			772	270	303	216	200	200	
	a. Parking	sq.m	1,600	255	164	91	73			
	b. Toilet/shower	sq m	140	118	59	59	39			
	d. Beach recreation	sq.m	400	50	12	38	26			
	e. Landscaping	ha	4	350	35	115	78	200	200	
	2) Public utilities			1,938	1,071	867	670			
	a. Water supply	set	1.0	548	278	270	201			
	b. Sewerage	set	1.0	975	515	460	374			
	c. Solid waste disposal	set	1.0	0	0	0	0			
	d. Electricity	set	1.0	374	257	117	78			
	e. Telecommunication	set	1.0	41	21	20	17			
Total Development Cost				239,824	124,777	41,789	29,119	73,259	86,535	

3.6 Project Implementation

(1) Implementation schedule

The implementation schedule was drawn up giving consideration to the relationship to each of the development plans which can be divided into seven parts as shown in Table 3.17.

In the Gamboa tourism development project, construction of the museum, observation tower Gamboa Bridge crossing the Chagres river are planned as short term developments.

In the Summit/Soberania Development Project is a short term project botanical gardens, zoological park is medium term, and golf courses are long term. Ten Monument Park Developments will be constructed in the short, medium and long term according to an overall plan.

(2) Investment plan

Investment volumes by sectors by investment time are shown in Table. The total investment is 196.4 million balboas of which 110.0 million balboas is for hotel and golf course construction by the private sector. The public sectors 3.2 million balboas is for road construction. The remaining 83.2 million balboas are invested by the TDC for other tourist facilities such as public beach improvement, city center beautification, information center, handicraft training marine center. Investment volume by sectors and investment term is shown in Table 3.17.

Table 3.17 Implementation Schedule and Term Cost

Panama Canal Tourism Development Plan		Short Term (US\$ '000)					Medium Term (US\$ '000)					Long Term (US\$ '000)				
No.	Project Description	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
2	Accommodation Development															
	1) Gamboa (G0187/M150) Renovation					0000	0000				0000	0000				
	2) Gamboa (H120/R0000) (new)					0000	0000	0000				0000	0000			
	3) Punta Toro (G0130/S0150) (new/renovation)							0000					0000			
	4) Punta Toro (G01150/G) (new)							0000	0000							
	5) Soberania National Park (M15/M15-M30)		0000	0000				0000	0000			0000	0000			
	6) Site Preparation (Summit)		0000							0000						
	7) Site Preparation (Punta Toro)															
	8) Site Preparation (Gamboa)					0000										
2.2	Marine Transport Development												0000	0000		
	1) Colon Marina												0000	0000		
	2) Colon Marina												0000	0000		
2.3	Land Transport Development													0000	0000	
	1) Gamboa Bridge		0000	0000									0000	0000		
	2) Botanical Garden Road Improvement															
2.4	Gamboa Tourism Development															
	1) Tourist Information Center			0000												
	2) Museum			0000	0000											
	3) Observation Tower				0000	0000	0000	0000								
	4) Gamboa Tourist Pier							0000	0000							
	5) Golf Course									0000						
	6) Infrastructure Development					0000		0000					0000			
2.5	Summit/Soberania development															
	1) Botanical Garden			0000	0000											
	2) Summit Zoological Park							0000	0000				0000	0000		
	3) Food Entertainment								0000					0000	0000	
	4) Golf Course									0000				0000	0000	
	5) Ecological Study Center								0000	0000	0000			0000	0000	
	6) Infrastructure Development			0000				0000					0000			
2.6	Monument Park Development															
	1) Amador Monument															
	2) American Bridge Monument		0000	0000												
	3) Miraflores Monument															
	4) Contractor's hill monument															
	5) Ruina															
	6) Canal museum park monument					0000										
	7) Panama Canal Tower					0000										
	8) Colon locks monument								0000							
	9) Punta Toro monument									0000						
	10) San Lorenzo		0000	0000	0000				0000	0000				0000		
	11) Landscaping		0000	0000	0000				0000	0000	0000			0000		
	12) Infrastructure Development					0000										
2.7	Punta Toro Beach Development															
	1) Beach Improvement									0000						
	2) Infrastructure Development									0000						
	Total Development Cost	61,043	4,577	10,539	27,098	32,007	28,312	38,259	11,138	971	1,686	7,499	13,024	2,315	1,356	0

NOTE: --- Land and engineering period
 0000 Construction period

(3) Promotion Plan

The Proposed catch phrase for the area is, for example "Panama Where the Two Oceans Meet". The canal is, without doubt, one of the most spectacular scenes in the world but it can hardly be said that it has been fully utilized for tourism purposes up to now.

It should be most important for foreign visitors to undertake Panama City sightseeing tours for a half or full day including observation and explanations about the Canal and its museum. Tours can be organized and sold by travel agencies and hotels who are receiving foreign tourists.

On the other hand, travel agencies should operate package tours for business and shopping travelers coming from Central and South America and the Caribbean in cooperation with airlines, hotels and other facilities in the area.

Eco-tours and adventure tours should persuaded to use the Canal and tropical rain forest as an optional tour with emphasis in the natural environment.

Improvement of city planning and security in Colon are the important issues. Green belts with flowers are recommended to give foreigners a good first impression of Panama and to make them welcome.

3.7 Project Evaluation

3.7.1 Economic Evaluation

(1) Cost

The investment cost, including land and compensation costs, maintenance, cost of developing infrastructure, and the operating cost of the related tourism sectors, which will receive revenues directly from the incremental tourists are shown in Table 3.18.

Table 3.18 Economic Cost of Panama Canal Tourism Development Plan

Unit: B/. 1,000

	Investment cost			Total investment cost	Maintenance cost of infrastructure	Operating cost	Total cost
	Land	Public	Private				
Short	86,535	32,040	22,116	140,691	3,790	17,901	162,382
Middle	0	13,235	66,296	79,531	10,345	83,206	173,082
Long	0	7,234	13,015	20,249	12,732	179,441	212,422
Total	86,535	52,509	101,427	240,471	26,867	280,548	547,886

Note: 1) Operating cost of related private sectors are estimated at 25% of the total tourist revenue for Panama Canal Tourism Development Plan (refer to Appendix).

(2) Benefit

The revenue of the Panama Canal Tourism Development Plan has been calculated based on the expenditure by the incremental number of night stay tourists and day visit tourists. It is converted into the direct and indirect contribution to the GDP of Panama as shown in Table 3.19. As shown in Figure 3.16 the characteristics of the benefits of Panama Canal Development Plan are the higher share of domestic tourist revenue and the lower share of accommodation expenditure when compared with Chame (refer to Figure 2.24).

Table 3.19 Benefit of Panama Canal Tourism Development Plan

Unit: B/. 1,000

	Tourist revenue		Total tourist revenue	Benefits		Total benefits
	Foreign tourists	Domestic tourist		Direct benefits	Indirect benefits	
Short	44,483	4,226	48,709	29,713	14,856	44,569
Middle	196,562	29,848	226,411	138,111	69,055	207,166
Long	388,438	99,837	488,275	297,848	148,924	446,771
Total	629,483	133,912	763,395	465,671	232,835	698,506

Note: 1) Conversion factor into direct benefit=61% (refer to Appendix)
 2) Conversion factor into indirect benefit=32%

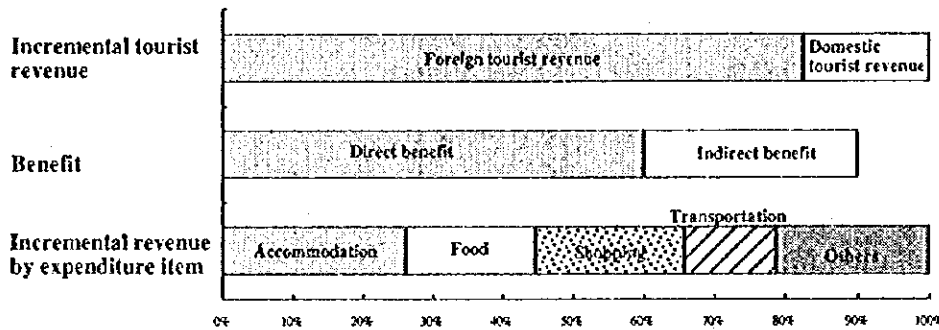
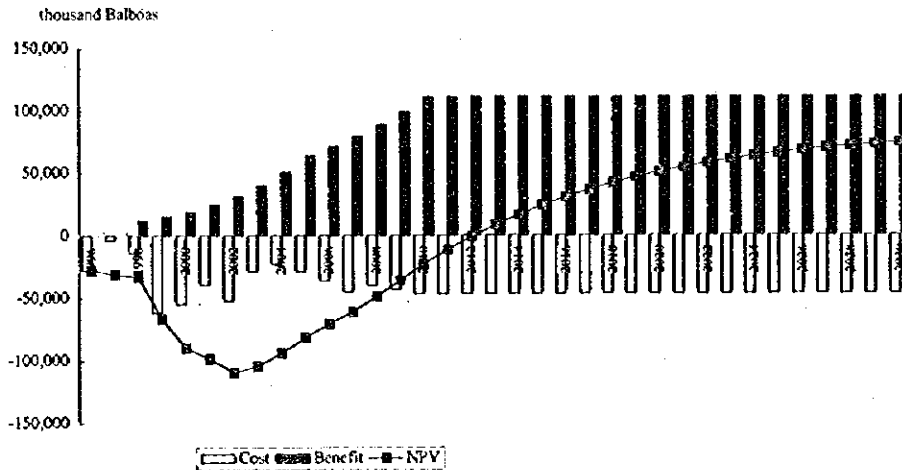


Figure 3.18 Incremental Revenue by Tourist and Expenditure Item, and Benefits (1996-2010), Panama Canal Tourism Development Plan

(3) Calculation and evaluation

Figure 3.19 shows the comparison of benefits and costs of the Panama Canal Tourism Development Plan. The results of calculation are shown in Appendix.



Note: NPV is calculated by using a discount rate of 12%

Figure 3.19 Benefit, Cost and NPV of Panama Canal Tourism Development Plan

The Economic Internal Rate of Return (EIRR) and Net Present Value (NPV) have been estimated at 16.6% and 73,717 thousand Balboas respectively. The EIRR is considered viable for the Plan to be implemented from the economic point of view.

The characteristic of the investment for Panama Canal Tourism Development Plan is the concentration of public investment in the short term period of the Plan. The public tourism facilities such as botanical garden, museum and observation tower are expected to be developed by the year 1999 and the cost of these facilities makes the EIRR lower. However, the importance of the development of these facilities will be recognized as one of the major factors to promote the image of tourism in Panama. The impact of the Panama Canal Tourism Development Plan on tourism for the whole country will be significant. Economic sensitivity has been examined under the following assumptions.

**Table 3.20 Results of Economic Sensitivity Analysis
Panama Canal Tourism Development Plan**

	EIRR	NPV
Base case	16.6%	73,717 Bl. thousand
Cost increase (20%)	14.2%	40,175 Bl. thousand
Benefit decrease (20%)	13.7%	25,432 Bl. thousand
Cost increase (20%) and Benefit decrease (20%)	11.5%	-8,111 Bl. thousand

3.7.2 Financial evaluation

The financial viability of the TDC has been examined and the details of each assumption adopted for the financial evaluation of the TDC are the same as in the Chame Resort Development Plan.

(1) Cost

Table 3.21 and Figure 3.20 shows the investment cost of Panama Canal Tourism Development Plan. The share of the investment cost for TDC is estimated at 53% of total cost, or 126,607 thousand Balboas, including the compensation cost of land. The share of TDC's cost is highest among the three selected tourism area plans and the disbursement of the costs concentrates in the short term as shown in Figure 3.20. Land cost including the compensation of land is very high in this plan. It is obvious from the view point of financial aspects that the role of the TDC is very important for the Panama Canal Tourism Development Plan.

The operation and maintenance cost of TDC has been calculated adopting the same procedure as Chame Resort Development Plan.

Table 3.23 Investment Cost of Panama Canal Tourism Development Plan
Unit: B/. 1,000

Development body	Short	Medium	Long	Total	%
Land	73,259	0	0	73,259	31%
Government	1,960	0	1,307	3,267	1%
TDC	32,328	14,482	6,538	53,348	22%
Private	27,722	65,890	16,339	109,951	46%
Total	135,269 (56%)	80,372 (34%)	24,184 (10%)	239,825 (100%)	84%

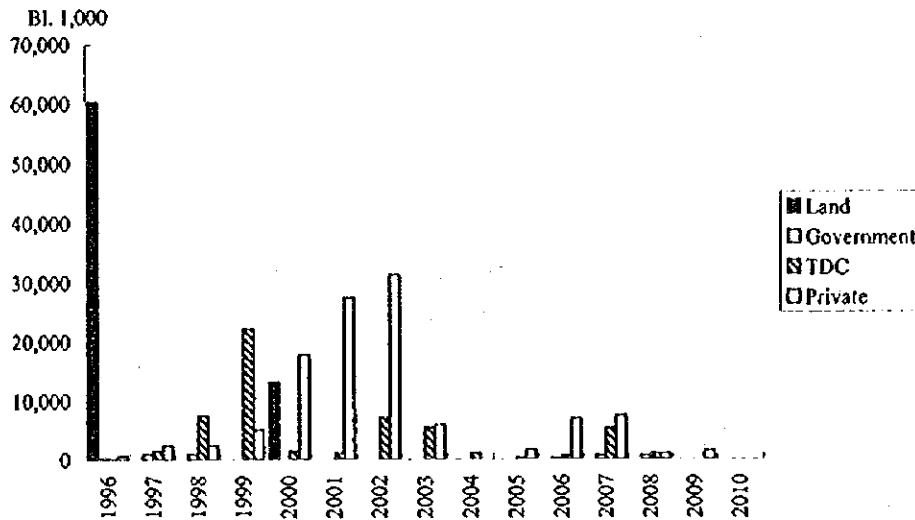


Figure 3.20 Investment Cost by Development Body (1996-2010) Panama Canal Tourism Development Plan

(2) Revenue

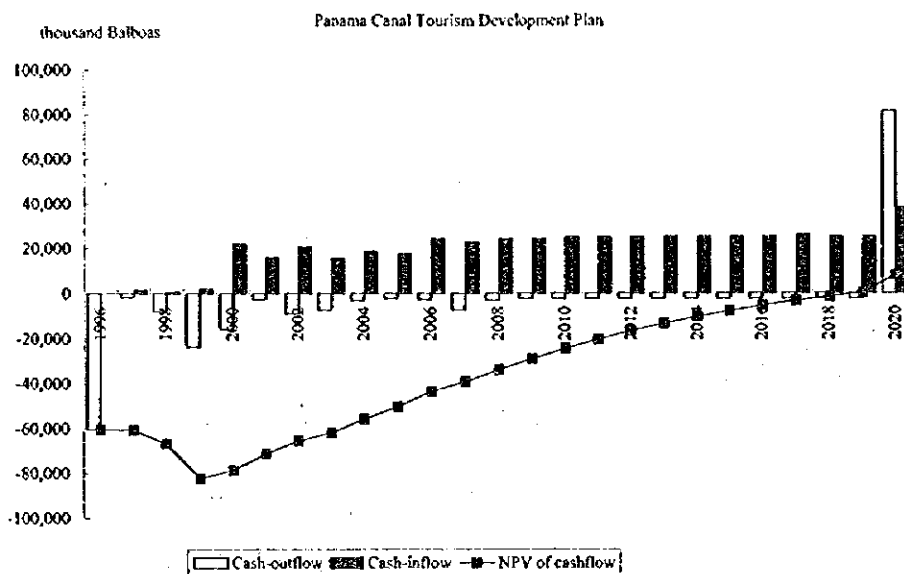
As shown in Table 3.22 the total annual revenue is assumed to amount to 24,796 thousand Balboas in 2010, which is almost twice that in the Chame Resort Development Plan (refer to Table 2.33). Comparing the ratio of each revenue in Panama Canal Tourism Development Plan with that in Chame, the percentage of the land lease fee for accommodation is high in Chame, while that of facility lease fee and direct revenue from tourists will be high in Panama Canal.

Table 3.22 Estimated Revenue of TDC in 2010, Panama Canal Tourism Development Plan
Unit: B/. 1,000

Revenue item	Revenue per year	%
Land lease fee for accommodation	7,980	32%
Land lease fee for other facilities	1,100	4%
Facility lease fee	6,485	26%
Revenue from tourists	9,231	37%
Total	24,796	100%

(3) Financial Evaluation

Figure 3.21 shows the cash-inflow and cash-outflow and the Net Present Value of net cash-flow of TDC between the period from 1996 to 2020. The FIRR and NPV of TDC have been estimated at 12.9% and 7,894 thousand Balboas respectively. The FIRR indicates the minimum rate to make the Plan viable from the financial point of view. The detailed calculation is attached in the Appendix.



Note: NPV is calculated by using a discount rate of 12%

**Figure 3.21 Estimated Cash-flow and NPV of TDC (1996-2020)
Panama Canal Tourism Development Plan**

Table 3.23 Results of Financial Evaluation of TDC, Panama Canal Tourism Development Plan

Term	Investment Cost		Operation & Maintenance Cost	Total Cost	Lease Fee		Total Revenue	Net Profit
	Land	Facility Development			Accommodation	Other facility		
Short	73,259	32,328	4,179	109,766	12,080	13,334	25,414	-84,352
Middle	0	14,482	9,907	24,389	44,732	42,006	86,738	62,349
Long	0	6,538	11,460	17,998	55,859	62,686	118,545	100,547
2011-2020	-73,259	-10,150	23,375	-60,034	109,823	152,010	261,833	321,867
Financial Internal Rate of Return (FIRR):					12.86%			
Net Present Value (NPV) discounted by 12%:					7,894 thousand Balboas			

(4) Financing Plan

Table 3.24 shows the financing plan of TDC in Panama Canal Tourism Development Plan.

Table 3.24 Financing Plan of Investment Cost, Panama Canal Tourism Development Plan
Unit: B/. 1,000

Total investment cost of TDC		Financing			
		Capital		Long-term loan	Incremental revenue
Land	Infrastructure & facility	Public	Private		
73,259	53,348	26,764	26,764	22,670	50,410
		53,528 (42%)			
126,607		126,607			

Note: The condition and the schedule of long term loan are shown in Appendix.

3.8 Environmental Impact Study (Panama Canal Tourism Development Plan)

3.8.1 Introduction

The Panama Canal Tourism Development comprises 7 projects including 5 tourism developments and 2 infrastructure developments. These project sites are located in the Canal Zone from the Pacific to the Atlantic side, and their location is fixed by the Panama Canal facilities.

As a result of the preparation of an environmental impact study, the following impacts have been identified. Moreover, detailed screening of each component is examined as described in the following table.

Table 3.25 Screening of Environmental Impacts

	Social Environment									Natural Environment							Pollution						
	Relocation	Economic Activity	Public Facilities	Community Isolation	Cultural Heritages	Water & Other Rights	Health / Sanitary	Wastes	Disaster	Topography and Geology	Erosion	Subterranean Water	River Basin	Coast & Marine Area	Flora and Fauna	Meteorology	Landscape	Air Pollution	Water Quality	Soil Contamination	Noise & Vibration	Ground Subsidence	Offensive Odors
1) Accommodation Development	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
2) Gamboa Tourism Development	D	D	D	D	D	D	D	D	D	C	C	D	C	C	B	C	C	D	C	D	D	D	D
3) Soberania National Park Development	D	D	D	D	D	D	D	D	D	D	C	D	D	D	C	D	D	D	D	D	D	D	D
4) Out Door Museum Park Development	D	D	D	D	D	D	D	D	D	D	C	D	D	C	D	D	D	D	D	D	D	D	D
5) Punta Toro Tourism Development	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
6) Gamboa Bridge and Road Network	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
7) Infrastructure Development	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D

Note: A - Large or moderate impact, B - Slight impact, C - Uncertain, D - Nil or Negligible

3.8.2 Present Condition of Project Area

The Present condition of the project area is composed of an entrance to the Panama Canal on the Pacific side to Punta Toro on the Caribbean side through Gamboa.

This area is managed under the Panama Canal Commission and will revert to Panama in accordance with the treaty. There is abundant natural flora and fauna nearby the capital city of Panama.

The Characteristics of this area are that a large part of it has been designated as National Park, for example, Soberania National Park (22,104 ha.), Camino de Cruces National Park (4,000 ha.), Interoceánico Las Américas (62,159 ha.), Metropolitan Natural Park and Lago Gatún Recreational Park (348 ha.).

Noteworthy Aspects:

- 1) Abundant rich flora and fauna with natural tropical rain forest (Bh-T) landscape of exist in the area.

- 2) Proposed project sites are already developed and carefully maintained by the Panama Canal Commission.
- 3) There exists an archaeological site in Colina de Ingenieros and old Venta de Cruces of great historic value.

Table 3.26 Present Condition of Project Area

Factors	Subject Item	Present Condition
(1) Geography	<ol style="list-style-type: none"> 1) Topography 2) River system 3) Soil erosion 4) Land Use 	<ul style="list-style-type: none"> • Coastal plain with hills and plains. Below 20 Mts. (50 to 99 Mts.), alluvial plains with high level of salinity and flooding. • Pacora river basin which includes Cabra, Tocumen, Juan Diaz, and other rivers between Caimito and Juan Diaz. Colon city: A few creeks exist. Chagres and Gatún are major river basins. • Panama city and the adjoining area to the Canal have arable and non-metallic soils (clay, limestone, and gravel). In the north section, the soil is non-arable and is adequate for pasture, forest and reserved areas. There is some erosion at the continental division and in Alajuela and Gatún lakes.
(2) Flora	<ol style="list-style-type: none"> 1) Terrestrial flora 2) Aquatic flora 3) Vegetation 4) Endangered species 	<ul style="list-style-type: none"> • The microhabitat varies varies with the extension of the flooded area and the depth of the water. It includes microhabitats of lilies, ferns, cyperacids and <i>hydrilla</i>. The plant structure is composed of all types of weeds and monocotyledons, which are dominant. • The vegetation in the Canal area consists of tropical rain forest (Bh-T). The Panama Canal Area has a set of natural ecosystems that show variations in ecological and floral structure. This refers to protected wild lands, such as Soberania National Park, Camino de Cruces National Park and Metropolitan National Park. • The endangered species include: <i>Cedrella odorata</i>, <i>Cordia alliodora</i>, <i>Swietenia macrophylla</i>, <i>Bombacopsis quinata</i>.
(3) Fauna	<ol style="list-style-type: none"> 1) Habitat area of fauna: 2) Endangered species, 	<ul style="list-style-type: none"> • El Charco Nature Trail: It has optimal conditions for amphibians (frogs and toads). Brooks maintain humidity. • Gamboa: The fauna is typical of the aquatic ecosystems and is associated with certain types of floating vegetation. Here can be found a biological diversity which ranges from aquatic to terrestrial invertebrates to larger vertebrates (birds and reptiles). • Soberania National Park: The park hosts a large biodiversity of terrestrial organisms: large mammals, endangered birds, colorful birds, and some amphibians. • Cerro Balboa: The zone has a dense vegetation that maintains different habitats for birds and mammals.
(4) Landscape	<ol style="list-style-type: none"> 1) Location of viewing points 2) Contents 	<p>The most important landscape is natural landscape of tropical rain forest and associated topographical aspects. Both the Atlantic and Pacific oceans are observed from some of the hill tops.</p>
(5) Economic Activities	<ol style="list-style-type: none"> 1) Chief Industry 2) Inhabitants 	<p>There is a residential area for employees of the Panama Canal in Gamboa, Punta Toro.</p>
(6) Water Quality	<ol style="list-style-type: none"> 1) BOD / COD 2) SS 3) DO 	<p>At the entrance of the Panama Canal, the Canal operation has caused oil spills.</p> <ul style="list-style-type: none"> • Crundu river: The water quality has greatly deteriorated and the levels of BOD have reached 300 mg/L. • Chagres river: The water quality is excellent and the levels of BOD are less than 2.0 mg/L, the dissolved oxygen is high (5.0 mg/L). • Gatún area: The population in Gatún basin is very small, so it preserves a good quality level. The levels of BOD are below 3 mg/L.
(7) Waste Matters	<ol style="list-style-type: none"> 1) Existing Waste Matter 2) occurrence points 	<p>The urbanized areas present a good system of solid waste collection and a good supply of drinking water.</p> <p><i>Charco</i> Nature Trail and <i>Camino de Cruces</i> have a poor sanitary conditions.</p>

(8) Cultural/ Historical Assets	1) Existing Cultural /historical Assets 2) Scale and volume	<ul style="list-style-type: none"> • <i>Venta de Cruces</i> site: Remains of walls, stone staircases, brick fragments, roof tiles, etc. <i>Venta de Cruces</i> has great historic value, fortunately, it is protected by Soberania National Park. • Part of the original pavement of <i>Camino de Cruces</i> can be found in the Soberania National Park • In "<i>Colina de Ingenieros</i>", a large archaeological extension exists, where big accumulations of shells, ceramics and lithium materials of the pre-Hispanic era can be seen.
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3.8.3 Environmental Impact Analysis

The Panama Canal Tourism plan comprises seven supporting projects located along the route of the Panama Canal. For each project and environmental impacts are analyzed in association with the present environmental conditions and described in tabular form as follows.

Table 3.27 Environmental Impact Characteristics

Supporting Projects	Project Type/ Scale	Project Site	Environmental Factor to be affected
1) Accommodation	Accommodation development (14,449 rooms)	Gamboa, Summit	Water, garbage
2) Gamboa Tourism Development	Observation Tower development (220 Mts.), Panama canal museum (220 Sqm.), Information center (1 Unit)	Gamboa	Flora, Fauna
3) Soberania National Park Development	Botanical and zoological garden (ha.), and Ruins area development (Ha.)	Summit and Ruins Area	Flora
4) Outdoor Museum Parks Development	Monument parks at 7 sites (11,875 Sqm.) and The American bridge lighting up (2 km.)	Along the Panama Canal	Flora
5) Punta Toro Tourism Development	Accommodation development	Punta Toro	Nil or Negligible
6) Gamboa Bridge and Road Network	New bridge (9x100 Mts.) and road improvement (Gailroad - Gamboa, 27 Mts.W)	Gamboa	Nil or Negligible
7) Infrastructure Development	Water supply (750 Qum/day), sewerage, (1,500 Qum.), solid waste (10,690 kg/day), Electricity (7.8 MW), telecommunications network (260 lines)	Gamboa, Summit, Punta Torro, American Bridge	Nil or Negligible

3.8.4 Environmental Impact Process and Evaluation

As a result of the environmental impact analysis, identified environmental impacts are processed in consideration of the construction and operation phase, and scale and type when the projects are carried out. Principle impacts are described, while any other small impacts are predicted in this examination.

Table 3.28 Environmental Impact Prediction and Evaluation

Projects	Environment Impact Prediction	Evaluation
1) Accommodation Development	Amount of discharge or residual water is associated with the number of inhabitants and affects the eutrophic condition of nearby river water in operation phase.	Slight impact on water quality is predicted.
2) Gamboa Tourism Development	Observation tower in Cerro Pelado and sports facility (Golf course) are proposed at the existing ladder site and old golf course. In the construction phase, none of flora and fauna will be destroyed. However, proposed sites have already been developed once and have been maintained.	Slight impact on flora is predicted.
3) Soberania National Park Development	Removing the top soil including roots systems of existing vegetation is caused by extending the existing botanical garden.	Nil or Negligible
4) Outdoor Museum Parks Development	7 sites where are maintained are proposed along the Canal. Some secondary forest will be affected by land formation while other impacts are less predictable. Also lighting up of the American Bridge has no major unsequences.	Nil or Negligible
5) Punta Toro Tourism Development	This area is settled by PCC for residential accomodation. The plan is proposed in adjacent an area to be existing development including roads.	Nil or Negligible
6) Gamboa Bridge and Road Network	The bridge is proposed to take the place of the existing bridge. No major impact is predicted.	Nil or Negligible

3.8.5 Examination of Environmental Countermeasures

To achieve the development in consideration of environmental conservation, countermeasures as a results of the series analysis are examined and formulated for avoiding or mitigating the environmental impact.

Most of projects in this plan are proposed in areas which are already developed for the Panama Canal operation and public attractions. However slight impacts are predicted from the development of accommodation in Gamboa.

Slight impact is predicted from the observation tower development due to disturbance of soil and vegetation in the construction phase. In order to mitigate this impact, general care for the environment shall be carried out such as minimizing cut and fill, and the felling of trees to maintain stability of the environment. This consideration will also be applied to any other development project.

4. Flower and Green City Development Project

4. Flower and Green City Development Plan

4.1 Features of the Plan

It is said that visitors form their first impression of a country when they disembark at the airport. This impression sometimes prevails over all other impressions gained in other parts of the country and becomes the basis for forming an opinion of the country. In this regard, it is necessary to emphasize that all measures to ensure tourists receive a warm welcome upon arrival are very important.

To fulfill this aim, beautification of the urban landscape to create an international tourism city comprising landscaping of roads, focal tourist and open space areas, signs and information centers for tourists and a tourist bus center are proposed to create a favourable impression.

Table 4.1 Component of the Plan

Objectives	Projects Title	Items/ Location	Development Cost(Unit: B/.)
Beautification of Town scape as an International Tourism City (Aesthetic)	1) Landscaping of Roads	20 Roads A total length is 70 km.	17,960,000
	2) Landscaping of Focal Tourist Areas	Calidonia Bella Vista 1,2	8,650,000
	3) Improvement of Tourism Open Space for tourists	Casco Viejo, Panama Viejo	640,000
Tourist Services	4) Three Types of Sign Board Improvement	150 Points	490,000
	5) Tourism Information Center	San Felipe and Bella Vista Area	1,130,000
	6) Tourist Bus Center	North side of Ancón Hill	3,630,000

4.2 Planning Condition

4.2.1 Natural Environment

A significant characteristic of the natural environment is that an abundant tropical forest lies adjacent to the city. A variety of birds and animals are readily seen in the secondary matured forest.

The climate is that of Tropical Savanna, furthermore, the dry season and rainy season last from January to April and from May to December respectively. The average monthly temperature in this area ranges from 26.2 degrees centigrade to 27.6 degrees centigrade throughout the year. Average monthly precipitation in the area ranges from 7.5 millimeters to 274.1 mm. monthly, with a total precipitation of 1,700 mm. annually. Probable precipitation intensity is 84.5 mm. per hour for a 10 year return period.

4.2.2 Social Environment

Panama City, the capital and chief industrial, financial, and cultural center of the Republic of Panama, is located adjacent to the Pacific terminus of the Panama Canal.

(1) Urban Structure

Panama's urban area lies next to the Canal Zone on the East side and extends in the Easterly and Northeasterly directions along the two major roads Transisthmian Highway and Pan American Highway.

(2) Surface Transportation

Panama City's transportation is characterized by two major highways; the Pan American highway which travels the city in an East-West direction and the Transisthmian Highway which crosses the isthmus to link Panama City with Colón city. Both highways meet in the city.

The Panama railway, which once served as a principal transport link across the isthmus, now carries minor cargo and sightseers.

(3) Airport and Sea Port

Most tourists from abroad arrive at Tocumen International Airport to the east of Panama City. There is another small scale air port in Paitilla next to the business district, which is utilized for transferring to other local destinations in Panama.

Balboa port, at the Caribbean entrance of the Panama Canal, is utilized as a commercial port handling the bulk of the country's freight and also by various passenger ships. For example, Caribbean cruise ships disembark there and it is used as a base for the Panama Canal cruise. Moreover, small-sized boats utilize the Balboa Yacht Club, which is positioned at the Panama Canal entrance. Boats for the neighboring Taboga Island and other charter vessels set sail from the Balboa Yacht Club.

(4) Existing Tourism Facilities

There are various kinds of tourism facilities in Panama City which represent historical and cultural assets, the Panama Canal, museum and transport facilities, etc., as described below.

- | | |
|-----------------------------------|--|
| 1) Historical and Cultural Assets | - Panama Viejo
- Casco Viejo Area |
| 2) Museums | - National Museum
- Museum of Religious Art
- Museum of Panamanian History |
| 3) Panama Canal Facilities | - Miraflores Lock Area
- Pedro Miguel Lock Area |
| 4) Shopping Mall | - Vía España Area
- Paitilla Area
- El Dorado
- Central area |
| 5) Convention Center | - ATLAPA |

- 6) Parks and Recreational Open Space
 - Metropolitan Natural Park
 - Camino de Cruces National park
 - Amador Area
- 7) Tourist Information Center
 - Tocumen International Airport
 - Panama Viejo
- 8) Bus Center
 - Central Area

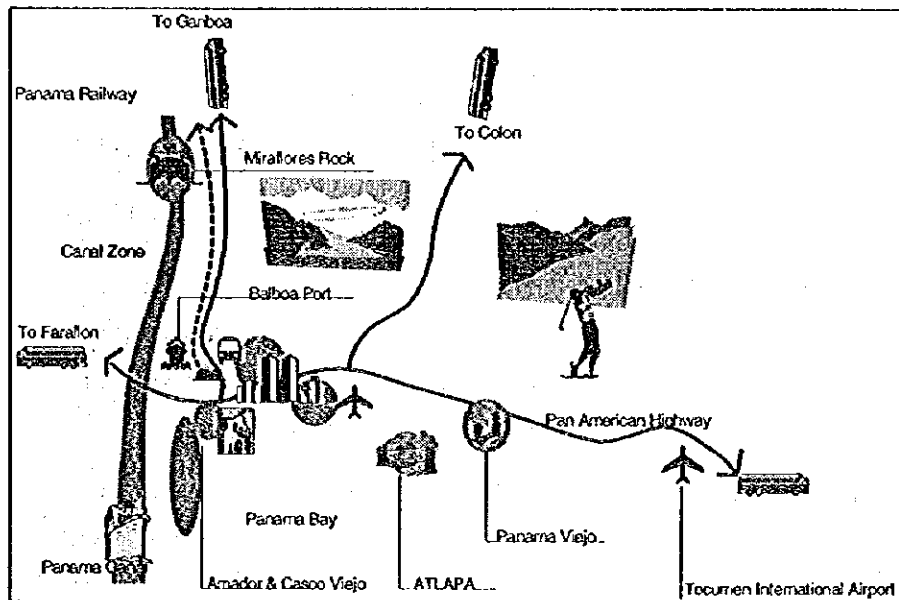


Figure 4.1 Tourist Facilities in Panama City

4.3 Development Framework

The Metropolitan zone will serve 684,000 tourists by the year 2000, 1,177,000 tourists by the year 2005 and 1,390,000 tourists by the year 2010, according to the demand forecast and tourist distribution study described in the previous chapters. Moreover, the total number of tourists who will be using air transport is predicted to be 1,200,000 tourists by the year 2010, including charter and regular flights. This means that 86% of the total foreign tourists will arrive in Panama City.

Table 4.2 Tourist inflow in Metropolitana Zone

Transport Mode		1992 (end)	2000	2005	2010
By Air (Tocumen)	Air Total	256,100	575,000	1,025,000	1,200,000
	Regular Flight	256,100	525,000	855,000	1,000,000
	Charter Flight	0	50,000	17,000	20,000
By Sea (Balboa)		14,600	43,000	70,000	90,000
By Road		43,100	66,000	82,500	100,000
Total		313,800	684,000	1,177,500	1,390,000

4.4 Development Plan

4.4.1 Landscaping of Roads

In order to produce aesthetically pleasing urban space as the gateway city of the Panamanian nation, landscaping of roads, with the focus on access roads for tourism, is proposed.

Landscaping serves many useful functions. Firstly, trees have an aesthetic function and produce a scenic urban landscape together with flowers along side the roads. Secondly, they are a visual aid to drivers and contribute to traffic safety by giving drivers early warning of changes in the road direction. Thirdly, trees have a pollution mitigation function on traffic noise and exhaust pollution along the road side areas. Moreover, landscaping has an environmental conservation function by provide a habitat for urban flora and fauna. Furthermore, it contributes to reduced headlight glare from opposing car headlights and glare to surrounding areas.

In order to make a good impression on visitors as mentioned at the beginning of this chapter, and considering the above mentioned functions, the development plan for road landscaping shall improve the appearance utilizing tropical plants providing a welcoming atmosphere for tourists and enhancing their first impression of the gateway city of Panama.

(1) Existing Road Side Trees

Existing roadside trees are found along arterial and auxiliary roads and provide a distinctive character.

The nature of existing roadside trees has been determined by the second environment survey shown in the Appendix. The vegetation, - mostly tropical species, - comprises trees (60 species), shrubs (40 species), grasses (20 species) and palms (15 species). A few indigenous species have been planted, but most of the species are not native to Panama.

(2) Existing Road Landscape

The built-up areas, which were developed after the Panama Canal opened to traffic, have an important characteristic in that the roadside trees, which were planted in rows in those days, have created a district atmosphere according to the type of tree over the subsequent half century. Typical examples are the rows of coconut palms, and other tree varieties where the trees create crowns over the top of the roads.

In newly developed areas, saplings are planted in a similar pattern, but it will take many years to achieve the same appearance.

(3) Selection of Roads to be Improved

1) Selection of Roads to be Improved

In accordance with the project objectives, principal roads which include access roads to downtown from the airport, roads in the central part of Panama and access roads to Amador and Miraflores Lock in the Canal zone, are subject to landscaping. The following roads are selected in conjunction with the policy of this plan to provide a welcoming image.

Table 4.3 Road Features of Selected Road

No.	Title	Length (m)	No. of Lanes	Median	Remarks
1	Ave. A	1,450	3	-	Casco Viejo
2	Ave. Amador	6,500	2	-	Canal Zone
3	Ave. Balboa	3,750	4	-	
4	Ave. Belisario Porras	2,750	4	-	
5	Ave. Central	4,100	4	M	Part of the road in San Felipe is a traffic free pedestrian zone.
6	Ave. de Los Mártires	1,250	4	-	
7	Ave. Federico Boyd	650	4	M	
8	Ave. Gaillard	8,150	4	-	Canal Zone
9	Ave. Juan Pablo II	2,500	2	-	
10	Ave. Justo Arosemena	2,100	2	M	
11	Ave. Manuel Espinosa B.	1,000	4	M	
12	Calle Balboa	1,550	2	-	Canal Zone
13	Calle Diablo	1,700	2	-	Canal Zone
14	Vía Argentina	1,050	4	M	
15	Vía Brasil	2,120	4	-	
16	Vía Cincuentenario	5,020	4	-	
17	Vía Domingo Díaz	13,800	4	M	
18	Vía España	1,600	4	-	
19	Vía Israel	1,950	4	M	Some parts of the road have medians
20	Vía Ricardo J. Alfaro	7,020	4	-	

2) . Features of Selected Roads

For the standpoint of short term achievement, the plan shall emphasize the area bounded by Vía Brasil and the access road to the airport. Features of the selected roads comprising road name, length, number of lanes and median are described in the table. Selected roads classified by typical section types are also shown in the figure.

(4) Landscaping Strategy

To achieve improvement of the landscaping of roads, the following strategy will be used.

- 1) Roadside tree planting will be proposed to produce an aesthetic and continuous landscape.
- 2) Plant will be planted in certain formations in accordance with the planting function.
- 3) Planting will emphasize ground cover plant, shrubs and flowers, which will show benefits within a short period. Open areas shall be covered by grasses and no areas will be left untreated.
- 4) Since annual precipitation is high, sufficient drainage provisions will be made.
- 5) Pavement will be minimized in order to allow storm water to permeate.
- 6) The landscape design will take into account handicapped persons.

Tourist routes to be improved are grouped according to the existing landscaping condition described as follows.

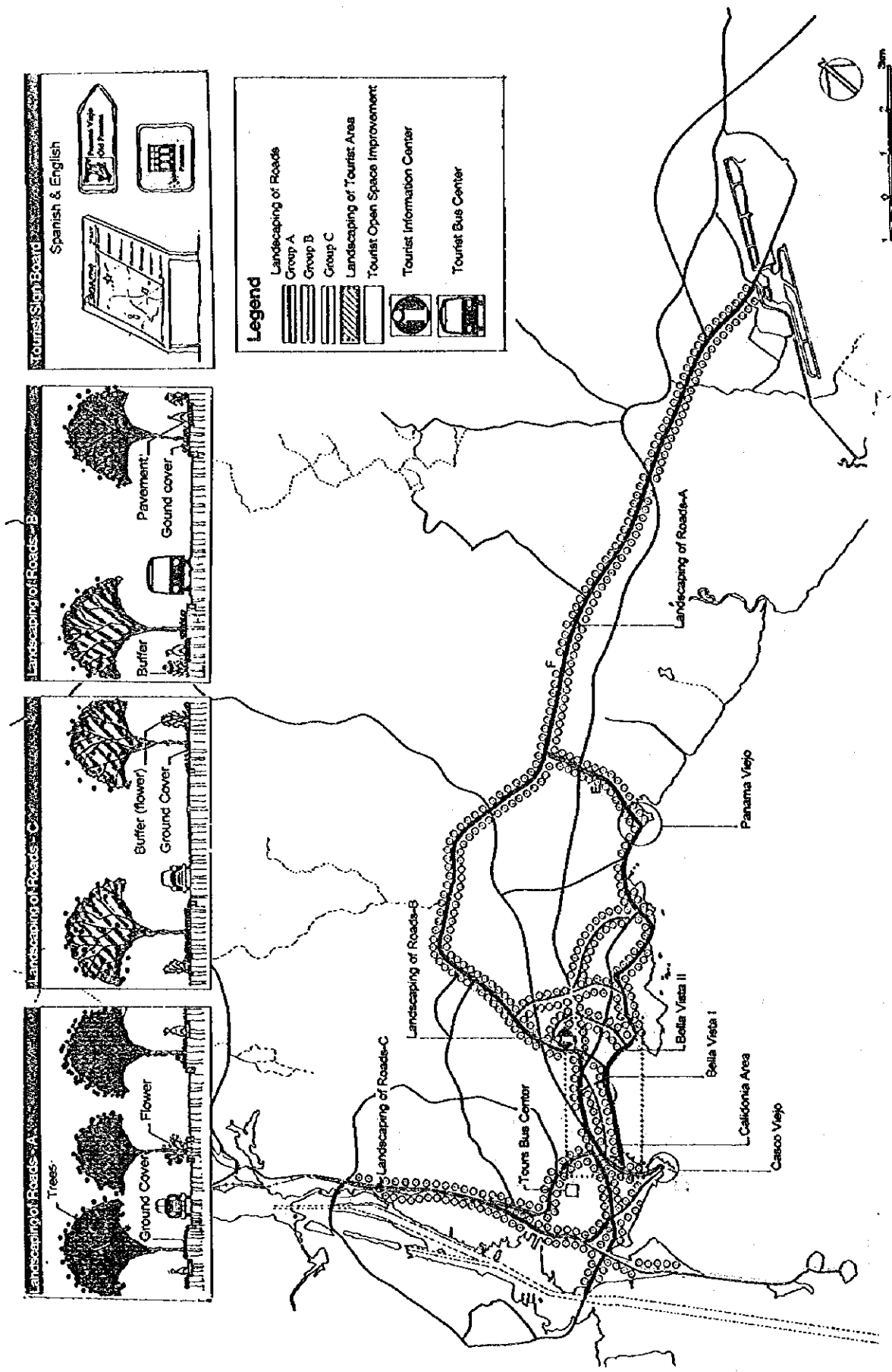


Figure 4.2 Flower and Green City Plan

Figure 4.3 Classification by Typical Road Section

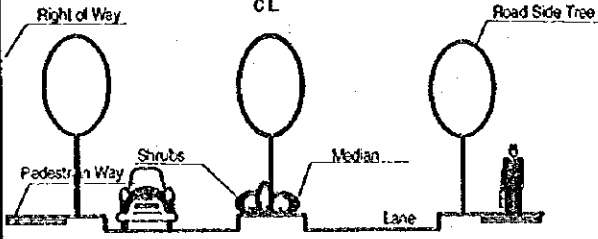
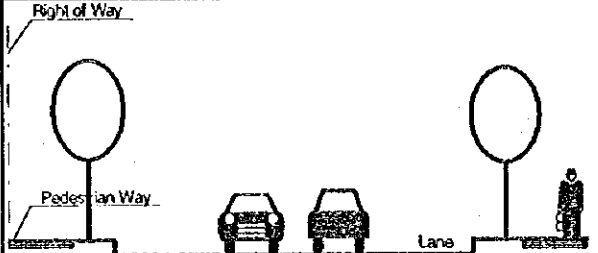
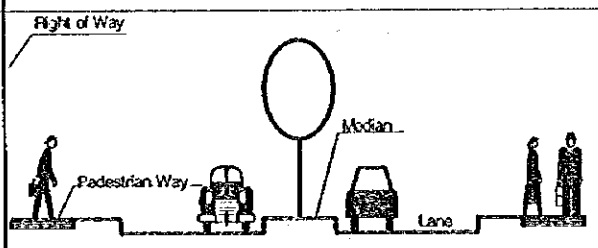
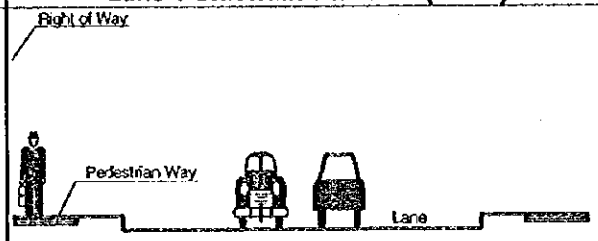
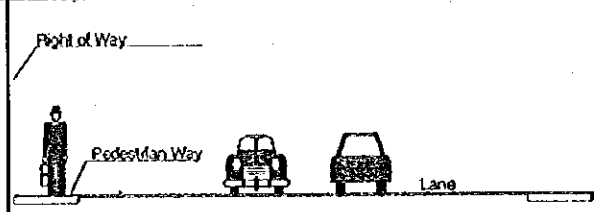
Type	Typical Section	Road
Type 1	 <p style="text-align: center;">Lane + Sidewalk (Trees) + Median (Trees)</p>	<p>Ave. Balboa Ave. Federico Boyd Ave. Manuel Espinosa B. Vía Argentina Vía Ricardo J. Alfaro Vía Domingo Diaz*</p>
Type 2	 <p style="text-align: center;">Lane + Sidewalk (Trees)</p>	<p>Ave. Amador Ave. de los Mártires Ave. Gaillard Ave. Juan Pablo II Ave. Justo Arosemena Calle Balboa Calle Diablo Vía España Vía Israel* Vía Ricardo J. Alfaro Vía Domingo Diaz*</p>
Type 3	 <p style="text-align: center;">Lane + Sidewalk + Median (Trees)</p>	<p>Vía Domingo Diaz*</p>
Type 4	 <p style="text-align: center;">Lane + Sidewalk</p>	<p>Ave. Belisario Porras Ave. Central* Vía Brasil</p>
Type 5	 <p style="text-align: center;">Lane + Sidewalk (No Curb)</p>	<p>Ave. A Vía Cincuentenario</p>

Table 4.4 Improvement Strategy by Groups

Group	Road Title	Improvement Strategy	Contents
Group A	Ave. Balboa Ave. Central Ave. Federico Boyd Ave. Manuel Espinosa B. Vía Cincuentenario Vía Domingo Díaz Vía Israel Vía Ricardo J. Alfaro	Access routes to downtown Panama City and transfer routes for arriving tourists. Creation of a good initial impression is, therefore, important.	<ul style="list-style-type: none"> • Planting which creates a continuing road landscape. • Flowers
Group B	Ave. A Ave. Amador Ave. Belisario Porras Ave. Justo Arosemena Vía Argentina Vía Brasil Vía España	Local principal sightseeing routes, creation of a good initial impression is, therefore, important. Moreover, on routes where tourists move on foot, sidewalks will be designed for the safety and comfort of pedestrians, as well as to provide a good appearance.	<ul style="list-style-type: none"> • Sidewalk improvement • Planting
Group C	Ave. de los Mártires Ave. Gaillard Ave. Juan Pablo II Calle Balboa Calle Diablo	The sightseeing routes which are located in the canal zone, already have been landscaped at relatively high level. Since these have already been developed, the emphasis will be on adding flowers and shrubs to add to the attraction of the existing roads.	<ul style="list-style-type: none"> • Planting

4.4.2 Landscaping Plan

(1) Planting

A planting proposal has been developed in accordance with the above strategy and grouping. Planting species are selected in consideration of existing planted species, significance of flower, tree form and easy maintenance described in the following figure.

(2) Sidewalk Improvement

In order to allow pedestrians to walk comfortably, sidewalks in the Group 2 areas shall be improved. The pavement structure for sidewalks must be adequate to face local conditions and high rainfall intensities.

From this standpoint, sidewalks shall be paved using concrete which is easy to maintain, has various design possibilities and offers easy construction. Finishing of the pavement shall be a natural stony finish to suit the surrounding atmosphere.

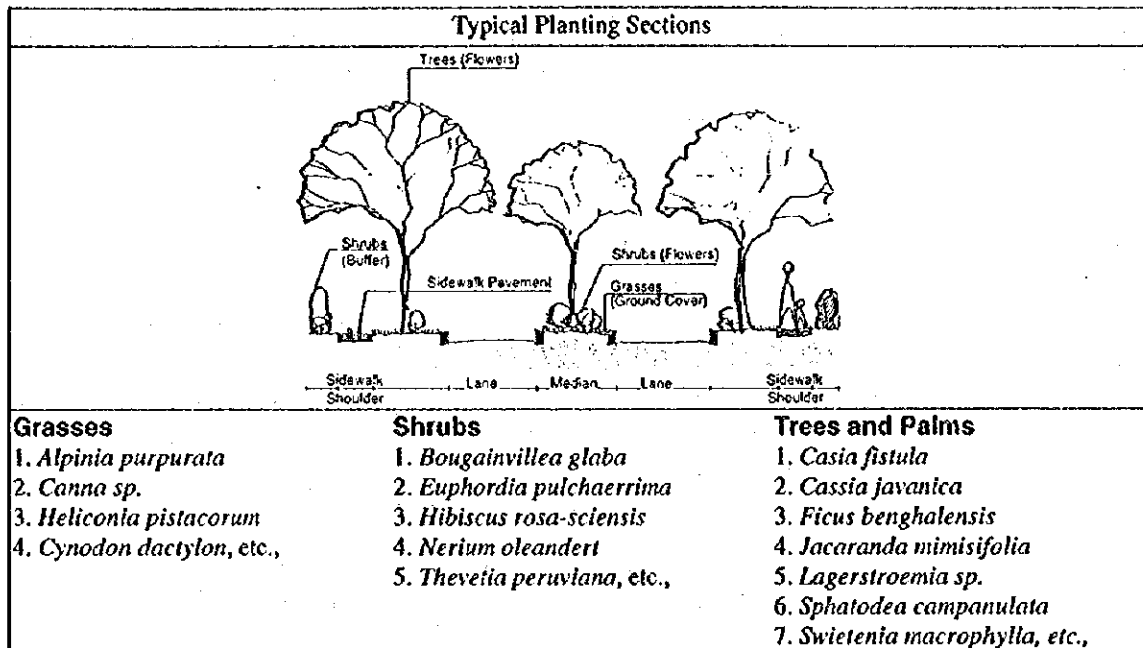


Figure 4.4 Typical Planting Section and Planting Species

Group	Road Title	Typical Section of Landscaping of Roads
Group A (Major access roads)	Ave. Balboa Ave. Central Ave. Federico Boyd Ave. Manuel Espinosa B. Vía Cincuentenario Vía Domingo Diaz Vía Israel Vía Ricardo J. Alfaro	
Group B (tourist area)	Ave. A Ave. Amador Ave. Belisario Porras Ave. Justo Arosemena Vía Argentina Vía Brasil Vía España	
Group C (Canal zone)	Ave. de los Mártires Ave. Gaillard Ave. Juan Pablo II Calle Balboa Calle Diablo	

Figure 4.5 Typical Section of Landscaping Classified by Groups

4.4.2 Landscaping of Focal Tourist Areas

Areas with high potential for improvement have been selected for landscaping including main tourist attractions and sections of the city with particular scenic or historic value.

(1) Selection of Focal Tourist Areas to be Landscaped

Both Calidonia and Bella Vista areas have been selected for landscape improvement. The urban area moved to the present San Felipe area after destruction of the old Panama City by Henry Morgan and has been rapidly expanding along Panama Bay, from the fringe of an early development, following an inflow of people due to construction of Panama Canal.

The Calidonia Area, which was developed after the Panama Canal opened the city to traffic, expanded and the original landscaping remains much as it was when city was first developed. The potential for improvement is high and the benefits from the improvement are also high. The same comments apply to Bella Vista adjoining Calidonia Area.

There are many tourism facilities and attractions in these areas and both areas are important servicing zones from the standpoint of tourism.

The plan shall arrange for public open spaces in both areas. Improvements include landscaping of roads including sidewalks, roadside tree planting, and parks and open spaces. Improvement of these urban areas will make a contribution to tourism promotion. Tourist routes passing through both areas for which improvements have already been described in the section on landscaping of roads, are excluded from this section.

(2) Landscaping Plan

1) Calidonia Area

In this area, landscaping of roads and parks and openspaces is proposed with an eye to establishment and enhancement of the towns identity based on the urban plan established after 1915 shown in the following figure.

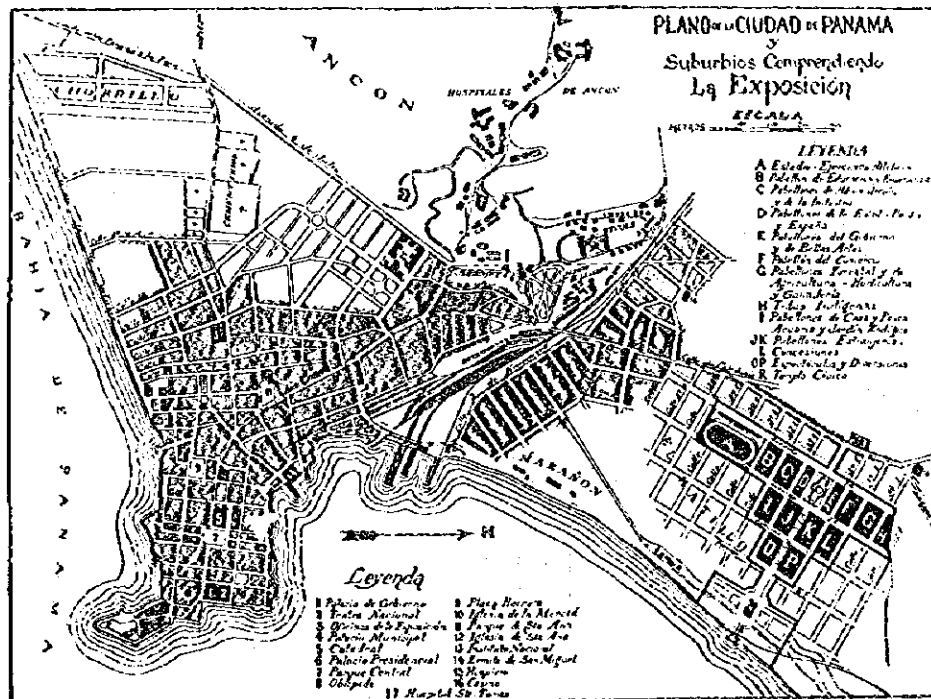


Figure 4.6 Calidonia Development Plan in 1915

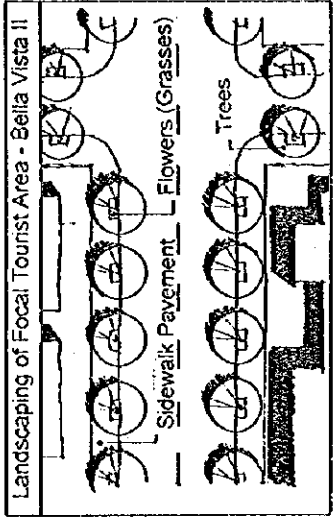
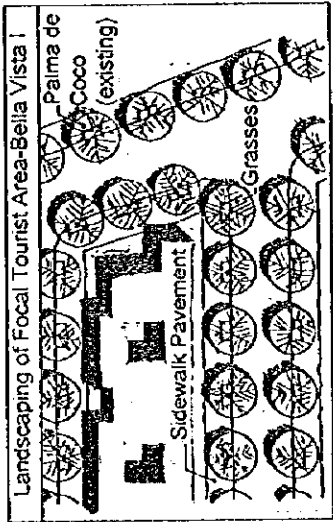
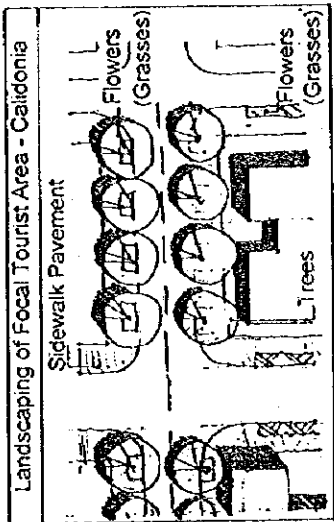
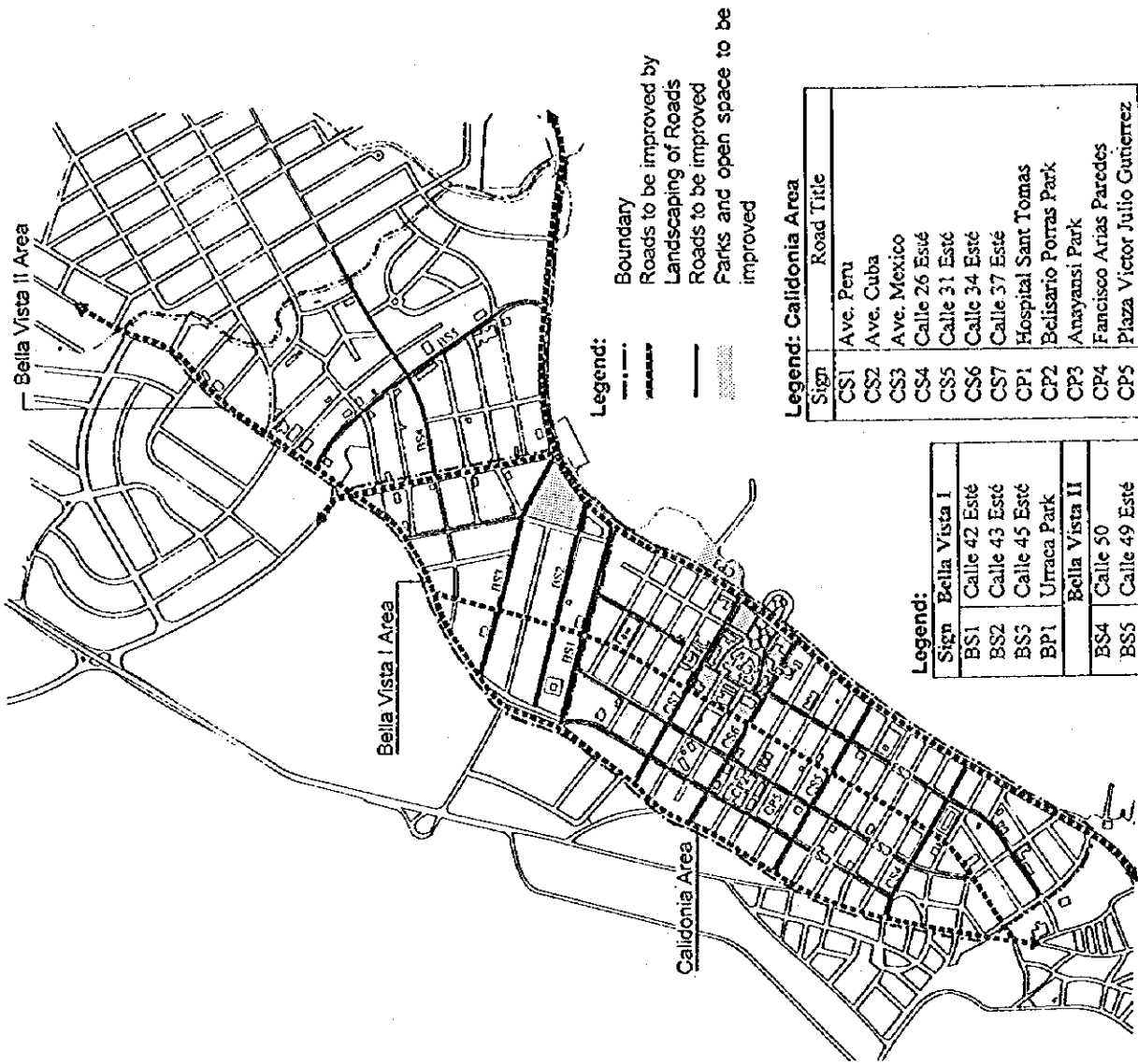


Figure 4.7 Landscaping of Focal Tourist Area in Calidonia and Bella Vista

Table 4.5 Roads to be Improved in Calidonia Area

Road Title	Length (Mts.)
1. Ave. Peru	1,875
2. Ave. Cuba	1,500
3. Ave. México	1,620
4. Calle 26 Este	560
5. Calle 31 Este	670
6. Calle 34 Este	670
7. Calle 37 Este	670

Table 4.6 Parks and Open Spaces to be Improved in Calidonia

Park Title	Area (sqm.)
1. Hospital Santo Tomas	20,000
2. Belixario Porras Park	6,000
3. Anayansi Park	7,600
4. Francisco Arias Paredes	1,280
5. Plaza Victor Julio Gutierrez	4,000

a. **Roads**

Planting of roadside trees and paving of sidewalks, shown in table, are proposed in the Calidonia Area. In this area, roadside trees are growing well with several decades of history although sequential tree rows and additional flowering shrubs are necessary for producing an aesthetic urban landscape. Also sidewalk pavements facilitate pedestrian movements in this area. The landscape characteristics of this area should be preserved and maintained as a valuable resources for tourism.

b. **Parks**

Parks and open space improvement are proposed as areas where people congregate and where tourists can rest. Flower and rest facilities are proposed in order to add the atmosphere.

2) Bella Vista -I

This area is characterized by a well designed landscape and roadside palm trees (Palma de Real) which are growing well. It is necessary to improve the sidewalk to ensure comfortable walking and to complete the scenic landscape. In addition planting flowers at foot of the palms is an effective way of improving the atmosphere.

c. **Roads**

Sidewalk pavements in this area shall be improved in order to create a comfortable environment for walking. Existing sidewalks especially of undulating profile should be levelled. The pavement shall be given a natural stony finish to blend into the surrounding atmosphere.

d. **Parks**

Urraca park facing Balboa Avenue is maintained by Panama Municipality and has an area of 24,900 square meters. The trees are well grown, but they create a dark atmosphere . It is necessary to provide more brightness with flowers and also some rest facilities.

Table 4.7 Streets and Open spaces to be Improved in Bella Vista

Road .	Length (Mts.)	Remark
1. Calle 42 Este	650	Palma de Coco exists
2. Calle 43 Este	675	Palma de Coco exists
3. Calle 45 Este	730	Palma de Coco exists
Park	Area (Sqm.)	
1. Urracá Park	24,900	

3) Bella Vista -II

The characteristic of this area which is called the banking center, is that many international banks are established here and skyscrapers rise up while low density residences exist in the surrounding area. Along Balboa avenue, several high-rise buildings including new hotels and commercial complexes are under construction.

Landscaping of roads is proposed in this area in order to enhance the urban landscape of the business district. Two roads are selected for improvement.

a. Roads

Sidewalk pavements including design for handicapped persons as described under landscaping strategy in a previous section, shall be improved in order to create a comfortable walking environment.

Table 4.8 Streets and Open spaces to be Improved in Bella Vista-2

Road .	Length (Mts.)	Remark
1. Calle 50	650	4 lanes with sidewalk
2. Calle 49 Esté	675	2 lanes with sidewalk

4.4.4 Tourism Open Space Improvement

This supporting project involves both historical areas of Casco Viejo and Panama Viejo. The National Institute of Culture (INAC) has formulated a renovation plan for Casco Viejo and a conservation plan for Panama Viejo. From this stand point, the plan emphasizes the enhancement of service facilities for tourists while other items related to landscaping are also important. Parking and rest facilities are proposed to achieve a minimum level of convenience in both areas in consideration of the INAC plan.

(1) Panama Viejo Area

1) Rest space

A new rest facility for tourists is proposed. It is located on the point facing Panama Bay rest to Panama Viejo. The facility is considered to be the principal open space in this area and will become an integrated part of a complex which includes the ruins, craft center and restaurant.

The proposed improvements include rest facilities such as shelters and benches. It will be harmonized with the ruins including aesthetic flower planting.

2) Parking

At present, though several parking spaces are available in front of the craft center, they are not sufficient. The number of tourists is expected to increase in the near future because the Panama Viejo area is a principal tourist attraction in the Panama Metropolitan Region. Therefore, the number of parking spaces should be increased in order to provide convenience to tourists. The number of proposed parking spaces, including large buses, is 30 spaces.

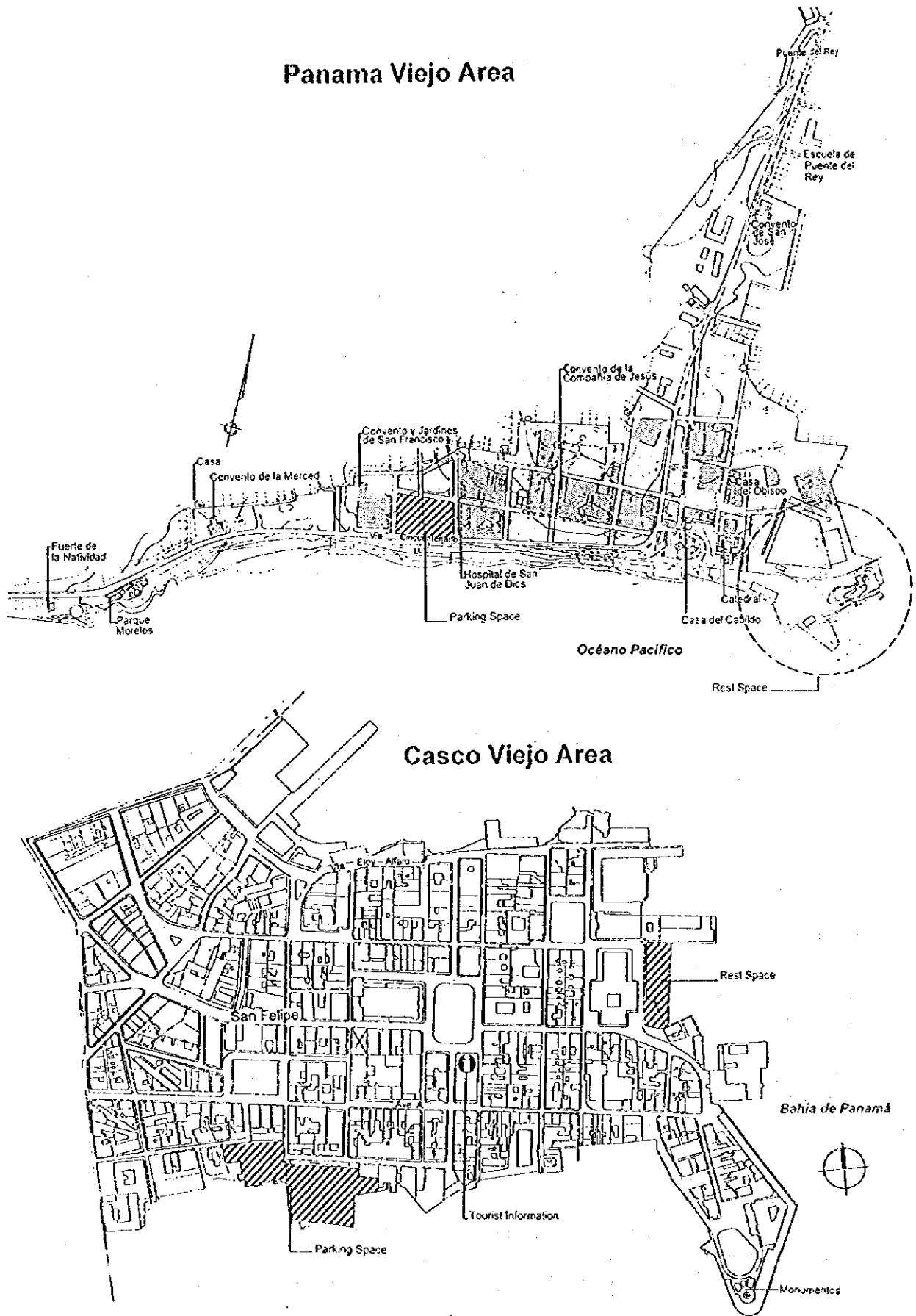


Figure 4.8 Tourism Open Space Improvement Plan in Panama Viejo and Casco Viejo

(2) Casco Viejo Area

1) Rest Space

It is proposed that a space in front of Teatro Nacional (National Theater) facing the Panama Bay in the San Felipe district is turned into a rest space in order to provide a scenic waterfront space for tourists to rest in.

This area has high tourism value in the historic town so that the design will be harmonized with the surrounding environment. The proposed space will be added to the sightseeing route of this area.

2) Parking

Road widths and related facilities are inadequate for present motor vehicle traffic in the area. The problem is similar to that in typical European towns constructed before motor vehicle traffic developed.

As mentioned above, tourist numbers will increase in the short term, and it is necessary to prepare parking space on the fringe of the historic town in order to allow easy access to this area. Tourists will be able to walk around the area after the parking.

An area reserved by IPAT which is in front of the National Theater and two area reserved by Panama municipality which are located on the south side of San Felipe are proposed. A total of 50 parking spaces is proposed considering the availability of space in this high density area.

4.4.5 Tourist Sign Board Improvement

In order to ensure that tourists can easily access any sites, sign boards with maps which indicate tourism facilities and other tourist information are proposed at principal nodes. The plan targets especially Panama City while similar sign board projects in other regional areas will be carried out by IPAT-OEA.

Signs will be in two languages; English which is accepted globally and widely understood by foreign tourists and Spanish which is the official language in Panama.

(1) Tourist Map Boards

Tourist sign boards are proposed in focal tourist areas. Maps will show principle tourism sites such as historic assets, tourist information centers and transportation facilities including the guides on their characteristics. Fifty tourist map boards are proposed at principle nodes in tourist area. Following figure shows examples of the Tourist Map Boards.

(2) Mosaic Tile Pavement

It is proposed that Mosaic tile pavements, which express motifs of tourist sites of Panama City, be embedded in each major sidewalk node. It is proposed that tourists should be able to access their destinations, for instance, San Felipe Plaza, when they trace the motifs.

The motifs will be installed in 50 places within the Casco Viejo and Calidonia area. Mosaic tile paving design will take into account the historic assets and buildings which are tourism resources of Panama City. A design example is shown.

(3) Tourist Sign Boards

Besides the above-mentioned tourist map board and the mosaic tile pavement, tourist signs which show the direction to tourist sites should be established in the Panama City area. The sign board will show direction and logo described in both English and Spanish.

The tourist sign boards are proposed for 50 locations such as intersections, ramp ways, major roads and surrounding areas surrounding the tourist sites.

4.4.6 Tourist Information Center Plan

This is quite an important facility for supporting tourism. There are already three Tourist Information Centers in Panama City, one in Tocumen International Airport, one in Panama Viejo and the other one in IPAT at ATLAPA.

Two new Tourist Information Centers are proposed in Vía España next to El Panama Hotel and in Plaza de la Independencia of Casco Viejo shown in Figure. These locations were selected because of the large number of tourists who already go there and who have requested a new Tourist Information Center.

The function of the Tourist Information Center is to provide tourism information on Panama City including accommodation and transport and the direction to tourism sites. Also tourist brochures are available at the center.

4.4.7 Tourist Bus Center Plan

A tourist bus center is proposed on Ancon Hill, at the intersection of Gaillard Avenue and National Avenue, adjacent to the present bus terminal to the north. This position is convenient for easy access to arrival roads and highways and provides smooth transfer from other modes of transport.

This tourist bus center can service various kinds of tourist buses including city tours, excursion tours, long distance bus, etc., as one of the supporting projects of the plan for tourist services.

The facilities of the tourist bus center are described in the following table. Included in the Bus Center are bus terminal, ticket office, restaurant, waiting room, kiosk, toilet and information signboard.

Table 4.9 Facilities of Tourist Bus Center

Facilities	Description
1. Bus Center Building	700 Sqm.
1.1 Administrative Office	100 Sqm.
1.2 Ticket Office	100 Sqm.
1.3 Bus Information	40 Sqm.
1.4 Coffee Shop	100 Sqm.
1.5 Kiosk	30 Sqm.
1.6 Waiting Room	100 Sqm.
1.7 Rest Room	140 Sqm.
1.8 Ware House	90 Sqm.
2. Bus Booth and Drive Way	6,400 Sqm.
3. Parking Lot and Opens pace	1,000 Sqm.
Total Area	8,100 Sqm.

4.5 Project Cost Estimation

The total construction cost of this development plan, excluding cost of land expropriation is estimated to be 32,500,000 Balboas as shown in the following table.

Table 4.10 Summary of Cost Estimation of Flower and Green City Development Plan
(Unit: Balboa)

No.	Title	Unit	QTY	Total Cost	Portion			Land/ Compen- sation
					Foreign	Local		
						Financial	Economic	
1.	Landscaping of Roads							
1.1	Group A	Mts.	37,170	10,460,000	5,099,724	5,359,914	3,694,698	0
1.2	Group B	Mts.	17,570	4,042,000	2,023,756	2,018,394	1,564,766	0
1.3	Group C	Mts.	15,150	3,458,000	1,611,960	1,845,270	1,315,020	0
	Sub Total		69,890	17,960,000	8,735,440	9,223,578	6,574,484	0
2.	Landscaping of Tourist Area							
	2.1 Calidonia Area							
1)	Landscaping of Roads	Mts.	7,565	1,557,000	804,916	751,961	508,368	0
2)	Landscaping of Open space	Sqrm.	38,900	4,003,000	2,069,480	1,933,330	1,307,040	0
	Sub Total			5,560,000	2,874,396	2,685,291	1,815,408	0
	2.2 Bella Vista -I							
1)	Landscaping of Roads	Sqrm.	2,055	423,000	218,652	204,267	138,096	0
2)	Landscaping of Open space	Sqrm.	24,900	2,562,000	1,324,680	1,237,530	836,640	0
	Sub Total			2,985,000	1,543,332	1,441,797	974,736	0
	2.3 Bella Vista-II							
1)	Landscaping of Roads	Mts.	400	106,000	48,720	57,680	34,720	0
	Sub Total			8,651,000	4,466,448	4,184,768	2,824,864	0
3.	Tourism Open Space Improvement							
1)	Panama Viejo	Sqrm.	2,400	371,000	210,000	161,280	105,840	0
2)	Casco Viejo	Sqrm.	1,500	267,000	158,858	107,716	94,290	0
	Sub total			638,000	368,858	268,996	200,130	0
4.	Sign Board Improvement							
1)	Tourist Map	Unit	50	280,000	148,400	131,600	111,860	0
2)	Mosaic Tile Pavement	Unit	50	105,000	55,650	49,350	41,948	0
3)	Tourist Sign Board	Unit	50	105,000	55,650	49,350	41,948	0
	Sub Total		150	490,000	259,700	230,300	195,755	0
5.	Tourist Information Center							
1)	Bella Vista Area	Unit	1	565,000	394,485	170,982	145,335	0
2)	San Felipe	Unit	1	565,000	394,485	170,982	145,335	0
	Sub Total		2	1,130,000	788,970	341,964	290,669	0
6.	Tourist Bus Center							
1)	Tourist Bus Center	Unit	1	3,626,000	1,778,000	1,848,000	1,570,800	0
	Sub Total		1	3,626,000	1,778,000	1,848,000	1,570,800	0
	Grand Total			32,495,000	16,397,416	16,097,606	11,656,702	0

4.6 Implementation Schedule

(1) Implementation Schedule

The implementation schedule for each project has been formulated giving consideration to preparation including detail design, consensus in related fields, budgeting and construction period. The following figure shows the implementation schedule of the six support projects divided into components as follows.

Projects/ Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1. Landscaping of Roads											
1.1 Group A											
1.2 Group B											
1.3 Group C											
2. Landscaping of Tourist Area											
2.1 Calidonia Area											
1) Landscaping of Roads											
2) Landscaping of Open space											
2.2 Bella Vista -I											
1) Landscaping of Roads											
2) Landscaping of Open space											
2.3 Bella Vista-II											
1) Landscaping of Roads											
3. Tourism Open Space Improvement											
1) Panama Viejo											
2) Casco Viejo											
4. Sign Board Improvement											
1) Tourist Map											
2) Mosaic Tile Pavement											
3) Tourist Sign Board											
5. Tourist Information Center											
1) Bella Vista Area											
2) San Felipe											
6. Tourist Bus Center											
1) Tourist Bus Center											


Note :  Detail design,  Construction

Figure 4.9 Implementation Schedule of Flower and Green City Plan

1) Landscaping of Roads

The Implementation schedule for landscaping of roads divided into three sub projects is anticipated as six months for preparation and one year for construction taking into consideration the planting timing of each sub project. Therefore, after completion of the study, and obtaining budgetary approval, the Group A and Group B projects can commence. Then one year after the commencement of these projects, Group C can start giving consideration to the requirement priority.

2) Landscaping of Focal Tourist Area

The Implementation schedule for landscaping the tourist area is anticipated as one year in preparation, and one year for construction giving consideration to the planting timing. Therefore, after completion of the study, and obtaining budgetary approval, the landscaping of roads can commence initially, followed by landscaping of the open space.

3) Tourist Open Space Improvement

The Implementation schedule for open space improvement is anticipated as one year for preparation and one year for construction. Therefore after completion of the study and obtaining budgetary approval, initially the project in the Casco Viejo area can commence followed by the Panama Viejo area.

4) Tourist Sign Board Improvement

The Implementation schedule for the tourist sign board improvement is anticipated as one year for preparation and six months for construction. Therefore, after completion of the study, and obtaining budgetary approval, the Tourist Sign Board project, Tourist Map project and Mosaic Tile Pavement project can commence in that order of priority.

5) Tourist Information Center

The Implementation schedule for the tourist information center is anticipated as six months for preparation and six months for construction. Therefore after completion of the study, and obtaining budgetary approval, the project can commence.

6) Tourist Bus Center

The Implementation schedule for the tourist bus center is anticipated as one year in preparation and two years for construction. Therefore after completion of the study and obtaining budgetary approval, the project can commence.

(2) Implementation Body

Three landscaping projects are located on publicly owned by owned space in Panama City which are maintained by Panama municipality and other public authorities. For this reason, the municipality will carry out the landscaping projects.

The Tourist Sign Board Improvement and Tourist Information projects will be carried out by IPAT which is responsible for this kind of project.

Furthermore, the Tourist Bus Center will be carried out by the Land Transport department, Ministry of Government Administration and Justice which is responsible for bus centers.

(3) Promotion Plan

According to a certain statistical report, more than 60% of the tourists consult with their friends when deciding their travel destinations. Thus it can be said that tourists now visiting Panama will help to create new tourists. Many tourists will form their first impressions on arrival at the airport. Therefore, realization of the Flower and Green City Plan is indispensable for tourism promotion. It is recommendable to involve private firms that are operating along the projected roads, and to gain the support of their members for promoting the plan. The municipality should also establish an executive committee enlisting representatives of each road to have them compete and hold flower festivals once a year. The prizes would be given to the most splendid and beautiful roads, which will be chosen by public poll. It is worthwhile considering funding the festival through donations of supporting members. This plan could be enhanced to be part of a nationwide movement, so that tourism development is achieved by the efforts of the citizens themselves.

4.7 Plan Evaluation

In general, economic and financial evaluation by the cost benefit method is carried out but qualitative evaluation is used for this project in consideration of the indirect benefits to the social sector, because the project does not earn any quantifiable revenue. The projects were evaluated for major qualitative benefits as follows:

1) Tourism Promotion of Panama City as the Gateway City

Panama City is not only the gateway city of the metropolitan region but it is also the gateway city of the Republic. In the long-term development plan, it is predicted that 1,200,000 tourists, will arrive by air in the year 2010 utilizing Tocumen International Airport. With this in mind, aesthetic measures such as landscaping of access routes to downtown area enhances their first impression of Panama and also ensures a warm welcome upon arrival. Consequently the plan has an important contribution to make to tourism promotion.

2) Achieving a Tourism-Oriented City with Civilian Support and Encouragement

The landscaping plan is the only project in this plan where civilians are able to participate in achieving a tourism oriented city. This aspect increases civilian awareness of their city as a tourist center and will enhance tourist services.

3) High Degree of Hospitality in the City

Aesthetic measures such as landscaping and tourist services including Tourist Information and Tourist Sign Improvement are predicted to enhance the reputation of Panama City as a tourism oriented city in the short term. Moreover it will help achieve a higher level of hospitality so that tourists enjoy the city and it will also improve the encouragement for 50% of the nation's population who live in the city area.

4.8 Environmental Impact Study

4.8.1 Introduction

The Flower and Green City Plan, is a kind of support project to maintain the urban natural environment and promote tourism. IT comprises 1) Landscaping of Roads, 2) Landscaping of Focal Tourist Areas, 3) Tourist Open Space Improvement, 4) Tourist Sign Board Improvement, 5) Tourist Information Center and 6) Tourist Bus Center.

The project involves public road areas, parks and other open space within Panama City. Most of component projects, except the tourist bus center, improve existing facilities.

Table 4.11 Screening of Environmental Impact

	Social Environment									Natural Environment							Pollution						
	Relocation	Economic Activity	Public Facilities	Community Isolation	Cultural Heritages	Water & Other Rights	Health / Sanitary	Wastes	Disaster	Topography and Geology	Erosion	Subterranean Water	Silver Basin	Coast & Marine Area	Flora and Fauna	Meteorology	Landscape	Air Pollution	Water Quality	Soil Contamination	Noise & Vibration	Ground Subsidence	Offensive Odors
1) Landscaping of Roads	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
2) Landscaping of Focal Tourist Area	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
3) Tourist Open space Improvement	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
4) Tourist Sign Board Improvement	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
5) Tourist Information Center	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
6) Tourist Bus Center	D	D	C	D	D	D	D	D	D	D	D	D	D	D	D	C	C	D	D	D	D	D	D

Note: A - Large or moderate impact, B - Slight impact, C- Uncertain, D - Nil or Negligible

4.8.2 Present Condition of Project Area

The characteristic of the project area is that it is an urbanized area including historical and newly developed areas. Mainly, the project affects roads in Panama city, though description shows the area of the city.

Noteworthy aspects:

- 1) Most of planted roadside trees are not indigenous species and there are few flowers and shrubs.
- 2) In Casco Viejo area, there are no roadside trees for historical reasons, while flowering plants are shown on balconies of the buildings in historical districts.
- 3) In Calidonia and adjacent areas, which were developed after the Panama Canal opened to traffic, an important characteristic is that the roadside trees, which were planted in rows in those days, have created a district atmosphere according to the type of tree over the subsequent half century. Typical examples are the rows of coconut palms, and other tree varieties where the trees form crowns over the roads.
- 4) In newly developed areas, sapling trees planted in a similar pattern, but it will take many years to achieve the same appearance.

Table 4.12 Present Condition of Project Area

	Subject Item	Present Condition
(1) Geography	1) Topography 2) River system 3) Soil 4) Land Use	Coastal plain with hills and plains. Most elevations are below 20 Mts. and a few elevations are between 50 to 99 Mts. Flatlands are alluvial plains with high level of salinity and flooding. Pacora river basin which includes Cabra, Tocumen, Juan Diaz, and other rivers between Caimito and Juan Diaz. Soils in Panama city and the closest area to the Canal are arables and non-metallic soils (clay, limestone, and gravel). In the north section, the soil is non-arable and is adequate for pasture, forest, urbanized area, and reserved areas.
(2) Flora	1) Terrestrial flora 2) Water flora 3) Vegetation 4) Endangered species	It is tropical savanna forest in this area, Abundant flora is located nearby the city.
(3) Fauna	1) Habitat area of fauna 2) Endangered species, and its level	The subject area is located in an urbanized area. A few species can be seen. Though abundant fauna habits are nearby the city which are reserved for wildlife.
(4) Landscape	1) Location of viewing points 2) Land marks	Along Balboa Avenue, significant urban landscapes which consist of shore line curve and historical part of Panama City with Ancon Hill background, can be seen. Another noteworthy landscape is American bridge at the gateway of Panama City. It can be seen from the causeway in Amadore area. Moreover various notable landscapes are seen in the Canal zone.
(5) Economic Activities	1) Chief Industry 2) Inhabitants	Panama's chief industry area, 80 % of industry is tertiary. Panama city's population is 650,000 (1992)
(6) Water Contamination	1) BOD or COD 2) SS	Crundú river: The water quality is very deteriorated and the levels of BOD have reached 300 mg/L. Chagres river: The quality of water is excellent and the levels of BOD are less than 2.0 mg/L, the dissolved oxygen is high (5.0 mg/L).

		Gatún area: The population in Gatún basin is very small, so it preserves a good quality level. The levels of BOD are below 3 mg/L.
(7) Waste Matter	1) Existing Waste Matter	DIMA undertakes garbage collection and disposes in Tocumen site.
(8) Cultural Assets	1) Existing Cultural Assets 2) Scale and volume	Great historical ruins, <i>Panama Viejo</i> , it remain ins the Eastern part of the City and notable historical town, <i>Casco Viejo</i> , various historical buildings, including a 17th century church, remaining, producing an attractive atmosphere. Another significant heritage is the Panama Canal which is one of highest achievements of civil engineering in this century.

4.8.3 Environmental Impact Analysis

The Flower and Green City Development Plan comprises environmental conservation oriented projects in order to enhance the city's natural environment and natural urban landscape. For these component projects, no major environmental factor is identified.

Table 4.13 Environmental Impact Characteristics

Supporting Projects	Project Type	Project Site	Environmental Factor to be Affected
1) Landscaping of Roads	Landscaping	Panama City	Nil
2) Landscaping of Focal Tourist Area	Landscaping	Calidonia, Bella Vista	Nil
3) Tourist Open space Improvement	Landscaping and Public Facility	Casco Viejo, Panama Viejo	Nil
4) Tourist Sign Board Improvement	Public Facility	Panama City	Nil
5) Tourist Information Development	Public facility	Bella Vista (Via Espanna), Plaza de la Independencia	Nil
6) Tourist Bus Center Development	Public facility	Ancon Hill	Transport

4.8.4 Environmental Impact Prediction and Evaluation

As a result of the Environmental Impact Analysis, only one minor impact has been identified. The environmental impacts are processed in consideration of the construction and operation phase, and scale and type when the projects are carried out. Principle impacts are described while any other small impacts are predicted in this examination.

Table 4.14 Environmental Impact Prediction and Evaluation

	Environment Impact Prediction	Evaluation
1) Landscaping of Roads	This is a landscaping project which comprises planting and pavement of sidewalk on existing roads so no major impact is predicted	Nil or negligible
2) Landscaping of Focal Tourist Areas	This is also a landscaping project as well as landscaping of roads in Calidonia and Bella vista. No major impact is predicted	Nil or negligible
3) Tourist Open Space Improvement	This project comprises pedestrian way and parking facility. No major impact is expected	Nil or negligible

4) Tourist Sign Board Improvement	This is a road facility which signs up tourist sites or directions. No major impact is predicted.	Nil or negligible
5) Tourist Information Development	The tourist information service facility is proposed in Plaza de la Independencia and Via Espana around Hotel El Panama. No major impact is predicted due to information service facility.	Nil or negligible
6) Tourist Bus Center Development	The plan is proposed at foot of Ancon Hill. Slight impact on transport around bus center might be predicted.	Nil or negligible, general countermeasures for transportation shall be applied.

4.8.5 Environmental Countermeasures

To achieve the development in consideration of environmental conservation, countermeasures as a result of the series analysis, are examined, and formulated, for avoiding or mitigating impacts.

This plan is for environmental conservation and public utility project so that in principal environmental impact is nil or negligible. On the other hand, this project contributes to enhance and promote the natural environmental condition of the city.

The only critical point is that traffic flow impact from bus center project is predicted. Traffic flow in the surrounding areas associated with operation frequency and volume shall be assessed when detail design is carried out.

5. Portobelo Tourism Development Project

5. Portobelo Tourism Development Plan

5.1 Portobelo Area In General

(1) Study area definition

The area for Feasibility study is located in the Western part of Portobelo Zone designated in the Long-term Development plan. The area covers 4 corregimientos (Portobelo, Cacique, Puerto Lindo or Garrote, and Isla Grande) of Portobelo District in Colon Province administered. The area covered is approximately 10,720 ha and population is 5,920 from 1990 census data. It is approximately 101 km from Panama city and 45 km from Colon city. The dominant tourist attractions of this area are: 1) Historical aspects of old Portobelo 2) Vacation area along the Isla Grande and coastal area.

(2) Focal Development Area

Focal areas of Portobelo Tourism Development are as follows:

1) La Escucha area, 2) Portobelo town area, 3) Puerto Lindo area and 4) La Guaira area

Table 5.1 Development Components

Projects	La Escucha	Portobelo town	Puerto Lindo	La Guaira
Hotel Accommodation	300 rooms	87 rooms	300 rooms	300 rooms
Tourist Facilities	Cruiser pier Marine museum Marine Research center	Information Center Handicraft training center City center beautification		Beach Plaza
Sport Facilities	Restaurant Marina	City center beautification City Plaza		
Beach improvement	Diving Center Parking, toilet/Shower Beach sand layer		Parking, toilet/shower Beach sand layer	Parking, toilet/shower Beach sand layer
Transport development	Road Improvement Cruiser Pier	Road Improvement	Road Improvement	Road Improvement

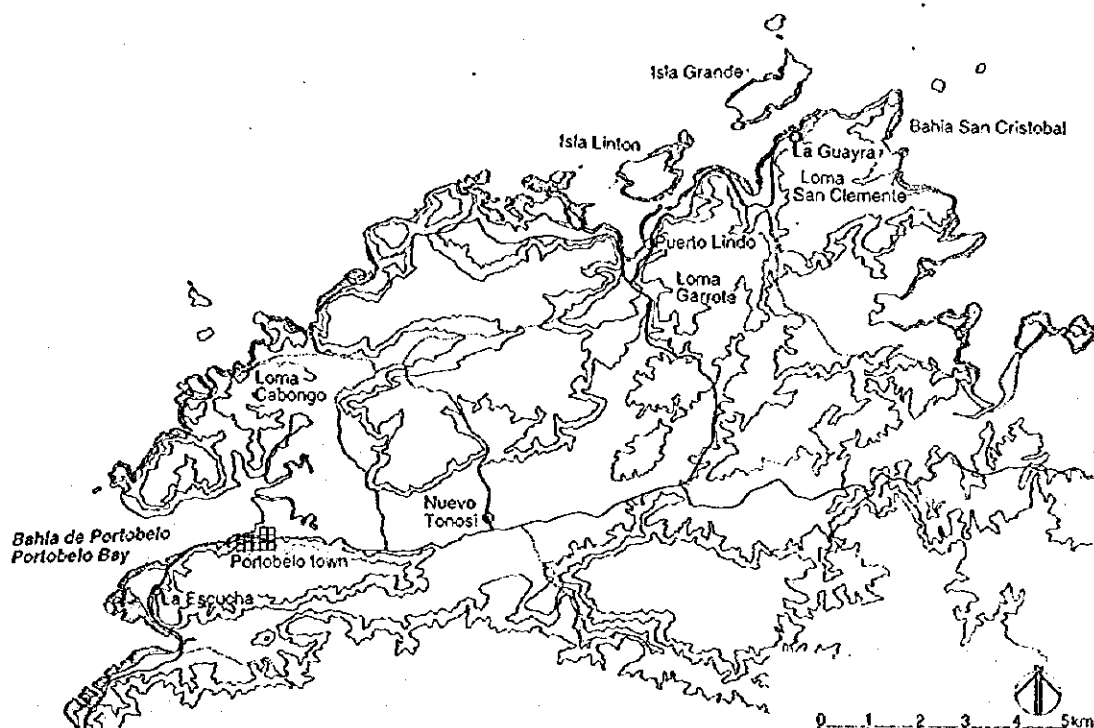


Figure 5.1 Location Map

5.2 Physical Conditions of Portobelo Area

(1) Existing land use condition

Portobelo is a quiet fishing village built around the ruins of old Portobelo with a strong Caribbean influence and beautiful natural setting. Since 1991, Portobelo has been part of the Portobelo National Park, which has regulated land use and is administrated by INRENARE. Table 5.2 present existing land use area and Figure 5.2 - 5.5 show existing land use, slope analysis and land capability analysis.

Table 5.2 Existing Land Use in Portobelo

Land Use Type	Area (ha)	Ratio (%)
Upland Forest	3,488	32.5%
Forest cleared area	583	5.4%
Mangrove Forest	885	8.3%
Lowland Forest (Low tree type)	35	0.3%
Lowland Forest (High tree type)	543	5.1%
Pasture/Grassland	5,105	47.6%
Palm Tree Areas	7	0.1%
Settlements	75	0.7%
Total	10,721	100.0%

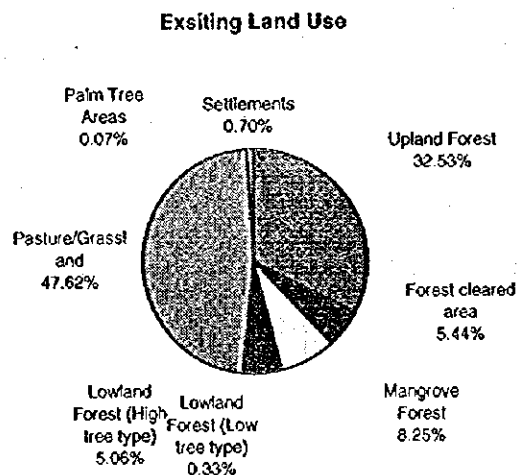


Figure 5.2 Existing Major Land Use

(2) Natural Features

Coastal area is characterized by vegetation associated with either a dry and sandy or dry-rocky edifice condition with presence of cliffs and small scattered beaches. The study area does not have large scale beaches and many coastal areas have thick mangrove vegetation, adopting ecosystems of coastal areas. It is important to consider existing natural resources and their conservation in the study area. The area is controlled by Portobelo National Park management.

(3) Cultural Features

The traditional architecture of Portobelo has enough interesting features to attract tourists. Therefore, it is recommended that hotels and other facilities to be constructed should enhance the traditional Portobelo architecture. Planning and design should follow the zoning and guidelines of INRENARE.

Current projects in Portobelo are an historical architectural restoration of the Aduana building supported by the Agencia de Cooperación Española since 1991, which is expected to be completed by 1995 and restoration of Casa Rodríguez building supported by USAID in 1992. These buildings will be utilized as tourism related facilities, such as, culture center, and tourist information center.

(4) Infrastructure Conditions

Tourism development in Portobelo requires road access to various places and interconnections for tours along the coastal area from Portobelo to Jose del Mar and Jose del Mar to Puerto Lindo, with appropriate parking space and drainage system. In Portobelo Bay,

the drainage of waste waters has increased because of the use of septic tanks that flow directly into the bay. Utilities are adequate at present, but will require expansion to meet the increase in demand.

(5) Land Ownership Situations

Previous study papers mentioned that most of the land in Portobelo is owned by the local municipality, which receives nominal rents from the residents who live on the land.

The control and administration of historical sites and monuments is under the authority of INAC, requiring close cooperation between INRENARE and INAC. Development issues are, therefore, jointly determined by INAC, INRENARE, and the Municipality. For this coordination, IPAT should participate in development issues for tourism development in Portobelo.

(6) Potential Tourism Development Areas

According to the development framework, Portobelo town is designated to be the center of cultural and historical places of attraction. There is rich in tourism resources of cultural and historical importance, including an old and historically important church, which has an unique architectural style of interest to tourists. However, many of these places are deteriorating, and it is necessary to improve them to attract more tourists.

Isla Grande is the most popular beach resort for sun bathing and swimming among those in Portobelo. However, the island is too small and with the increasing number of tourists using beach services, the study of parking capacity, as well as more suitable beach resort areas, is necessary in the future. La Escucha, La Guaira, and Puerto Lindo are possible beaches to develop in this zone.

5.3 Development Framework

(1) Development target

The potential area should be developed to serve the tourist demand by developing the Portobelo area for the type of tourists shown in Table 5.3

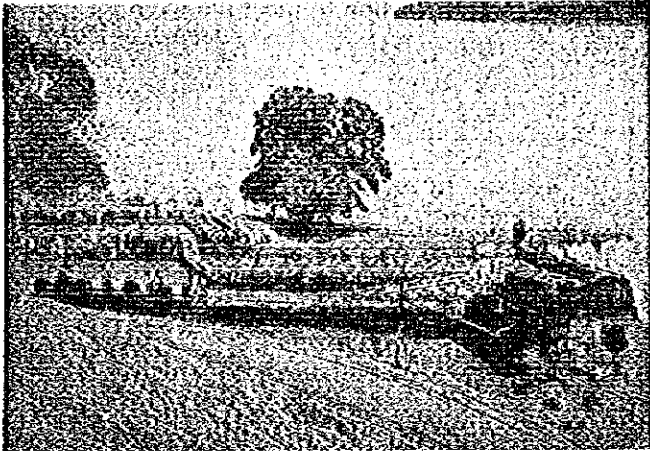
Table 5.3 Target number of tourists in Portobelo Area

	Night stay tourists			Daytime tourists		
	~2000	~2005	~2010	~2000	~2005	~2010
Foreign	146,000	253,000	517,000	418,000	849,000	1,202,000
Domestic	94,000	150,000	191,000	94,000	144,000	262,000
Total	240,000	403,000	708,000	512,000	993,000	1,464,000

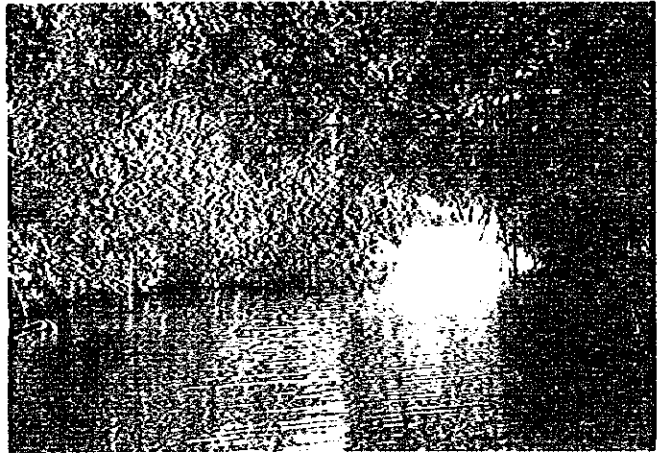
(2) Characteristics of Tourism Development

Portobelo tourism development is the type of cultural and historical tourist area with a coastal resort characterized as follows:

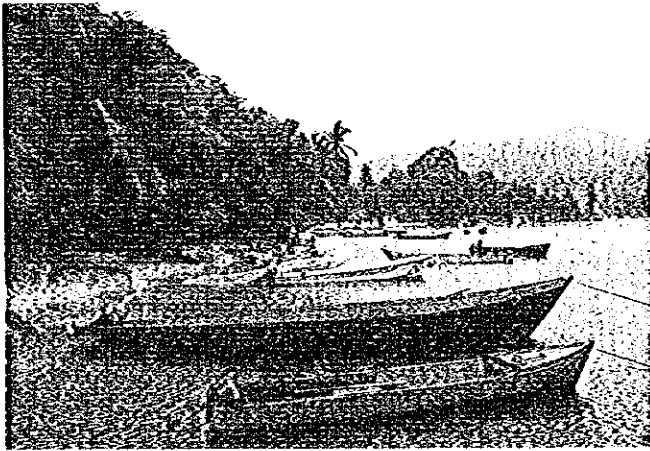
- 1) Portobelo historical town, unique architectural heritage and its historical importance.
- 2) Portobelo National Park as the principal tourist attraction for natural and historical sites.



Historical Structure :Fort Santiago



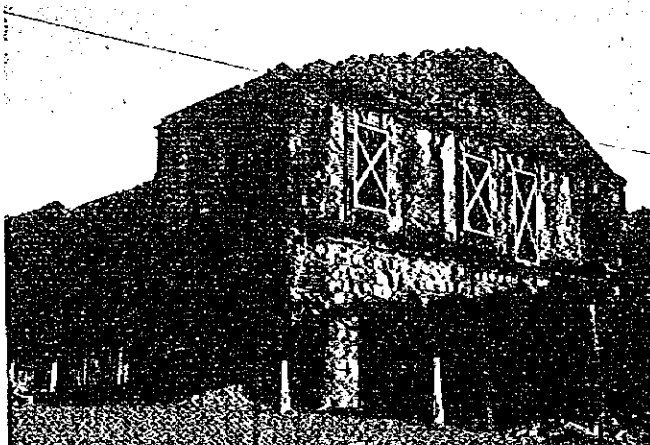
Waterway in Mangrove Forest



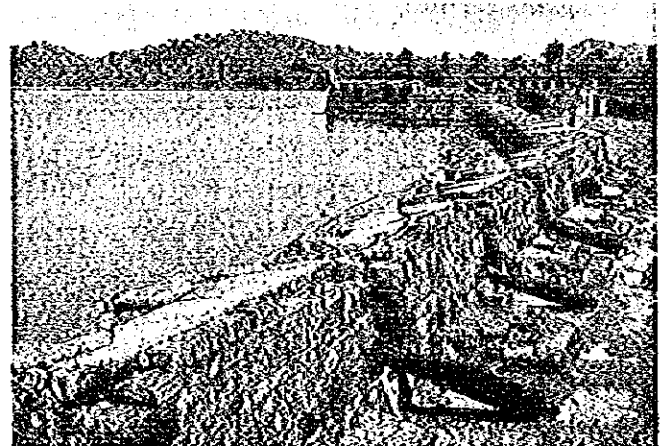
La Guaira: Gateway to Isla Grande



Resort Island Isla Grande



Old Custom House



Historical Monument: Fuerte San Geronimo

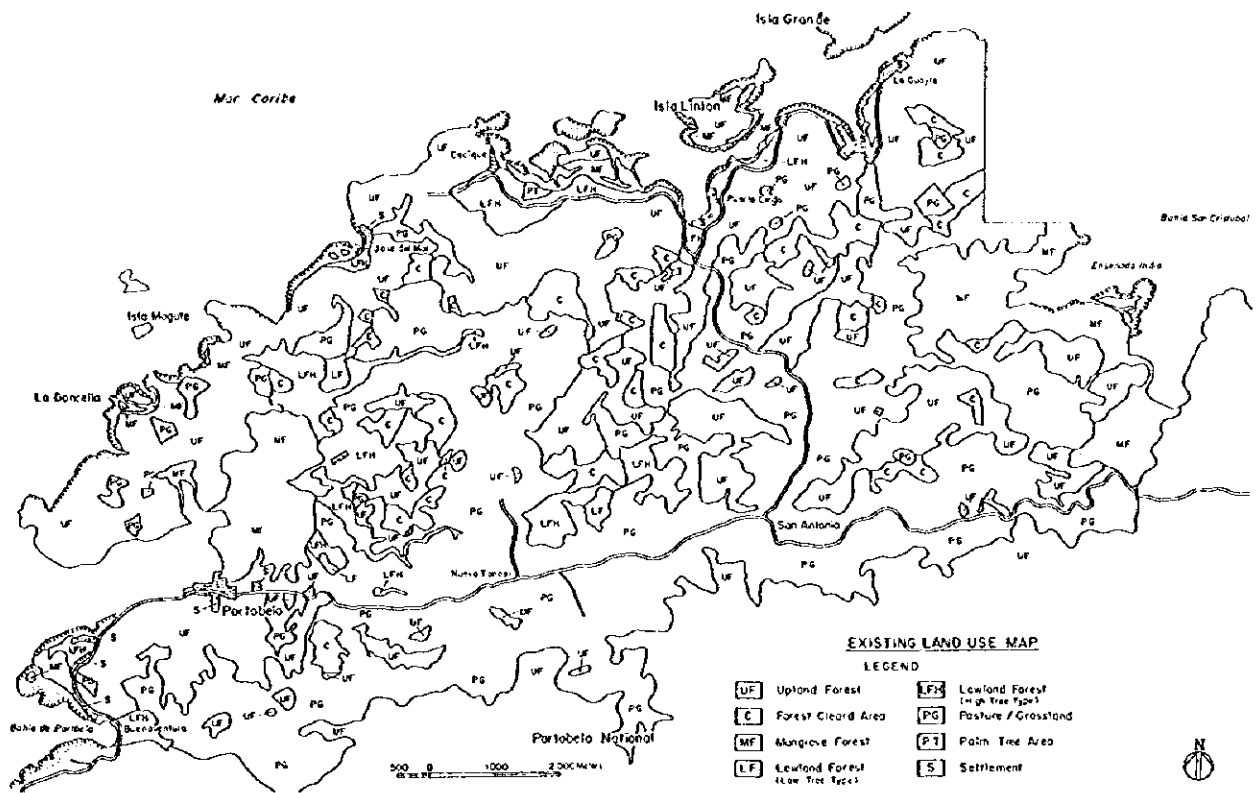


Figure 5.3 Existing Land Use

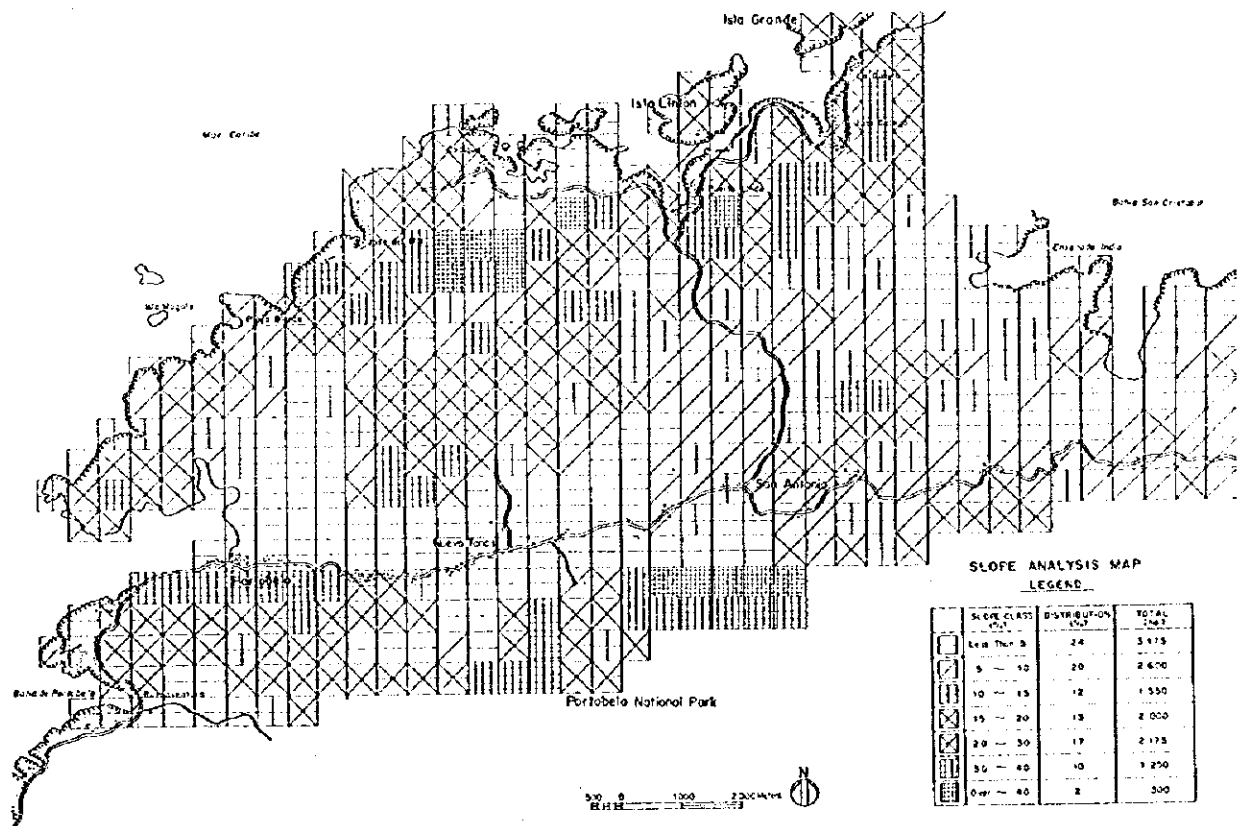


Figure 5.4 Slope Analysis