

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
SUBIC BAY METROPOLITAN AUTHORITY (SBMA)

THE STUDY ON THE SUBIC BAY PORT MASTER PLAN IN THE REPUBLIC OF THE PHILIPPINES

FINAL REPORT
VOL. 1 SUMMARY

AUGUST 1999

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(As of February 1998)

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PREFACE

In response to a request from the Government of the Republic of the Philippines, the Government of Japan decided to conduct THE STUDY ON THE SUBIC BAY PORT MASTER PLAN IN THE REPUBLIC OF THE PHILIPPINES and entrusted the study to Japan International Cooperation Agency (JICA).

JICA sent to the Republic of the Philippines a study team four times between January 1998 and June 1999, which was headed by Dr. Koji Kobune of the Overseas Coastal Area Development Institute of Japan (OCDI) and composed of members from OCDI and the Pacific Consultants International (PCI).

The team held discussion with the officials concerned of the Government of the Republic of the Philippines, and conducted field surveys at the study area. After the team returned to Japan, further studies were made and the present report was prepared.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of the Philippines for their close cooperation extended to the team.

August, 1999



Kimio Fujita

President

Japan International Cooperation Agency

LETTER OF TRANSMITTAL

August, 1999

Mr. Kimio FUJITA
President
Japan International Cooperation Agency

Dear Mr. Fujita,

It is my great pleasure to submit herewith the Final Report of the Study on the Subic Bay Port Master Plan in the Republic of the Philippines.

The study team which consists of the Overseas Coastal Area Development Institute of Japan (OCDI) and the Pacific Consultants International (PCI) conducted surveys in the Republic of the Philippines over the period between January 1998 and June 1999 as per the contract with the Japan International Cooperation Agency.

The findings of this study, which are compiled in this report, were fully discussed with the officials of the Subic Bay Metropolitan Authority and other authorities concerned to formulate the Master Plan which is the Long Term Plan of Subic Bay Freeport for the period up to the year 2020, and formulate and examine the feasibility of the Short Term Plan of the same port for the period up to the year 2007.

On behalf of the study team, I would like to express my heart felt appreciation to the Government of the Republic of the Philippines, the Subic Bay Metropolitan Authority and other authorities concerned for their diligent cooperation and assistance in the course of the study.

Yours faithfully,

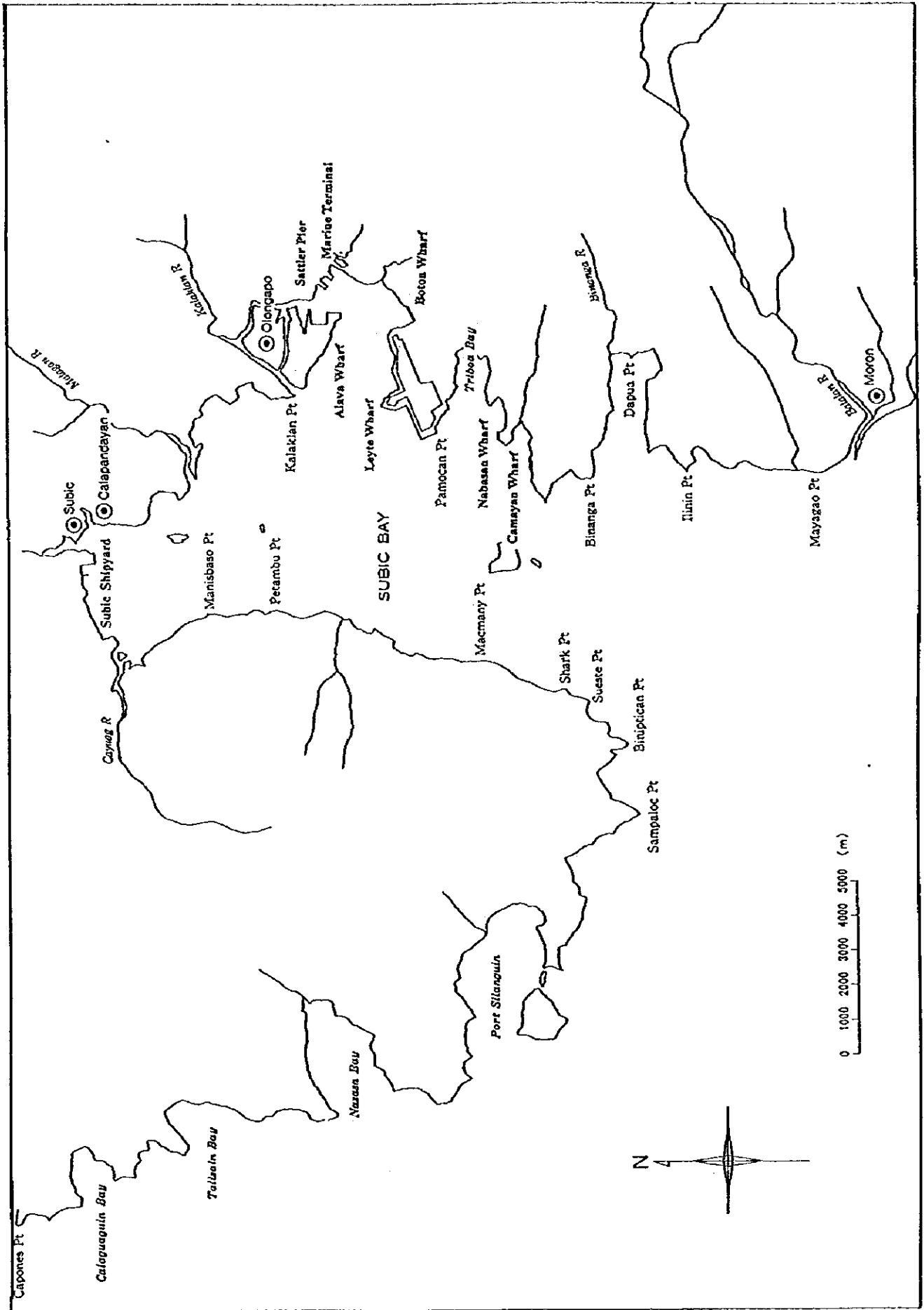


Koji Kobune
Leader of the study team
for the Study on the Subic Bay Port Master
Plan in the Republic of the Philippines

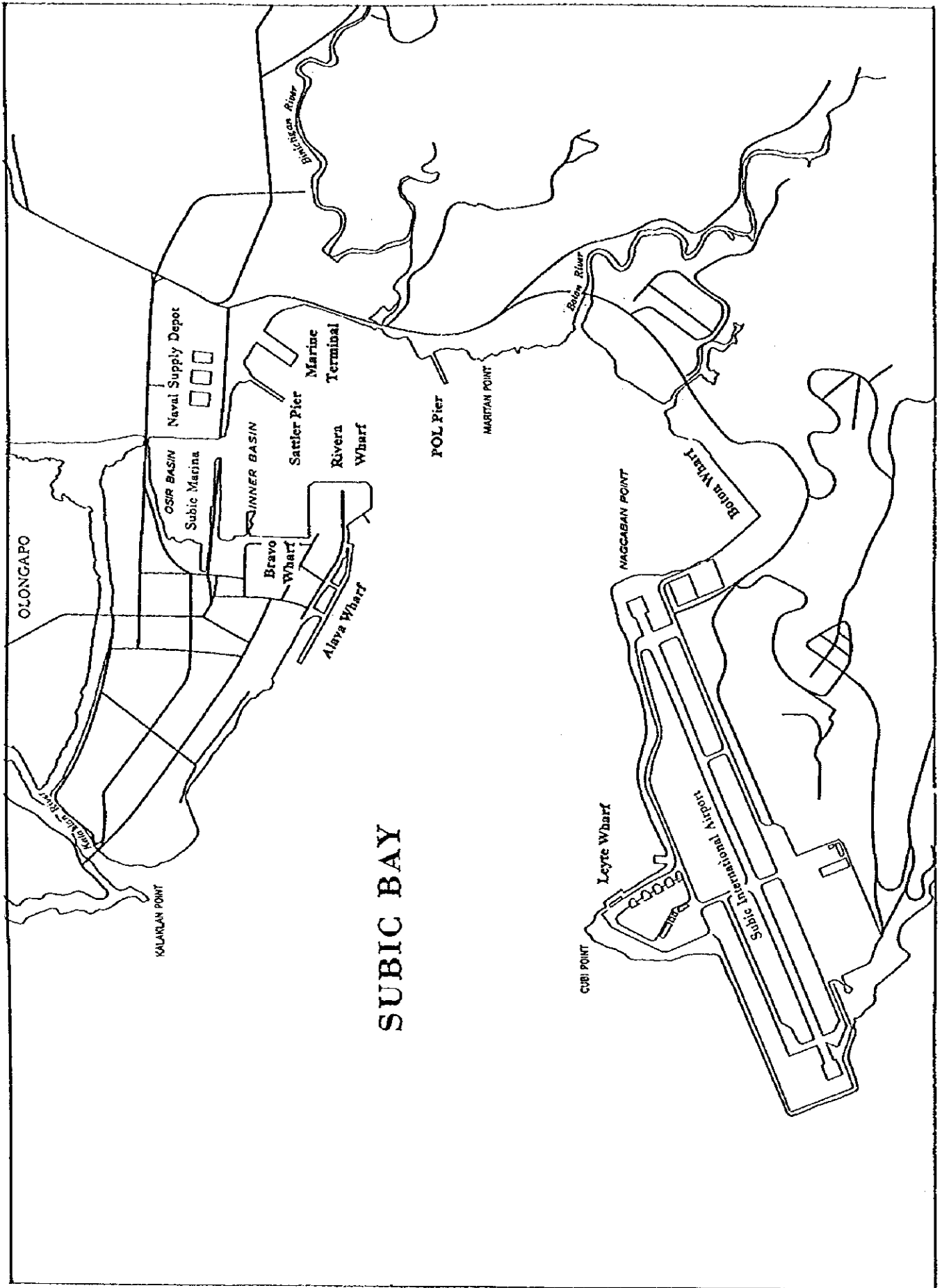


Long-term Development Plan (up to 2020)



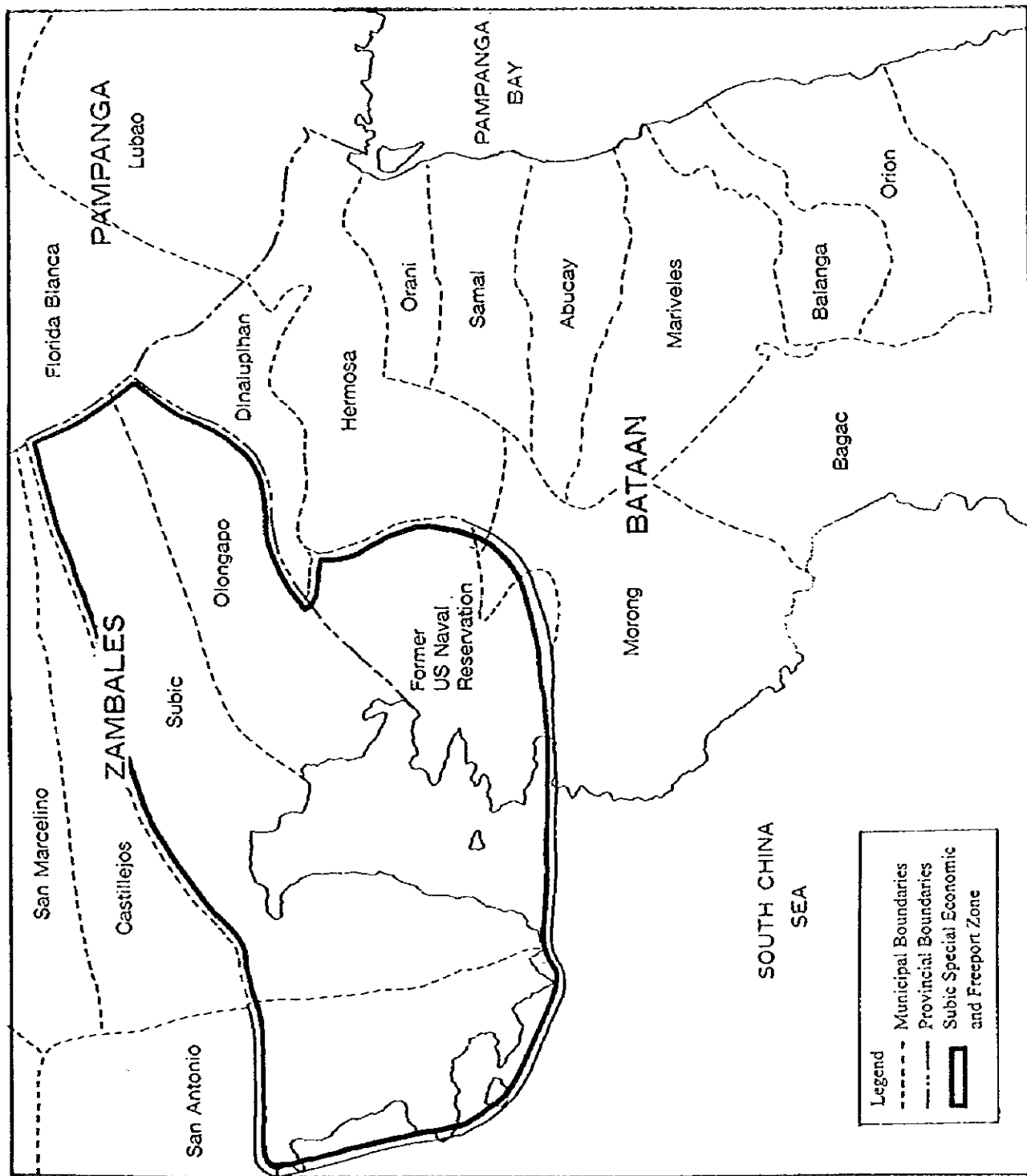


Subic Bay



SUBIC BAY

Location of Major Wharves



Current Delineation of Subic Special Economic and Freeport Zone

LIST OF ABBREVIATIONS

A	ADB	: Asian Development Bank
	AFP	: Armed Forces of the Philippines
	ANERA	: Asia/North America Eastbound Rate Agreement
	AO	: Administrative Order
	APL	: American President Lines
	APT	: Asset Privatization Trust
	AT&T	: American Telephone and Telegraph Co.
	ATI	: Asian Terminals Incorporated
ATO	: Air Transportation Office	
B	BCDA	: Bases Conversion Development Authority
	BI	: Bureau of Immigration
	BIR	: Bureau of Internal Revenue
	BOC	: Bureau of Customs
	BOR	: Berth Occupancy Ratio
	BOT	: Build, Operate and Transfer
C	CAB	: Civil Aeronautics Board
	CB	: Central Bank of the Philippines
	CBA	: Cost/Benefit Analysis
	CCA	: Custom Clearance Area
	CDC	: Clark Development Corporation
	CFS	: Container Freight Station
	CIQ	: Custom, Immigration and Quarantine
	CLDP	: Central Luzon Development Program
	COA	: Commission on Audit
COP	: Committee on Privatization	
D	DBEL	: Deep Berth Equivalent Length
	DENR	: Department Environmental and Natural Resources
	DF / R	: Draft Final Report
	DOF	: Department of Finance
	DOH	: Department of Health
	DOJ	: Department of Justice
	DOTC	: Department of Transportation and Communications
	DPWH	: Department of Public Works and Highways
E	EDI	: Electronic Data Interchange
	EDP	: Electronic Data Processing

	EIA	: Environmental Impact Assessment
	EL	: Elevation Line
	EO	: Executive Order
	EPZ	: Export Processing Zone
F	FCL	: Full Container Load
	F/R	: Final Report
	F/S	: Feasibility Study
	FSC	: Freeport Service Corporation
G	GOCC	: Government Owned and Controlled Company
	GOP	: Government of the Philippines
H	HHW	: Highest High Water Level
	HPPL	: Hutchison Port Philippines Ltd.
I	IC/R	: Inception Report
	ICTSI	: International Container Terminal Services, Inc.
	IEE	: Initial Environmental Examination
	ISO	: International Standardization Organization
	IT	: Information Technology
J	JAIDO	: Japan International Development Organization
	JICA	: Japan International Cooperation Agency
L	L/C	: Letter of Credit
	LCL	: Less than Container Load
	LCT	: Loading Craft Transport
	LGU	: Local Government Unit
	LLW	: Lowest Low Water Level
	LO-LO	: Lift on Lift off
M	MEPZ	: Mactan Export Processing Zone
	M/P	: Master Plan
	MICT	: Manila International Container Terminal
	MOT	: Ministry of Transport
	MSL	: Mean Sea-Water Level
	MTPDP	: Medium-Term Philippine Development Plan
	M/V	: Motor Vessel
N	NAIA	: Ninoy Aquino International Airport
	NAVMAG	: Naval Magazine

	NEDA	: National Economic and Development Authority
	NOAA	: U.S. National Oceanic and Atmospheric Administration
	NOL	: Neptune Orient Lines
	NSCB	: National Statistical Coordination Board
	NSD	: Naval Supply Depot
	NVOCC	: Non Vessel Operating Common Carrier
O	OCS	: Obstacle Clearance Surface
	OJT	: On the Job Training
	OSIR	: Out of Service in Reserve
P	PAL	: Philippine Air Lines
	PBAC	: Pre-qualifications, Bids & Awards Committee
	PD	: Presidential Decree
	PEA	: Public Estate Authority
	PEZA	: Philippine Economic Zone Authority
	PHRI	: Port and Harbor Research Institute
	PLDT	: Philippine Long Distance Telephone Company
	PNR	: Philippine National Railways
	POD	: Pocket Oxford Dictionary
	POL	: Petroleum, Oil and Lubricant
	PPA	: Philippine Ports Authority
	PPATC	: Philippine Ports Authority Training Center
	PR / R	: Progress Report
	PSE	: Philippine Stock Exchange
	PTA	: Philippine Tourism Authority
	PTSS	: Philippine Transport Strategy Study
R	RA	: Republic Act
	R/W	: Runway
	RO-RO	: Roll on Roll off
	RTGC	: Rubber Tired Gantry Crane
S	S/W	: Scope of Work
	SBC	: Sensitive Biological Community
	SBDMC	: Subic Bay Development and Management Corporation
	SBF	: Subic Bay Freeport
	SBFSA	: Subic Bay Freeport Secured Area
	SBFZ	: Subic Bay Freeport Zone
	SBIA	: Subic Bay International Airport
	SBMA	: Subic Bay Metropolitan Authority
	SBSSI	: Subic Bay Satellite Systems, Inc.

SBWD : Subic Bay Waterfront Development Corporation
SBYC : Subic Bay Yacht Club
SEC : Securities and Exchange Commission
SEZ : Special Economic Zone
SIACI : Subic International Air Charter Inc.
SPC : Enron Subic Power Corporation
SS : Suspended Solid
SSEFZ : Subic Special Economic and Freeport Zone
STEP : Subic Technopark Corporation

T

TCC : Training through Curriculum Course
TEU : Twenty- Foot Equivalent Unit
TOR : Terms of Reference
TSP : Total Suspended Particulates

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Executive Summary

Executive Summary

The Study on the Subic Bay Port Master Plan in the Republic of the Philippines

(January, 1998 through June, 1999)

Background and Objectives

1. Subic Bay was reverted to the Philippine Government from the U.S. Navy in 1992 as a part of the “ Bases Conversion and Development Act of 1992 (Republic Act No.7227)”. This act also set the framework for the Subic Bay Freeport (SBF) and Subic Special Economic and Freeport Zone (SSEFZ). It also established the Subic Bay Metropolitan Authority (SBMA) to administrate the area.
2. SBMA has been developing the SBF and SSEFZ to create a major regional hub of broadly-based economic activities, and model metropolis of the future as an information-rich business environment.
3. Main infrastructures excluding port infrastructures have started to be developed and the remaining issue is how and what to develop in respect of port development.
4. In this regard, the Government of the Republic of the Philippines (GOP) requested the Government of Japan (GOJ) to elaborate the Subic Bay Port Master Plan to ensure the promotion of Subic Bay Freeport (SBF) and regional development. In response, the Japan International Cooperation Agency (JICA) organized a study team and carried out the study to formulate the Master Plan (target year: 2020) and to assess feasibility of the Short Term Plan (target year: 2007).

Implementation of the Study

5. Firstly, existing information and reports, and port information and data on the present situation of SBF were collected and SBMA’s development policy and strategy were analyzed.
6. Considering the present natural and environmental conditions, conceptual zoning plan for the whole area of Subic Bay was formulated.
7. The future cargo traffic of SBF was forecast from the present handling cargo volume and regional development plan on the basis of three scenarios of economic growth: High growth, Middle growth and Low growth.

8. To meet the requirements for the cargo handling capacity of SBF in 2020, suitable scale of development was examined, and three alternatives for the Port Master Plan and Long Term Plan were elaborated. These alternatives were consistent with the conceptual zoning plan. And after prudent evaluation of the three alternatives, a port master plan and a long term plan were decided.

9. In the framework of the Long Term Plan, phasing of Long Term Plan and formulation of a Short Term Plan up to 2007 were conducted to ensure that the cargo handling capacity of the port would be sufficient to accommodate the forecast cargo volume.

10. The proposed Short Term Plan was evaluated from the viewpoints of engineering soundness, economic and financial feasibility, and the impacts of the project on the natural and socioeconomic environment. Port development, management and operation systems were also analyzed and necessary improvement plans were recommended.

Conclusions

(Conceptual Zoning Plan)

11. Conceptual zoning plans are proposed and coastal development in SSEFZ should comply with the zoning plan.

(Cargo Traffic Forecast)

12. The cargo volumes were forecasted for three scenarios: High, Middle and Low case scenarios. On the basis of the Middle Growth scenario, which is the most realistic of the three scenarios, the cargo volume is shown in the following table.

Year	2000	2005	2010	2015	2020
Container (1,000TEU)	122	275	420	567	720
Non-container (1,000tons)					
Including Soya	527	632	743	863	995
Excluding Soya	527	424	504	594	698

Note: Soya bean meal will be handled in a private terminal from 2002.

(Role of SBF)

13. The role and function of SBF will be to support the development of SSEFZ, other SEZ and EPZ as a specialized port rather than a public port for the Central Luzon area. The development concept of SBF can be defined as a specialized port for business development in SSEFZ, adjacent SEZ and EPZ, and for the tourism development in SSEFZ.

Project Outline

(Port Master Plan)

14. The container terminal project which was to be developed under a BOT scheme at the NSD area has been suspended due to a lawsuit and it is impossible to clarify when this project will resume. Therefore, the Master Plan includes the new container terminal development at Cubi Point. Master Plan, Long Term Plan and function of each wharf are shown in the following table.

Master Plan, Long Term Plan and Function of Each Wharf						
Site	Name of Wharf	Length(m)	Depth(m)	Present Use	Condition	Master Plan and Long Term Plan (2020)
Alava	Station 7,8	157	12.0	Naval Ship,	Need repair	Ferry Passenger Ship
	Station 3-6	363	12.0	Passenger Ship,	Good	
	Extension	181	12.0	Cargo Ship		
	Sub Total	701				
Rivera	West	106	5.0	Unused	Good	Waterfront Park
	South	126	10.0	Cargo Ship	Good	
	East	300	6.1, *9.0	Cable Ship, Cargo Ship	Good	
	North	(289)	7.0	Cable Ship	Need repair	
	Sub Total	532 (289)				
Bravo		327	7.0	Tug Boats, Cargo Ship	Good	Tug, Fiber Boats
Sattler		180	12.0	Non-container Cargo Ship,	Good	Non-container Berth
Marine Terminal	East	221	12.2	Container Cargo Ship,	Good	
	West	221	12.2	Small Boat	Good	
	E. Bulk			Tanker	Good	
	W. Bulk	117	6.0	RORO, Cargo Ship, Tug Boat	Good	
Sub Total	559					
Biniogan						
POL Pier				Tanker	Good	Oil Terminal
Lower Mau				LCT		RO-RO Ramp
Baton		411	9.4	Small Boat	Good	Non-container Berth
Leyte		(300)	13.0	Unused	Need Rehabilitation	
Cubi Point				Airport Revetment	No wharf, Beach	Container Terminal
Nabasan		(180)	14.0	Maritime School	Fair	Non-container Berth
Camayan		(135)	10.0	Unused	Fair	Eco-tourism
Grand Total		2,710 (615)				

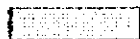
Note -1) The figures in parenthesis indicate wharf is not used for cargo handling activities.

-2) Asterisk (*) indicates the initial depth of wharves.

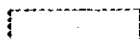
-3) Key to Alternative plans is as follows:



The Objective Port Project in this Study (Long Term Plan)



SBMA Other Project



Other Port Project

(Long Term Plan)

15. The number of berths required in 2020 is as follows.

Non-container cargo: When soya bean meal is handled in a private bulk terminal, the existing wharves in SBF (three berths at NSD and two berths at Boton wharves) will be sufficient for the non-container cargo traffic in 2020.

Container cargo : A new container terminal will be required with three berths at Cubi Point area. The maximum ship size is 2,000 TEU container carrier.

(Phased Construction Plan)

16. It is recommended that the new container terminal included in the Long Term Plan be constructed in the following phases:

Phase 1: 2003-2005, 280 m in Berth Length, 2 Gantry Cranes

Phase 2: 2005-2007, 280 m in Berth Length, 2 Gantry Cranes

Phase 3: 2014-2015, 280 m in Berth Length, 2 Gantry Cranes

(Short Term Plan)

17. The short term plan with target year up to 2007 includes the following items:

- ① The new container terminal construction (including reclamation) with 560 m in berth length and 13 m in berth depth (Phase 1: 280 m × -13m, Phase 2: 280 m × -13m), and procurement of gantry cranes
- ② Construction of access road from Boton area to the new container terminal
- ③ Rehabilitation work of the NSD wharves and other port related facilities
- ④ Installation of new navigational aids
- ⑤ Procurement of container and non-container cargo handling equipment (operators' responsibility)

(Urgent Development Plan)

18. Until the short term plan is operational, it is recommended to conduct the following urgent development plan by SBMA's own budget in order to accommodate non-self sustaining container ships and to attract or generate new container customers.

- ① Installation of at least one second-hand gantry crane at Sattler Pier
- ② Pavement work on the existing container yard (10 ha) at NSD area

(Restriction of Airspace Caused by the Airport)

19. Airspace around the Subic International Airport has certain restrictions. The height limitation along the layout of quay wall at Cubi Point is 57.2 m from average mean sea level. Since the allowable gantry crane height is 51.6 m, an articulated crane type must be selected for accommodation of 2,000 TEU container ships under this height limitation.

20. Considering the obstacle clearance surface, the elevation of the access road which crosses the Flight Path of R/W 25 should be 4 m above the water level.

Short Term Plan

(Structural Design and Reclamation Material)

21. Considering the sub-soil conditions and construction cost, selected structural type is as follows.

Container wharf: Gravity concrete caisson type quay wall

New access road: Mound type

Rehabilitation of existing Marine Terminal: Additional steel pipe piles and concrete deck

22. Necessary filling material for reclamation is approximately 2.2 million m³ and approximately 80 % of total reclamation material will be taken from dredging at Cubi Point shoal, Caiman and Carrasco shoal and remaining 20 % from a quarry site at Mt. Maritan.

(Construction Plan)

23. On the assumption that construction will be carried out in a single package, the required construction period is estimated at a minimum 36 months for both Phase 1 and Phase 2 ; 20 months for Phase 1 and 16 months for Phase 2.

(Project Cost)

24. The total project cost for the Short Term Plan is US\$ 215 million (185 million for SBMA and 30 million for operators) which includes consultancy for detailed design of the facilities, consultancy for the construction supervision, procurement cost for non-container cargo handling equipment, annual price escalation, physical contingency, costs for the rehabilitation program of port related facilities and administration cost of SBMA for implementation of the project.

Project Evaluation

(Economic Analysis)

25. The EIRR results in 32.2 % for the Long Term Plan and 29.0 % for the Short Term Plan. Even in the worst case, where the costs increase by 10 % and the benefits decrease by 10 %, the EIRR is 23.2 % for the Short Term Plan. Since the project ensures 15 % of the EIRR, the Short Term Plan is concluded to be economically feasible.

(Financial Analysis)

26. The FIRR of the Short Term Plan is calculated on the assumption that the SBMA charges the same fee as the new port tariff (to be revised by June 1999) and operators charge US\$ 67 per TEU (inclusive of berthing fee and container handling charge).

The FIRR results in 11.1 % for the Base Case of the Short Term Plan and even in the worst case, where the costs increase by 10 % and the revenues decrease by 10 %, the FIRR is 8.0 %.

If 85 % of initial investment by SBMA is covered by a soft loan (interest rate of 1.8 %/year) and the rest of the initial cost shouldered by both SBMA and Operators is covered by a loan with an interest rate of 6 %/year (the real interest rate excluding inflation rate), the weighted average interest rate for the total investment becomes 2.9 %. Since the results of the FIRR exceed the weighted average interest rate, the project is assessed to be financially viable.

(Environment Impact Assessment)

a. Present natural and socioeconomic conditions

27. Concerning air and marine water quality, the present conditions in SBF thoroughly satisfy the national quality standards. And no critical habitats or sensitive aquatic flora and fauna are found in the proposed project site.

28. Since there are no inhabitants in the proposed project site, implementing the development project poses no serious problem to the social environment.

b. EIA for dispersal of reclamation material

29. According to the results of the computer simulation, suspended solid (SS) dispersion is limited to the area adjacent to dredging and reclamation works site and is in conformity with the SS criteria of marine waters regulated by SBMA. However, cadmium and chromium concentrations in sea bottom sediments were detected in the project site. Therefore, leaching tests of sea bottom concerning cadmium and chromium must be conducted during detailed design stage, and if the cadmium solution shows more than 0.1 ppm and/or the chromium solution shows more than 2 ppm, prudent dredging/reclamation works or change of sand site for reclamation from sea bottom to land will be required.

c. EIA for natural resource utilization

30. According to the results of a perception survey in fishing communities, SBMA should take charge of overseeing compliance with environmental rules, regulations and standards. In particular, SBMA should monitor all domestic waste and bilge water discharge from calling ships and enforce regulations as required. In addition, the existing navigational aids are insufficient and installation of new navigational aids (buoys and a lighthouse) is required.

d. EIA for socioeconomic environment

31. According to the results of a questionnaire survey, an alternative beach facility needs

to be created to compensate for the loss of beach. It is also necessary to explain the project and quarrying method to residents along the eastern coast of Redondo Peninsula in order to obtain their consensus.

(Overall Evaluation)

32. It is concluded that the project, the Short Term Plan, is feasible from the viewpoints of cargo handling capacity, economic and financial analyses, and environment impact assessment.

Port Development, Management and Operation

(Utilization of private capital and demarcation of SBMA's role and private sector's role)

33. The construction of container terminals, dredging of navigation channel/basin and other basic port infrastructure should be the responsibility of SBMA while the terminal operation should be entrusted to private operators. These operators will make necessary investments in superstructures and container and cargo handling equipment.

(Review of institutional framework and function)

34. SBMA is an independent organization with almost full rights to perform or entrust any kind of business in SBFZ. However, SBMA has adopted the practices of PPA and the US Navy. It is stipulated by RA-7227 that SBMA can exercise administrative powers, rule-making and disbursement of funds over SBFZ in conformity with the overseeing function of the Base Conversion Development Authority. Therefore, it is strongly recommended that SBMA establish its own framework and function.

(Port sales promotion and marketing)

35. Port of Subic is not known to the world as a commercial port and therefore, it is of great importance for SBMA to assign a group of staff dedicated to the port sales promotion and marketing. The marketing strategy should include ① Elimination of arbitrary charges of the shipping conferences, ② Periodical port sales promotion tour and ③ Setting up SBMA's offices or agents abroad.

Recommendations

(Preparation of accurate statistics)

36. Accurate statistics on cargo and calling ships at ports are indispensable in making and revising a port development plan. It is strongly recommended to consolidate the legal and institutional frame for obtaining and maintaining these statistics.

(Cooperation of other Philippine government organizations)

37. To implement road construction projects related to SSEFZ development and to obtain a soft foreign loan, SBMA needs the cooperation of other Philippine government organizations.

(Review of Kenzo Tange's Master Plan)

38. According to Kenzo Tange's Master Plan, a part of Alava Wharf shall be removed to construct a basin for small ships, but this new basin faces entering waves and thus it is necessary to examine the location and length of revetment of the basin for tranquility before finalizing the plan.

(Matters with Regard to Airport)

39. It is strictly required to observe the rules and regulations of the airport and to consult with the airport staff in order to maintain safe airplane operation. Special attention during detailed design stage and construction stage needs to be paid to ① Height limitation, ② Influence on the transponder landing system, ③ Lighting systems in the container terminal and the access road, ④ Radio system ⑤ Airport radar system, ⑥ Shelter of the access road.

(Matters with Regard to Environment)

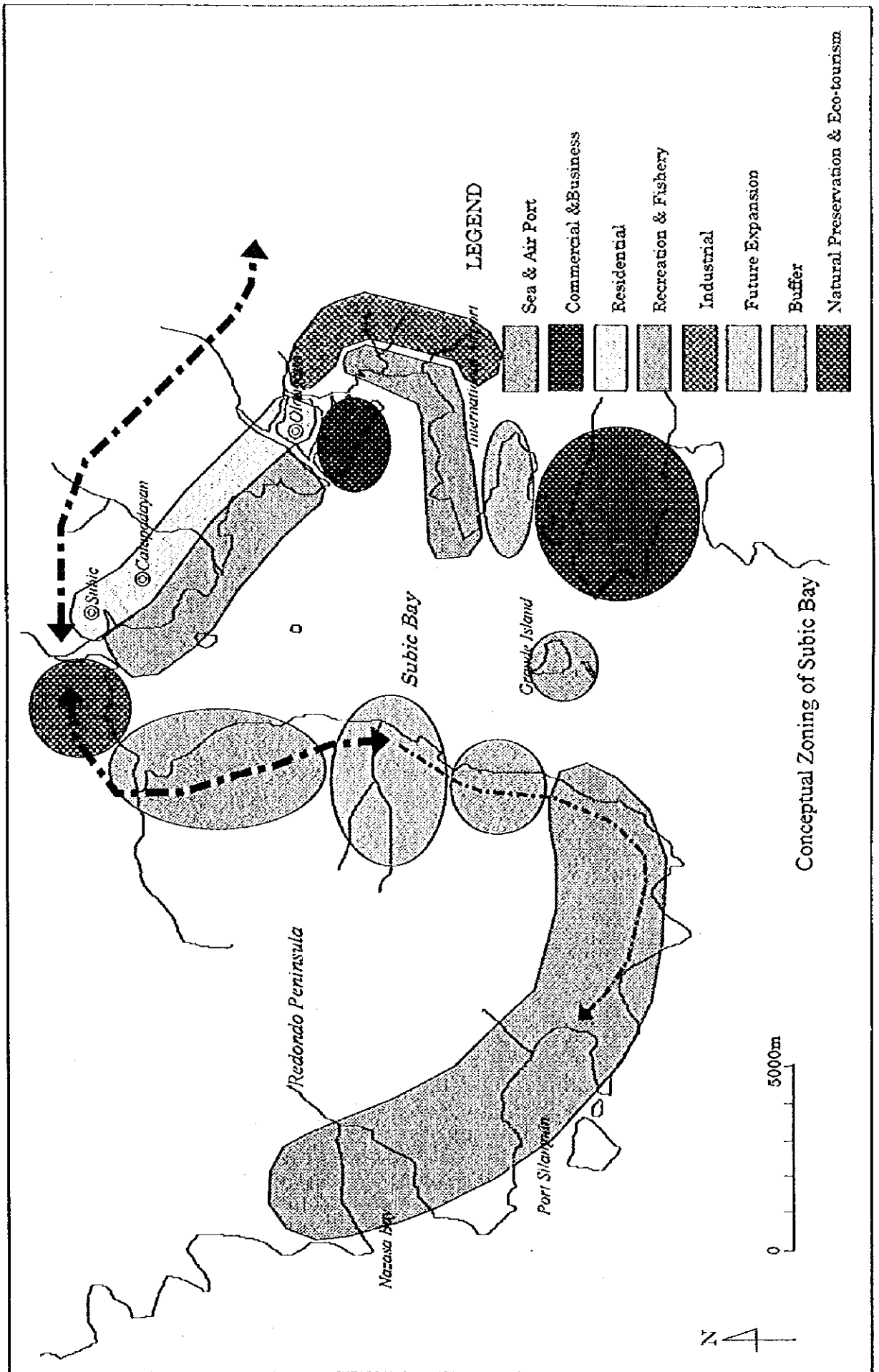
40. It is necessary to clarify during the detailed design stage and the construction stage ① the correlation equation between turbidity and SS, ② the background value of SS.

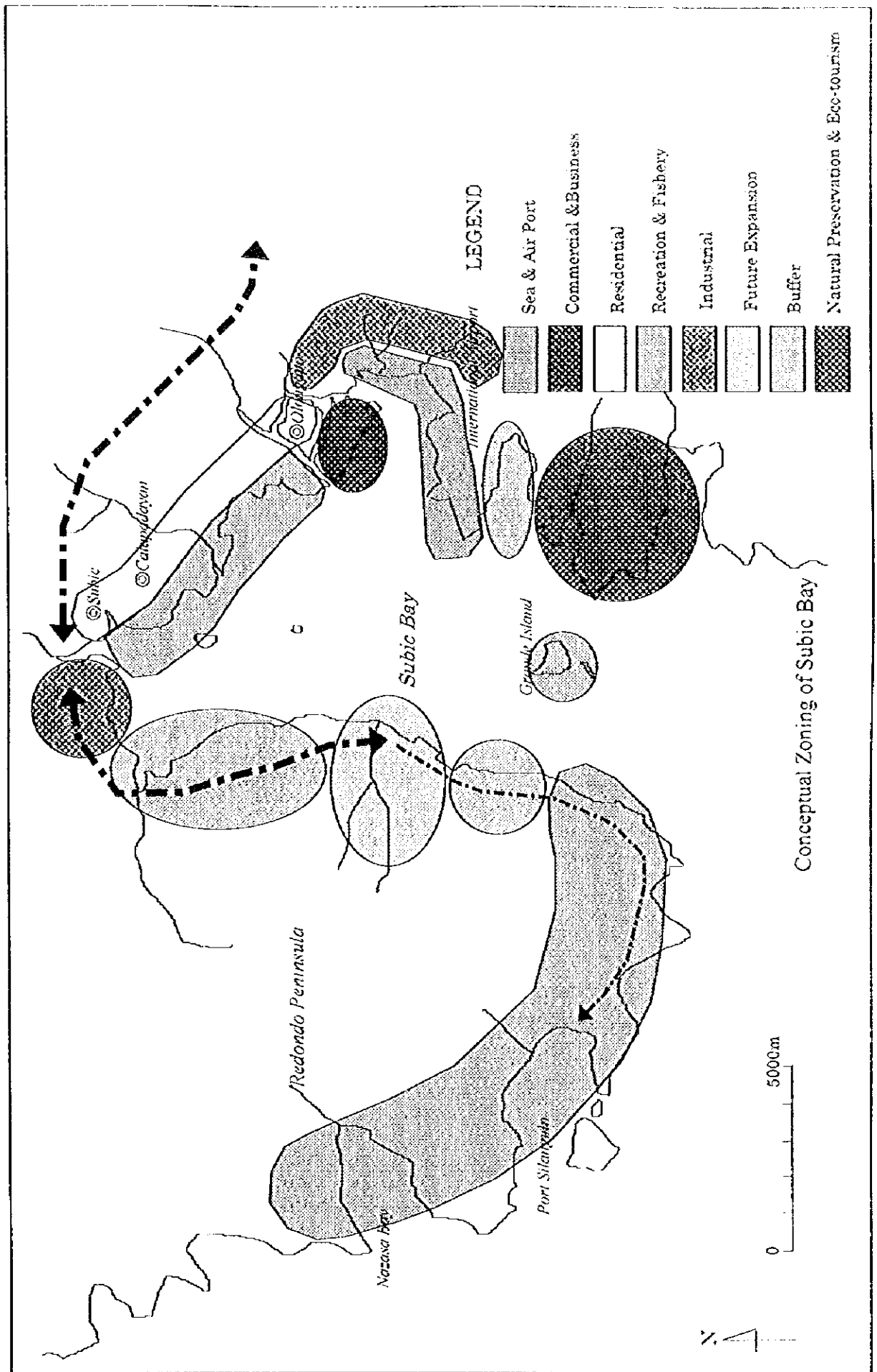
41. In the detailed design stage leaching tests of sea bottom concerning cadmium and chromium must be conducted. If necessary, the countermeasure (prudent dredging and reclamation works, change of sand site for reclamation) must be taken.

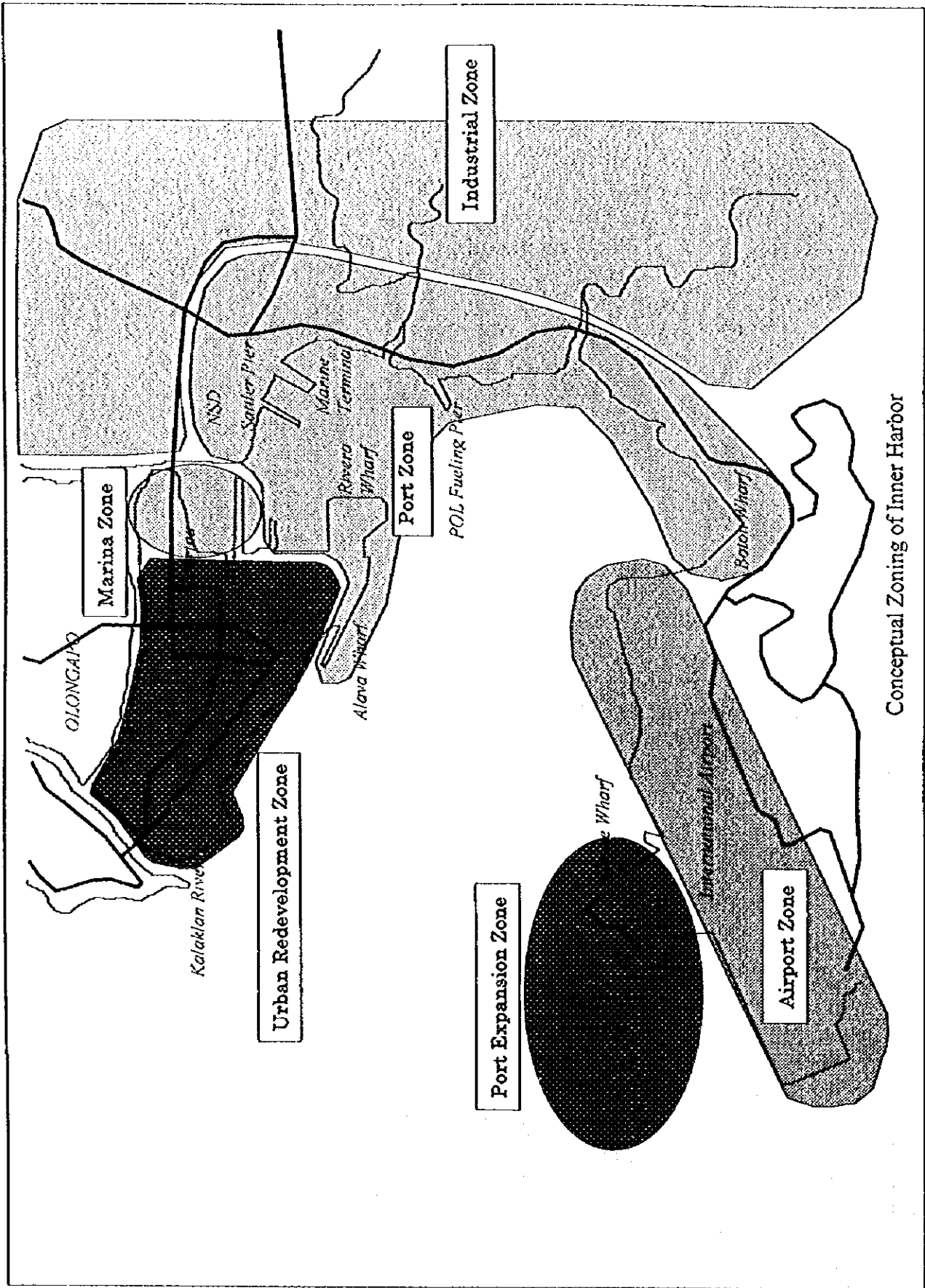
42. When the project is authorized, SBMA should be responsible to explain the contents of the plan, the construction schedule and construction method to the local people, so that conflicts which may otherwise occur can be avoided.

(Port Development, Management and Operation)

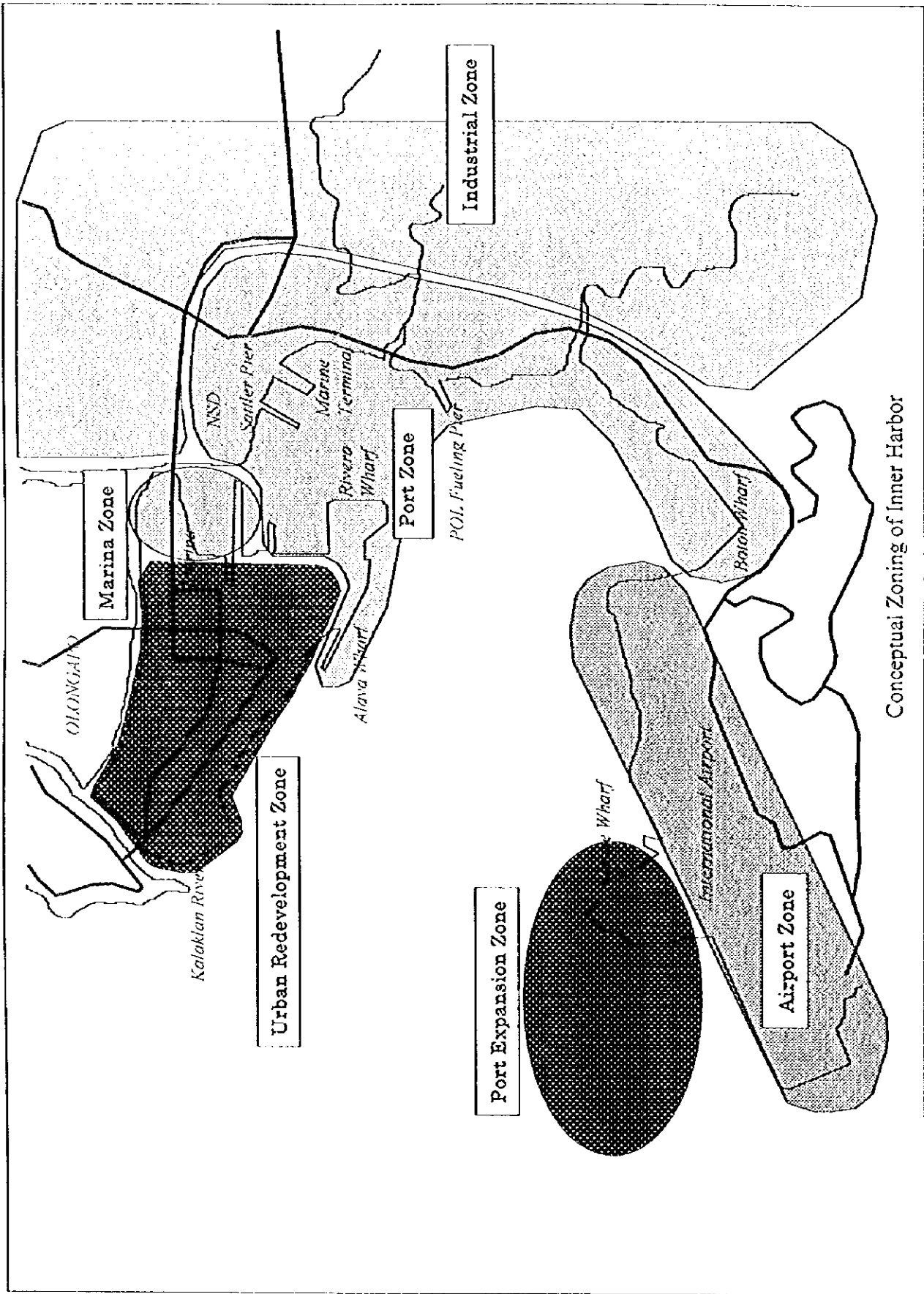
43. SBMA is recommended ① To behave as a Port Management Body, ② To utilize the training systems of the PPA and Japanese Government, ③ To prepare for Port Promotion and Sales, ④ To re-organize Seaport Department, ⑤ To divide the new container terminal into two terminals, ⑥ To apply the Combined Lease Fee System of Fixed and Variable Charge (Profit and Loss Share System) in the new container terminal lease contract with private terminal operators, ⑦ To clearly demarcate SBMA's role in the waterfront and container related business such as Van Pool, CFS, Cargo Tally/Checking, Pilot and Tug Boat, ⑧ To review and re-frame the Port Tariff after the new demarcation.

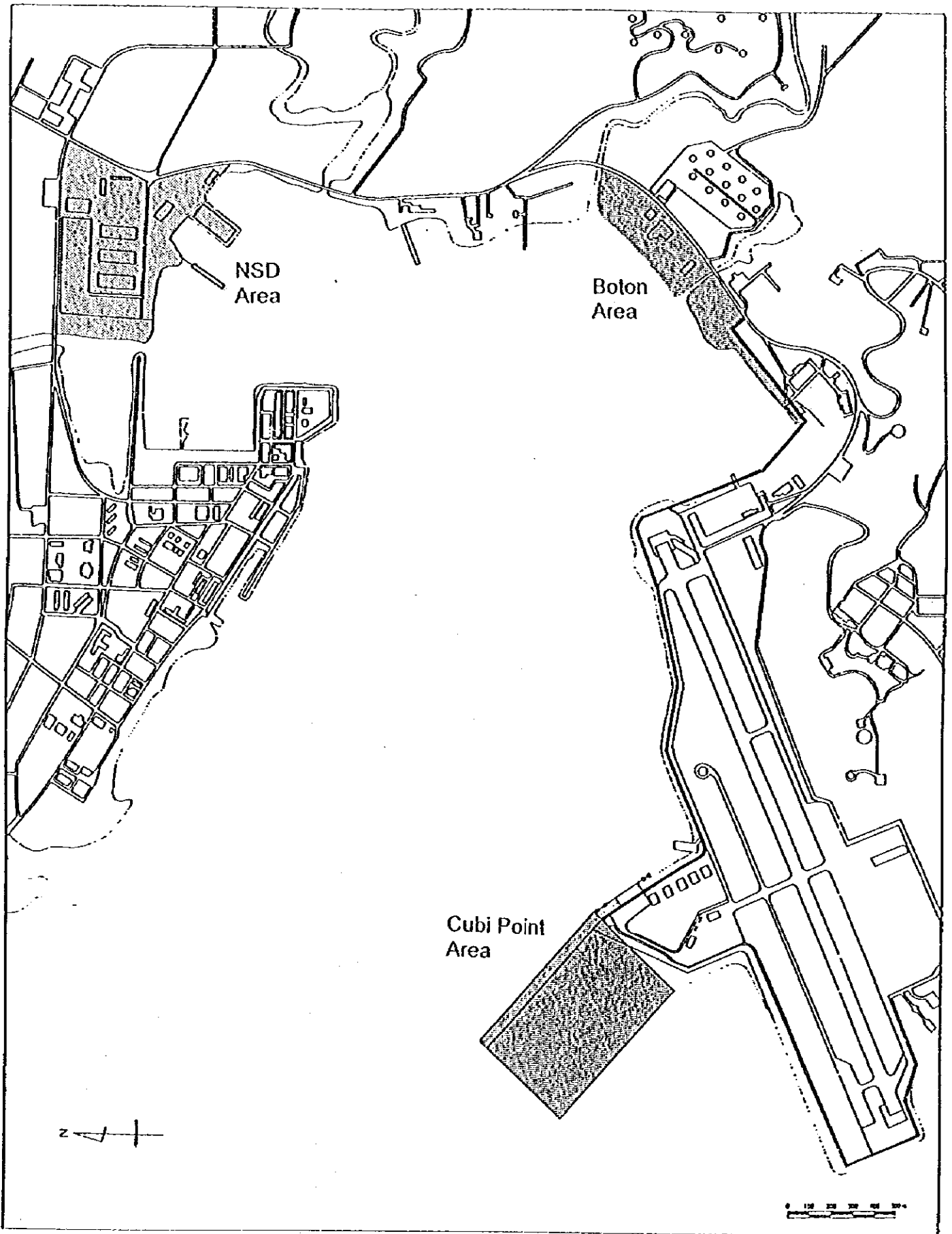




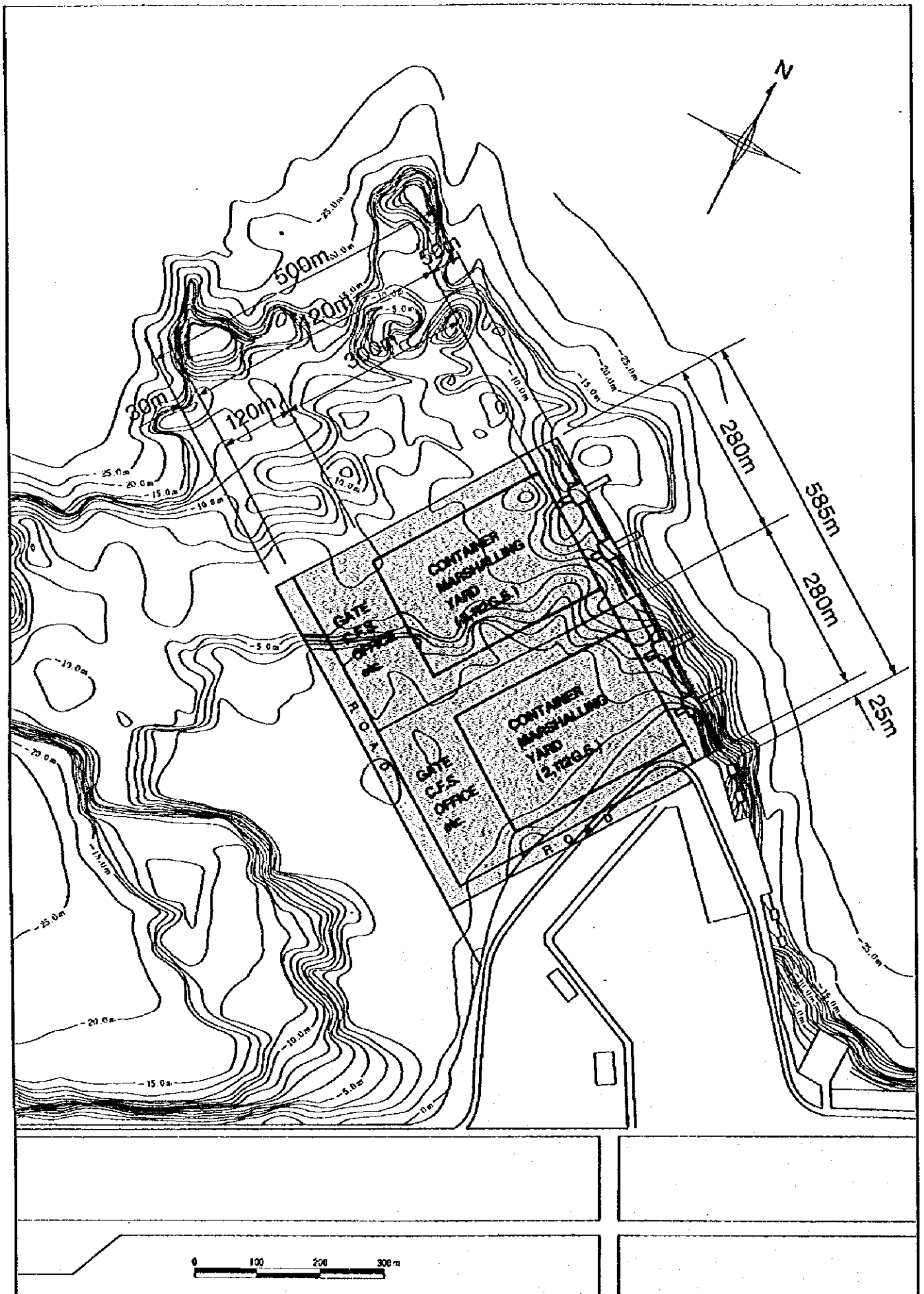


Conceptual Zoning of Inner Harbor

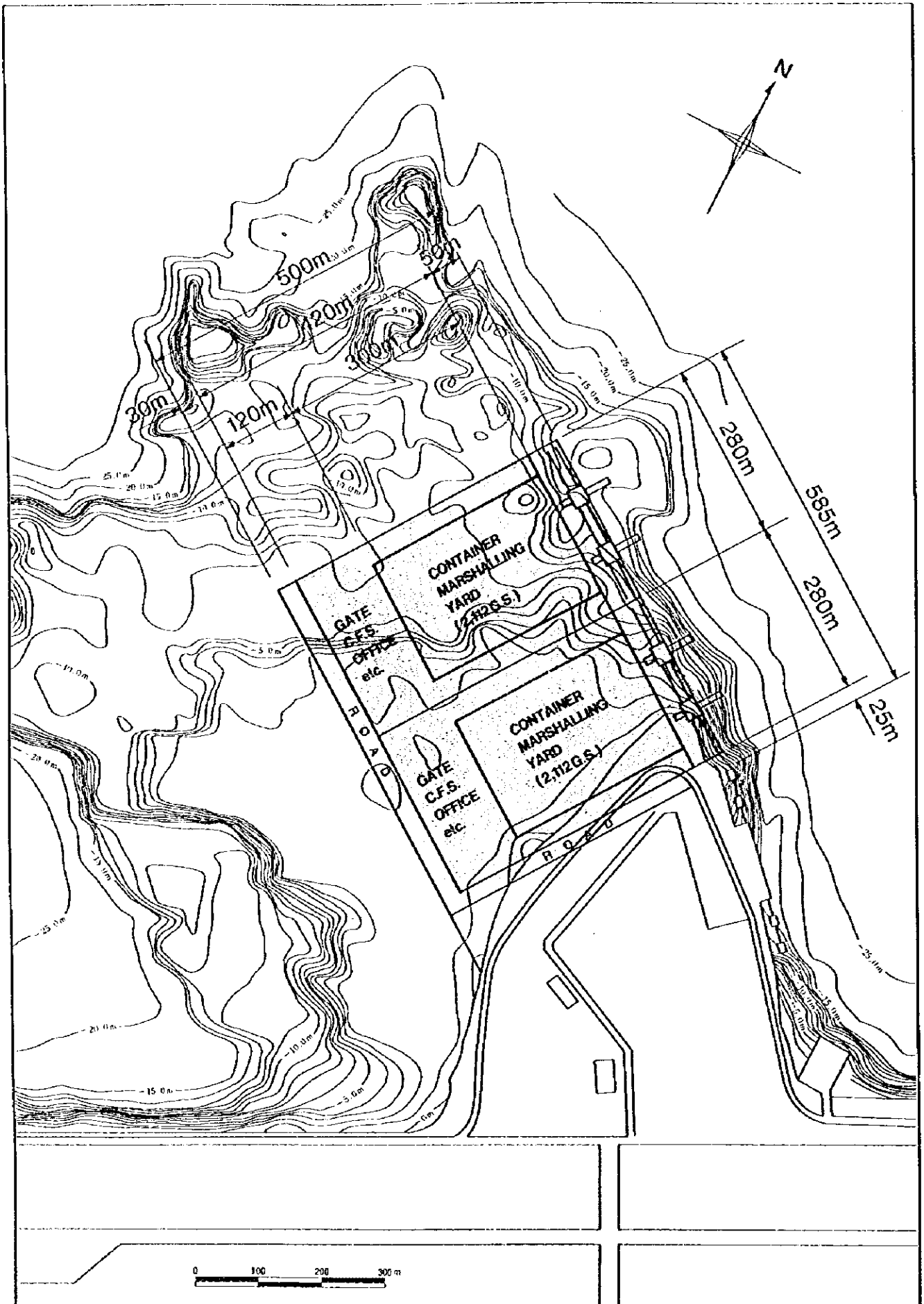




Port Development Sites in Long Term Plan



Short Term Plan (New Container Terminal)



Short Term Plan (New Container Terminal)

List of the members of the Counterpart Team and the Study Team

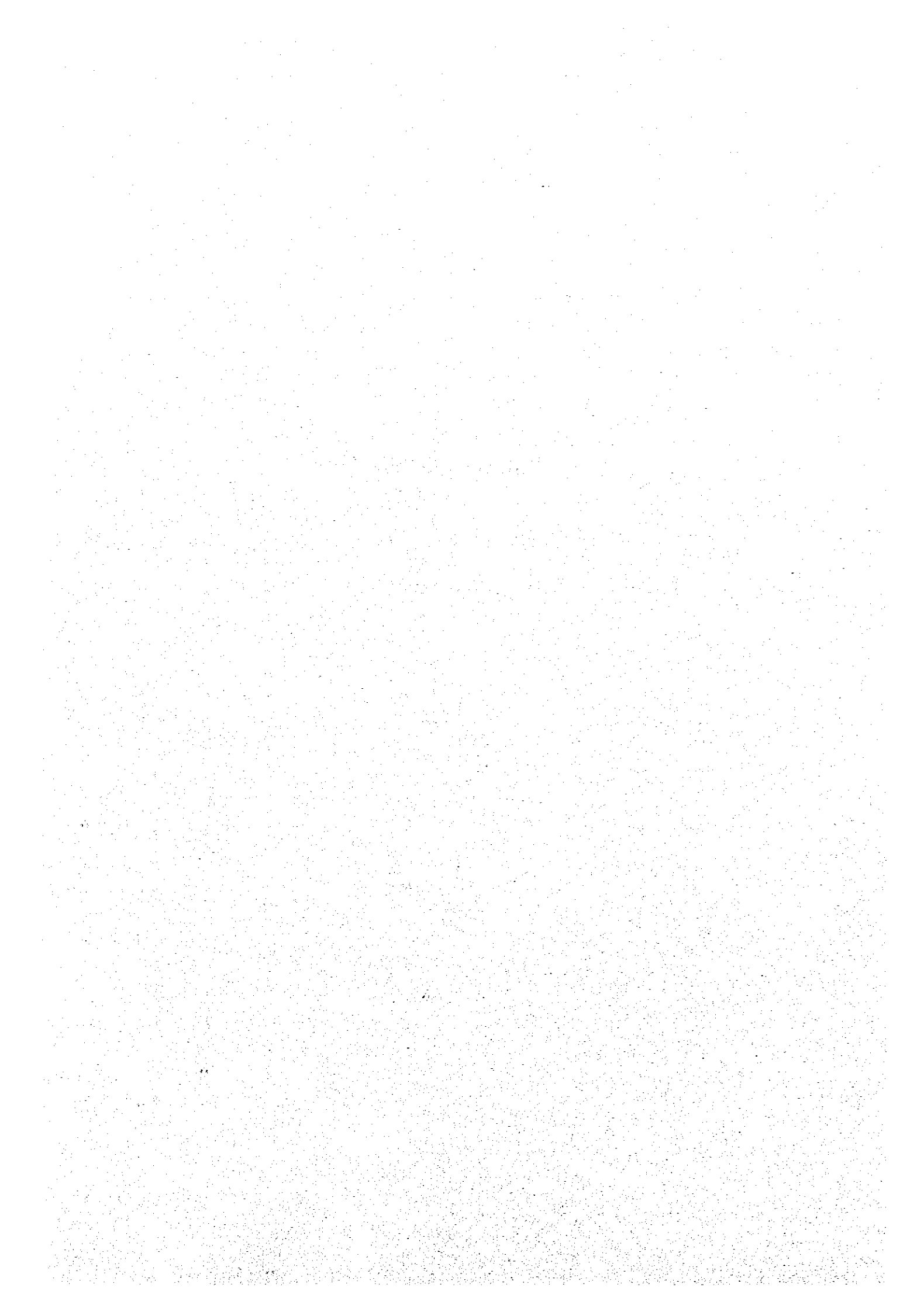
Counterpart Team (Subic Bay Metropolitan Authority)

Capt. Victor L. Mamon	Deputy Administrator for Ports (Sea/Air)
Mr. Cesar P. Adamos	Deputy Administrator for Public Works
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Study Team

Koji Kobune	Leader
Mitsuhiko Iwasaki	Port Planning/Environmental Consideration
Tooru Yano	Regional Development
Hideo Maeda	Demand Forecast/Economic Analysis/Financial Analysis
Yoshinobu Shakuto	Port Administration, Management/Financial Analysis
Yoshihisa Tateno	Port System/Project Planning
Nobuo Kawamura	Design of Port Facilities
Ichiroh Miyakoshi	Construction Planning/Cost Estimation
Katsuhiko Takahashi	Natural Conditions
Ruben A. Estedillo	Natural Environment
Daihachiro Kamimura	Social Environment
Shane Reid	Coordinator

Summary



1. The Role and Present Situation of Subic Special Economic and Freeport Zone

1.1 The Subic Bay Metropolitan Authority (SBMA)

The Subic Bay Freeport and Special Economic Zone was established through the Republic Act (RA) 7227, so called the Bases Conversion and Development Act in March 1992 and Subic Bay Metropolitan Authority (SBMA) was designated as an operating and implementing agency to establish the Freeport to ensure the promotion and development of social projects

Basic legal capacity of SBMA is defined by those fundamental acts, proclamations, orders etc. shown below:

1.	R.A. 7227	Proposed	1991-7-22
		Approved	1992-3-13
2.	Proclamation No. 50		1992-9-18
3.	Rules and Regulations		1992-11-3
4.	Executive Order No.97-A		1993-6-19
5.	Port Tariff (No. 2)		1994-4-1
6.	Proclamation No. 532		1995-2-1
7.	SBMA Strategy		1997-4-4
8.	SBMA Strategic Planning (Revised)		1998-10-19

From 1992 to the present, SBMA has focused on the need to secure the former Naval Station, continue to operate and maintain municipal services, and to attract locators to invest.

SBMA has been able to secure the base, and by January 1999 attracted 306 domestic and international locators to invest more than US\$ 1.2 billion.

1.2 Strategic Plan of SBMA

SBMA has been created to undertake the conversion and development of the former Subic Naval Base and its neighboring areas, the Subic Special Economic and Freeport Zone (SSEFZ), into a self-sustaining industrial, commercial, financial and investment center.

1.3 Existing Master Plans of the Subic Bay Freeport Zone (SBFZ)

(1) The Subic Bay Freeport Development Urban Design Guidelines (Kenzo Tange's Master Plan)

SBMA commissioned world-renowned architects and urban planners - Kenzo Tange and Associates - to provide the physical framework and urban design guideline for the development of a model metropolis for the future. The Central Area Master Plan of the Subic Bay Freeport designed by Kenzo Tange Associates has been systematically codified into a

series of volumes under the general title of "The Subic Bay Freeport Development Urban Design Guidelines". The Urban Design Guidelines are intended to be utilized by the Land Management Department of SBMA as a general guide for the control of development of land under its jurisdiction.

(2) Strategy for Conversion of the Subic Bay Naval Base into a Special Economic Zone and Freeport (The World Bank's Master Plan I)

This strategy was reported in January 1993. The report summarizes the results of the various technical analyses undertaken by a World Bank consulting team which has been assisting the SBMA in converting the Subic Bay Naval Base into the Subic Bay Freeport(SBF).

This report proposed "Strategy for Conversion of Subic Bay Naval Base", "Proposals for Development of the Subic Bay Freeport" and "Privatization Strategy and Financial Plan".

(3) Others

Other master plans are Second Subic Bay Freeport Project (The World Bank's Master Plan II) and Subic International Airport Master Plan and so forth.

1.4 Organization and Institutional Aspects of SBMA

Organization

SBMA is currently being run by about 5,100 people as a whole, and is cooperating with the Freeport Service Corporation (FSC) which is a 100 % subsidiary company of SBMA.

The breakdown of the total number of around 5,100 staff was as follows in March 1998:

SBMA	1,573
<u>FSC</u>	<u>3,529</u>
	5,102

In mid 1998, there was a transfer of the chairmanship of SBMA and since then there have been some changes in the organization and the component of the personnel of SBMA and FSC. The re-organization is still in process, however it is out-looked that the new organization will have a following framework:

- 1) Three Senior Deputy Administrators (SDR) each responsible for-
Legal Administration and Finance
Operation
Business Development
- 2) Eight Deputy Administrators (DA) Each responsible two to seven departments under

his control

The remarkable change of the component of the personnel is the increase of the permanent employees of SBMA. The total number of the employees of SBMA and FSC is still aimed at 5,000 but the portion of SBMA is increasing from 1,573 to around 2,500, thus decreasing FSC personnel from 3,529 to some 2,500.

Institutional Aspects

Section 12 of RA No. 7227 stipulates SBMA's Administration Policies and Section 13 gives a detailed stipulations on Powers and Function.

One Section is explicitly assigned to the relationship with the Bases Conversion Development Authority and the local governments units as Section 14.

In terms of the theory of organization, SBMA has almost all rights of doing any business. Therefore it is necessary for SBMA to select its own field of activities including its duties and responsibilities out of the authorized rights defined in RA-7227. By doing so, SBMA can encourage the private sector without monopolizing waterfront businesses.

1.5 Infrastructure of SBFZ

Administration Buildings and Land Uses

There are eight main administration buildings and 6,600 hectares in SBFZ. About the buildings now in use, most of the structures are configured to meet security considerations and specialized military applications, and do not lend themselves easily to commercial applications.

Main items of the land uses are :

Industrial	310 (Hectares)
Commercial	77
Tourism/Recreation	2,245
Residential	358
Transportation	325
Community Facilities	267
Special Areas	193
Utilities	68
<u>Reserved for Future Use</u>	<u>16</u>
Sub-total	3,859
<u>Others</u>	<u>2,741</u>
Total	6,600

Tourist and Residential Facilities

The SBF has tourist and residential facilities. Within the former Base area are 1,876 housing units and three story, 80-100 room hotels, etc.

Seaport Facilities

There are six district port facility areas. They are (1) Central Business Area, (2) The Naval Supply Depot (NSD) Area, (3) Pol Pier (for the fuel-oil), (4) Boton Wharf, (5) Leyte Wharf and (6) The Naval Magazine.

Airport Facilities

The airport occupies an area of 435 hectares. It has a single runway with a length of 2,744m and width of 45m. There are three aprons known as the Main apron, the Boton apron and the Carrier wing apron.

Other Infrastructure

(1) Power and Water Supply:

The total generating capacity of Enron SPC (Enron Subic Power Corporation) in SBFZ is now 147.5 MW, while Subic Water is now supplying 294 million liters of water per day.

(2) Communications:

AT&T of the United States and PLDT (the Philippine Long Distance Telephone Company) signed a joint venture agreement to upgrade the telecommunication services for SBMA in June 1994. The initial 2,000 lines which were made available in October 1994 have now increased to 100,000 lines.

(3) Ecology Preservation

There are primarily three Proclaimed National Parks within the SBF and its neighboring area.

(4) Housing

The latest figure of the housing units are 1,876 units, which is almost double of the originally transferred from the US Navy.

(5) Hospital

Ex-Naval Hospital (90 beds) had been closed since the transfer in 1992, but was opened for the public in 1997 as Subic Legenda Health and Medical Center. Five hospitals are located near-by SBMA.

(6) Road and Highway System

Regarding highway network surrounding SBMA, The World Bank Subic II Project (Officially it is called SECOND SUBIC BAY FREEPORT PROJECT/Loan 411-PH) is going on. The project is at the final stage of the detailed design and construction work will start around July/August, 1999.

2 Socioeconomic Conditions of the Philippines and Central Luzon

2.1 Socioeconomic Situation

(1) Socioeconomic Situation of the Country

1) Population

Population in the Philippines has steadily increased. Population of the Philippines in 1995 is 68,616,536 and the average growth rate of population for the period of 1990-1995 was 2.32%.

2) GDP

The Philippines GDP amounted to around 848,451 million pesos in 1996 at constant prices of the year 1985. Average growth rates of the Philippine GDP at constant 1985 prices are 3.7%(1985-1996) and 5.2%(1994-1996).

(2) Socioeconomic Situation of the Region

1) Population

The Subic Bay Freeport belongs to Region3, the Central Luzon Region. The population of Region3 in 1995 is 6,932,570 which is the third largest Region accounting for 10.1% of the Philippine population. Region3 has experienced roughly the same average growth rate of population as in the whole Philippines, 2.12% annually for the period of 1990-1995.

2) GDP

GDP of Region3 in 1996 at constant 1985 prices represents 9.8% of the whole Philippines. Average growth rates of the Region3 GDP are 4.0%(1985-1996) and 5.0%(1994-1996).

2.2 Economic Development Plans and Strategy

(1) National and Regional Economic Development Plans

1) National Economic Development Plan

Medium-Term Philippine Development Plan (MTPDP) spells out policies and strategy concerned with national economic development. The updated MTPDP, 1996-1998, was to be submitted to the NEDA Board by December1995.

2) Regional Economic Development Plans

Regional economic development plans are spelled out in Central Luzon Regional Medium-Term Development Plan. Its spatial development strategy is summarized below.

a) The Triad Growth Corridor

In 1995, the JICA Study Team responsible for drafting the Central Luzon Development Program Masterplan Study presented 'The Triad Growth Corridor' concept of urbanization in the report. This concept integrated the concentric urbanization pattern from three rapidly expanding areas, namely; Metro Subic, Metro Angeles (Clark and its environs) and the Bulacan Conurbation Area (towns contiguous to Metro Manila). They are called the National Triad Growth Centers.

b) The W Growth Corridor

There was a need to expand the concept of a 'growth corridor' that not only would encompass other industrial areas but likewise integrate the growth potentials that would be derived from other sectors such as tourism and high-value agriculture. Then the Department of Trade and Industry evolved the triad concept and proposed the 'W growth corridor' concept in 1997. 49 municipalities and 3 cities out of the region's 117 municipalities and 5 cities were included. When these were plotted on a map, the shape of the letter 'W' emerged.

(2) Economic Zones and Industrial Estates

Main EPZs and SPZs in and around Region3 are as follows.

- 1) Bataan Export Processing Zone
- 2) Luisita Industrial Park
- 3) Angeles Industrial Park (Special Economic Zone)
- 3) Baguio City Export Processing Zone
- 4) Hermosa Ecozone
- 5) Clark Special Economic Zone

2.3 Transportation Sector

(1) Existing Situation of Transport Sector

1) Roads

In 1996, the length of the whole road network was estimated as 160,970 kms, which was divided into administrative categories as follows:

• national roads (national government)	26,720 kms
• provincial roads	29,117 kms
• city roads	3,949 kms
• municipal roads	12,820 kms
• barangay roads	88,364 kms

2) Railways

Philippine National Railways (PNR)'s route network measures 1,296 km but only 494 km are operational, namely the main line south from Manila to Legaspi (479 km) and the short

section north from Manila to Meycauayan (15 km).

3) Shipping

There are said to be about 1,250 ports in the country but many of them are extremely small. There are 220 private ports, mostly ports belonging to private enterprises for their own exclusive use. These ports handle 65%, in tonnes, of all cargo traffic, which consists largely of minerals, petroleum, cement and bulk agricultural produce. There are 179 fishing ports (which come under the Philippine Fisheries Development Authority). The Philippine Ports Authority (PPA) operates 123 public ports, including most of the largest ones. In addition there are four other important authorities involved in operations:

- a) the Cebu Port Authority, which operates Cebu Port and several small neighboring ports on Cebu Island;
- b) Subic Bay Metropolitan Authority, which operates Subic Bay Port;
- c) the Bases Conversion Development Authority, which now has jurisdiction over San Fernando Port
- d) the Cagayan Economic Zone Authority, which is designated to operate the Port Irene Freeport.

4) Air Transportation

There are 87 operational public airports in the Philippines, of which 47 provided commercial services in 1995. 82 public airports are run by the Air Transportation Office (ATO). At present the ATO classifies the airports into five categories:(international, alternate international, trunk-line, secondary and feeder.)

The former military airports formerly under US control were converted into civilian use, namely: the Subic Bay International Airport and the Clark International Airport which serves as an alternate airport to decongest the Ninoy Aquino International Airport .

(2) Freight Transportation in Central Luzon

1) Current cargo movement of SBF

a) Handling cargo volume of SBF

• Import / Inbound

In 1997, the volume of imported/inbound cargo to SBF is 12,063 TEU for containerized cargoes and 416,297 tons for non-containerized cargoes.

• Export / Outbound

In 1997, the volume of exported/outbound cargo from SBF is 11,354 TEU for containerized cargoes and 40,435 tons for non-containerized cargoes.

b) Industrial cargo movement of other EPZ and Special Economic Zone

In 1997, the industrial cargo of other EPZ and Special Economic Zone (Baguio, Bataan and Clark) was imported via SBF.

c) Current movement of non-industrial cargo

At present, the non-industrial cargo movement of Region III which is being handled at SBF consists of non-containerized cargo such as rice, fertilizer and soya-bean and construction materials such as cement and steel materials. The containerized cargo consists mainly of equipment and construction materials for the power station that is now under construction.

2) **Adjacent Port activities and development plans**

The following ports which are assumed to be in the hinterland are considered as adjacent ports. Hereinafter, the present condition of adjacent ports is examined to determine whether some commodities handled at adjacent ports presently can shift to the SBF in future or not.

a) **Present condition of adjacent ports**

i) **Port of Manila**

- North Harbor
- South Harbor
- MICT

ii) **Port of Batangas**

iii) **Port of San Fernando**

b) **Port development plan of adjacent ports**

The Philippine Ports Authority (PPA) came out with a 25-Year Master Plan which was approved in principle by the President on 10 July 1995. The Plan was updated in 1996.

i) **Port District of Manila**

The Port District Office (PDO) of Manila, which covers the Manila Bay and Bataan/Zambales Coastline, has twelve (12) port development plans.

ii) **Port District of Luzon**

Port District Office of Luzon covers the entire island of Luzon and the Southern Tagalog Region less the area covered by PDO Manila. A total of twenty-seven (27) development plans have been authorized by the Philippine Ports Authority (PPA).

The two(2) projects are related directly to the hinterland of SBF.

c) **Cargo volume handled at five adjacent ports**

The total cargo volume, based on the Annual Statistical Report(1996-Volume 2) published by PPA, in the Philippines in 1996 was 129.04 million tons, of which 62.29 million tons was domestic and 66.75 million tons was foreign.

Annual average growth rate of cargo volume handled at five adjacent ports is given in the following Table 2.3-1.

Table 2.3-1 Annual Average Growth Rate at Five Ports

Port Management Office	Year	1992 -1996 Annual Average Growth Rate
Batangas		5.58%
Manila (North Harbor)		7.99%
Manila (South Harbor)		15.40%
Manila - M.I.C.T.		15.63%
San Fernando		14.16%

Source: Annual Statistical Report, PPA, 1992 - 1996

d) Ship calls at five adjacent ports

Ship calls at the five ports in the past 5 years (1992 - 1996) are shown in the following Table 2.3-2.

Table 2.3-2 Ship Call at Five Ports from 1992 to 1996

Unit: Ships Nos.

Port Management Office		Year	1992	1993	1994	1995	1996
Batangas	Domestic		15,919	16,644	19,613	30,309	35,844
	Foreign		908	1,032	1,045	1,023	974
Manila(North Harbor)	Domestic		11,596	12,503	13,247	13,530	16,419
	Foreign		299	267	290	245	238
Manila(South Harbor)	Domestic		6,403	6,619	6,549	7,333	9,813
	Foreign		1,937	2,170	2,508	2,533	3,157
Manila - MICT	Domestic		133	129	63	34	0
	Foreign		1,156	1,113	1,232	1,324	1,348
San Fernando	Domestic		474	509	654	685	747
	Foreign		208	151	269	510	747

Source: Annual Statistic Report, 1992 to 1996, PPA

2.4 Transport Strategic Plans

(1) Philippine Transport Strategy Study (PTSS)

The output from PTSS differs from past plans. According to PTSS the conclusions from it should be translated into a Statement of Transport Policy, and incorporated in the new Development Plan 1999-2004, to guide the implementation of the transport strategy.

PTSS should determine a realistic (implementable, fundable) strategy that the main agencies of government will sign up to. This should:

- set the priorities for action
- identify the necessary institutional reforms
- recommend future policy
- recommend priority investments in the roads, rail, maritime and aviation sectors, and
- determine how the private sector can be involved in implementation.

(2) Artery network in the Central Luzon Development Program Masterplan Study

Spatial development of any region is affected by a network of transportation arteries and distribution of urban centers as well as resources potentials and constraints. A future artery network for Central Luzon is proposed in line with the National Triad Growth Centers and the proposed hierarchical structure of urban centers. It consists of inter-regional arteries and intra-regional arteries linking those urban centers in the upper tiers.

3 Present Situation of Subic Bay Freeport

3.1 Natural Conditions

The Study Team conducted data collection and field surveys/investigations for the natural conditions of Subic Bay in 1998.

(1) Topography and Bathymetry

The Study Team conducted the following topographic and bathymetric surveys:

Topographic survey along the shoreline of NSD zone, from the estuary of Kalaklan river to Boton Wharf East:	100 ha.;
Bathymetric survey along the shoreline of NSD zone, from the estuary of Kalaklan river to Boton Wharf East:	350 ha.;
Topographic survey at Binictican area and the north east shoreline of SBIA from Boton Wharf West to Cubi Pt.:	85 ha.;
Bathymetric survey at Cubi Pt. offshore:	100 ha.;
Bathymetric survey along the north east offshore of SBIA from Boton Wharf West to Cubi Pt.:	68 ha.

Based on the survey results, topographic maps in each area have been produced in scales of 1:2,000 and 1:5,000. The bathymetric surveys were carried out using an echo sounder at an interval of 50 m along lines of 500 m long towards offshore. Bathymetric maps have been created in a scale of 1:5,000 and superimposed on the topographic maps.

(2) Meteorology

Throughout the Philippines, the southwest monsoon winds prevail from June to mid-October, which bring warm, moist and unstable tropical air producing mostly cloudy to cloudy skies as well as intermittent showers and scattering thunderstorms. The annual rainfall at Cubi Pt. in Subic Bay reaches 3,386 mm. 78 % of this rainfall has been recorded during a five month period of the "wet" south-west monsoon season. From mid-October to May, the climate gradually changes to "dry", where northeast monsoon winds prevail. Daily average temperature varies between the lowest 26 °C in January and the highest 33°C in May. Differences of about 15 °C have been recorded between the minimum and maximum temperature in a day. A wind rose has been created based on the data collected at Subic Bay International Airport (SBIA), which clearly shows the predominant wind directions of north east or north-north east and south west.

(3) Oceanography

A continuous tide observation for 36 hours was conducted in July 1998. It has been

observed that the tide in Subic Bay is 20 to 30 cm higher than that of Manila South Harbour predicted from the tide table. The following tide levels have been established:

Highest High Water Level (HHWL):	+1.70 m
Extreme High Water Level (EHW):	+1.37 m
High Water Level (HWL):	+1.20 m
Mean Higher High Water Level (MHHW):	+0.91 m
Mean High Water Level (MHW):	+0.87 m
Mean Seawater Level (MSL):	+0.46 m
Mean Low Water Level (MLW):	+0.10 m
Mean Lower Low Water Level (MLLW):	±0.00 m
Low Water Level (LWL):	-0.20 m
Design Low Tide Level (DLT):	-0.35 m
Extreme Low Water Level (ELW):	-0.46 m
Lowest Low Water Level (LLWL):	-0.52 m

Current observation was conducted at some points in Subic Bay during the Site Survey in 1998. A continuous current observation for 15-day period was conducted at the mouth of the Bay. At the other points, the current was recorded for 25 hours. From these observations, it has been understood that the regular (residual) current inflows on the west side and outflows on the east side at the mouth of the Bay. Inside the Bay, an anti-clock current pattern was observed during both ebb and neap tides. Velocity of the current is less than 10 cm/sec inside the Bay.

An wave hind-cast has been conducted based on the wind and typhoon data collected. For normal condition, the wind rose created in the Study from the records at SBIA were analyzed and used for the hind-cast. For extreme condition, the past typhoon data were used for the numerical simulations on the hind-cast. Generation of the waves both inside and outside of the Bay has been considered in the evaluation. Wave height at eight locations in the Bay was evaluated in order to assess the calmness for port operation. The results from the hind-cast reveals that the maximum wave height in extreme condition reaches about 2 m at Agusuhin Pt. in Redondo Peninsula and overall calmness in normal condition is well secured at about probability of the exceedance under 5 % for the wave height greater than 0.3 m.

(4) Geotechnical Conditions

Sub-soils around Subic Bay are mostly volcanic origin of andesite, basalt and agglomerates supplemented by coralline materials from relatively fringing reefs. These soils are considered to be mainly generated by a volcanic mudflow in late tertiary of early quaternary periods, 10 to 12 million years ago. This mudflow containing andesite boulders was transported to the coastal area, where marine sand/silt materials form the overlying deposits. Mixture of the andesite and shallow marine materials through sedimentation and consolidation,

eventually constitute a hard stratum of conglomerates and sand/silt stones.

Quite a bit of borings and soil exploration have been carried out inside the Bay, particularly in vicinity of the existing port facilities, whereas only little information is available for the offshore areas outside the NSD zone. The Study Team, considering this, conducted a series of soil investigations consisting of thirteen offshore and two on-land borings in the Bay. During these boring works, Standard Penetration Test (SPT) and disturbed/undisturbed sampling for laboratory tests were also conducted. Physical and mechanical properties of the samples were obtained, including gradation, specific gravity, consistency, i.e. Atterberg limits, undrained compressive strength and consolidation characteristics.

Subic Bay is located near the Manila Trench lying west of the Luzon Island, characterised by the North Luzon Ridge and North Luzon Trough forming a focal mechanism of strike-slip type. There are some active faults generating earthquakes such as Cagayan, Digdig, and Lubang faults. Accordingly, the PPA manual categorized the area in the seismic zone of 3, where regional seismic coefficient is 0.15, the largest in the criteria.

(5) Siltation and other Coastal/Shoreline Characteristics

No significant siltation has been identified in Subic Bay, other than some estuaries of the rivers affected by the eruption of Mt. Pinatubo, where sea/river beds were covered with the volcanic ashes/sands. As a whole, sufficient water depths around the existing port facilities have been maintained since US naval period and no maintenance dredging has been taken place.

As a part of the field investigations, seabed sampling at twenty-six points and their gradation analysis were conducted. In vicinity of the estuary of River Kalaklan, the seabed is covered with silty soils of "Lahar" origins discharged from the river. Along the shoreline of Subic Bay, other than estuaries of major rivers, sandy soils are predominant on the seabed.

In relation to the above discharge, measurement of the flow velocity was conducted at the mouths of River Kalaklan, Kalalake, Malawaan and Boton from 15 to 17 July 1998. As precipitation during the period was minimum, the velocities observed were less than 0.20 m/sec resulting in the maximum discharge of 31.8 cu.m/sec measured at Kalaklan River. Due to insignificant discharges from the rivers, no suspended sediments or wash-loads were identified in the absence of turbulent flows.

(6) Source of Reclamation/Fill Materials

As a part of the natural condition surveys, source of materials for the possible reclamation/fill work has been searched in the surrounding. Within SBMA, a quarry site at

Mt. Maritan behind the POL Pier has supplied filling and aggregate materials for construction. The quarry is currently operated by a private firm and is said to have more than one million cubic meters of its reserve. This site will be an appropriate quarry site for the port development in this study.

In addition to the above on-land quarry site, there are some shoals in Subic Bay, where good reclamation materials are obtainable. Both Caiman and Carasco Shoals near Cubi Pt. will be used for such sources by dredging.

There are some other possible quarry sites in Redondo Peninsula, Agusuhin Pt. for example. It is, however, understood that these sites have not been used as quarries and will require basic provision of the facilities for operation.

3.2 Natural Environmental Conditions

The present natural environment at and around the project site is as follows:

- (1) Air quality data from the World Bank Environmental Baseline Study in 1995-1996 and EIA Studies in 1998 revealed that the total suspended particulates (TSP), nitrogen dioxide (NO₂) and sulfur dioxide (SO₂) were all below the DENR ambient air quality standards.
- (2) The coastal waters of Subic Bay are generally in good condition. Most of the water quality parameters are in conformance with the applicable DENR Standards for Coastal and Marine Waters Class SB.
- (3) The downstream portions of the rivers draining into the Bay are generally within the prescribed DENR Criteria for Fresh Waters Class C and still in good condition.
- (4) The water column and bottom sediments of Subic Bay were found to contain heavy metals. Levels of heavy metals in water were way below the DENR standards. However, high levels in bottom sediments were detected, generally higher than the sediment screening values developed by the U.S. National Oceanic and Atmospheric Administration (NOAA).
- (5) Except for the mangrove stands in the mouths of Binictican River and Boton River, no other sensitive biological communities (SBC's) are found in the proposed area for port development. As a whole, coral reef resources inside the Subic Bay are found in Triboa Bay, Camayan Point, around the Grande and Chiquita Islands and along the east coast of Redondo Peninsula (from Nagyantok down to Sampaloc Point). Small patches of scattered or scanty live coral colonies also occur at the tip of Cubi Point. Seagrasses can be found around the Grande Island, Triboa Bay and at several sites but in isolated patches along the east coast of Redondo Peninsula.

(6) Basically, there are not many natural resources other than fishery is existent around Subic Bay. Land and water around the area is already urbanized and not much collection of plants and/or sea products is available. Fishing around the project site, either by sports or occupational fishermen, is not presently allowed by SBMA authorities.

3.3 Social Environmental Conditions

- (1) Present socio-economic environmental conditions in five (5) municipalities around Subic Bay are analyzed.
- (2) The most important social and economic impact on the area around Subic Bay in recent years was the turning back of the U.S. Subic Naval Base in 1992.
- (3) It caused a lot of loss of job opportunities and population thereof, especially at Olongapo city where the largest accumulation of urban facilities were recognized.
- (4) Within the SBMA area, there are virtually no residents, adverse socioeconomic impact in normal sense in the Subic Bay area is not applicable for the Proposed Port Development.

It is recommended, from the viewpoint of the social environment, to plan and implement the development project(s) in so as to promote increase of job opportunities and income level of local residents.

3.4 Port Facilities

The existing Port facilities are currently handling containers, break-bulk (general cargo) and liquid bulk (petroleum) and are functionally divided into Ship Repair Facility (SRF zone), Navy Supply Depot (NSD zone) and Cubi Point, including Camayan and Nabasan Wharves.

There are four (4) sheds and ten (10) warehouses with a total surface area of 70,000 sq.m. Most of them are located in the NSD zone.

Most of the back up yards for the present facilities are not appropriate for container and general cargo operations, mainly due to lack of sufficient spaces behind the wharves and piers. Large yard area for possible cargo operation is only available in NSD zone.

According to the diagnostic investigations of the existing port facilities, the following structures need complete rehabilitation for the cargo operations:

- ① Alava Original Wharf;
- ② The fendering system of Bravo Wharf;
- ③ The dolphin structure of POL Pier;
- ④ Leyte Wharf.

3.5 Present Port Activities

(1) Cargo Traffic

In 1997, Subic Bay Freeport handled 23,417 TEUs of containerized cargo, 456,732 tons of non-containerized cargo and 2 million tons of petroleum products.

The cargo handling volume increased dramatically from 1993 to 1995 as port activities were brisk. In fact, these volumes have been decreasing slightly (refer to Table 3.5-1).

Table 3.5-1 Cargo Volume Handled at Subic Bay Freeport

	1993	1994	1995	1996	1997
Containerized Cargo Unit : TEU					
Foreign Import	277	4,247	13,631	9,589	8,822
Foreign Export	0	460	2,362	2,016	613
Domestic Outbound	-	-	-	-	23
Transshipment	270	9,488	6,944	14,260	4,860
Empty (IN)	0	0	775	1,293	811
Empty (OUT)	0	0	7,793	6,593	8,311
Total	547	14,195	31,505	33,751	23,417
Non-containerized Cargo Unit : Tons					
Foreign Import	29,915	30,358	155,880	368,731	389,289
Foreign Export	0	672	4,988	4,085	1,181
Domestic Inbound	-	-	-	-	12,281
Domestic Outbound	-	-	-	-	24,527
Transshipment	9,911	26,055	116,604	56,765	29,454
Total	39,826	57,085	501,711	484,735	456,732
Petroleum Products Unit : 1000 tons					
Foreign Import	444	673	1,055	1,469	1,115
Foreign Export	333	369	689	1,110	413
Domestic Outbound					480
Total	777	1,042	1,744	2,579	2,008

Source: Statistic Data, Seaport Department, Subic Metropolitan Authority

(2) Calling Vessels

The number of vessels calling Subic Bay Freeport peaked in 1995, then gradually decreased until 1997. The trend of ship calls coincides with the total cargo volume handled at the SBF (refer to Table 3.5-2).

Table 3.5-2 Ship Calls at Subic Bay Freeport

	1993	1994	1995	1996	1997
Unit : No. of Ship					
Domestic Vessel	215	580	902	749	825
Foreign Vessel	127	909	1,104	1,181	851
Total	342	1,489	2,006	1,930	1,676

Source: Statistic Data, Seaport Department, Subic Metropolitan Authority

(3) Cargo Handling System

The container ship calling frequency is 16 times/month (half of these ships conduct either loading or unloading only). The calling container ships must have ship-gears and the origin/destination ports are limited to Kaoshung and Singapore, because there are no cranes nor adequate container facilities.

Container and general cargo handling is carried out in 2 shifts with the following time table:

1st shift	8:00-20:00 (lunch break 12:00-13:00)
2nd shift	20:00-8:00 (meal break 24:00-1:00)

3.6 Port Development, Management and Operation

(1) Philippine Ports Authority (PPA)

To clarify the institutional status of SBMA in terms of development and privatization, the interpretation of the policy and regulations of PPA will become one of the most important questions.

(2) Managerial Status of SBMA as stipulated in RA No. 7227

in terms of the theory of organization, SBMA has almost all rights of doing any business and this is the strong point as well as the weak point of SBMA. It is necessary for SBMA to select its own field of activities including its duties and responsibilities out of the authorized rights defined in RA No. 7227.

(3) Present Issues of Management and Operation of SBMA

SBMA has five important issues to take action in regard to the Port Development, Management and Operation.

1) Review of Institutional Framework and Function

SBMA has never been defined as a port management body, but defined only as a self sustaining Government Owned and Controlled Company (GOCC), with many functions and responsibilities including a port management as one of them. It is necessary for SBMA to review and streamline the organization from the view point of the new charter to survive the hard competition among world ports.

2) De-Regulation of the Port Usage Procedure

SBMA has some port procedures to deregulate or to simplify to transform from an ex-US Naval Port to a commercial port.

3) Demarcation of the Boundary of SBMA with the Customs Service

Because of the expression of RA 7227, Section 12 (h), it is observed that SBMA feels full responsibility of securing cargo even in the field of the Customs.

4) Demarcation of the Boundary of SBMA with Private Sector

It will become necessary in the near future for both SBMA and users to leave the businesses to the direct negotiation of the concerned parties.

5) Facility Management Contract/Facility Lease Contract

It is typical to separate ownership and usage of a facility. Facility is usually consigned to an operator either by a facility management contract or a facility lease contract.