

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

BOARD OF INVESTMENT
THE PEOPLE'S REPUBLIC OF BANGLADESH

**THE STUDY ON INDUSTRIAL DEVELOPMENT
OF
CHITTAGONG REGION
IN
THE PEOPLE'S REPUBLIC OF BANGLADESH**

FINAL REPORT

VOL.2

**IMPLEMENTATION PLAN OF
CHITTAGONG SPECIAL ECONOMIC ZONE PROJECT**

September 1995

**PACIFIC CONSULTANTS INTERNATIONAL
NIPPON KOEI CO., LTD.**

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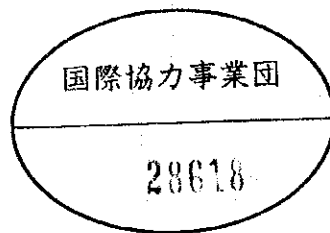
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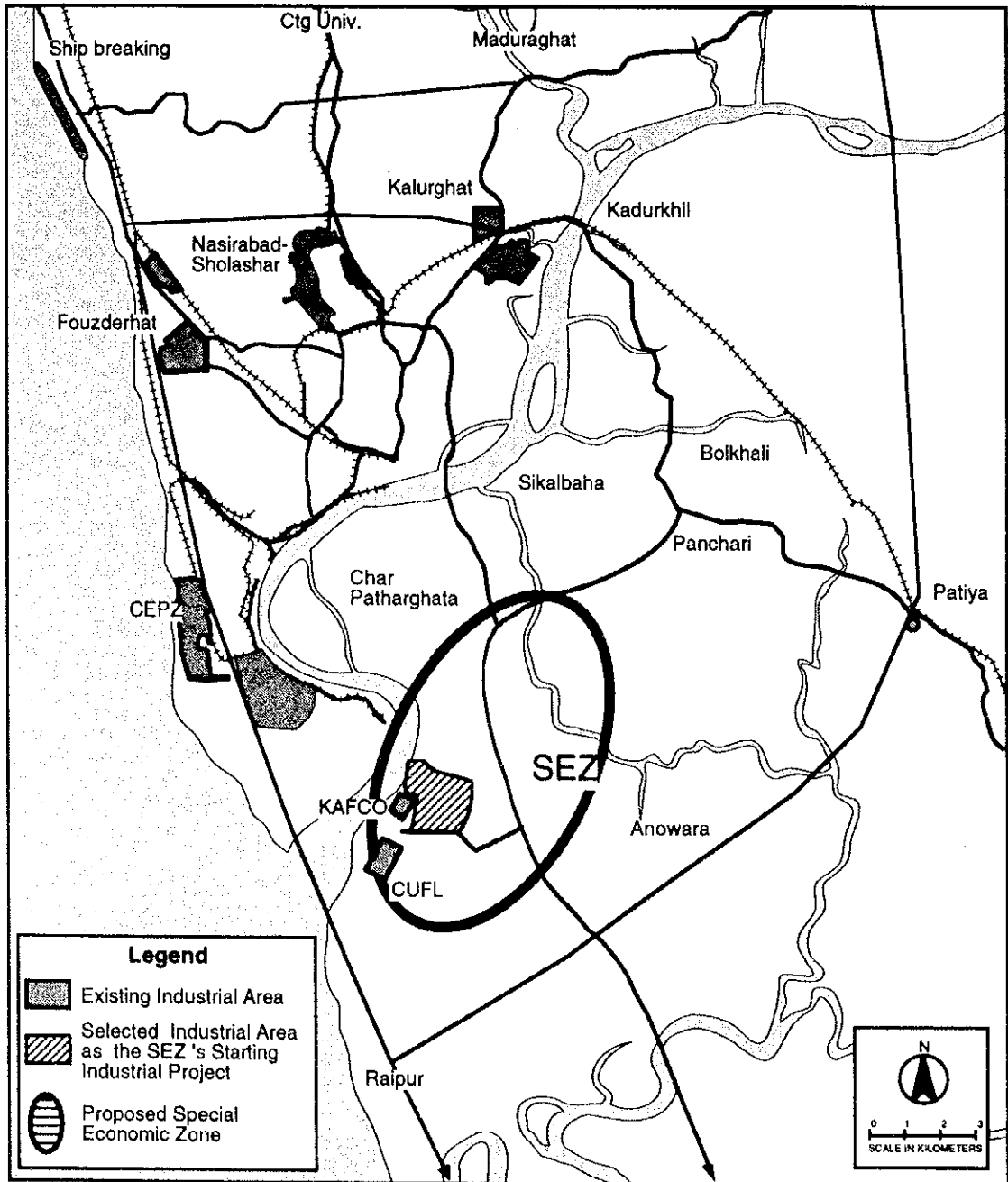
September 1995



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The following foreign exchange rate is applied in the study:
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(as of November 1994)



LOCATION OF THE PROPOSED SEZ AND THE INDUSTRIAL ESTATE PROJECT



PERSPECTIVE VIEWS OF SEZ

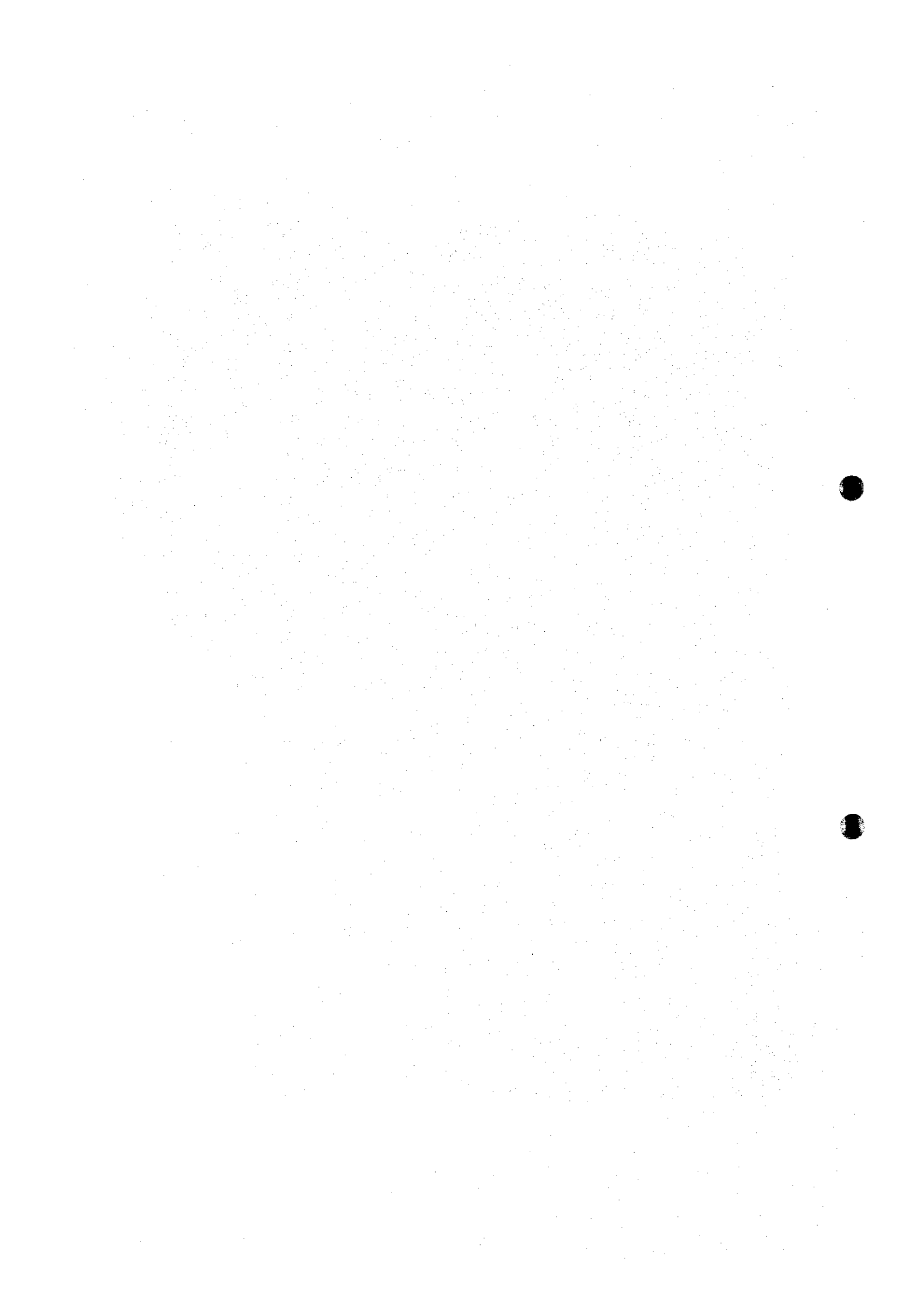


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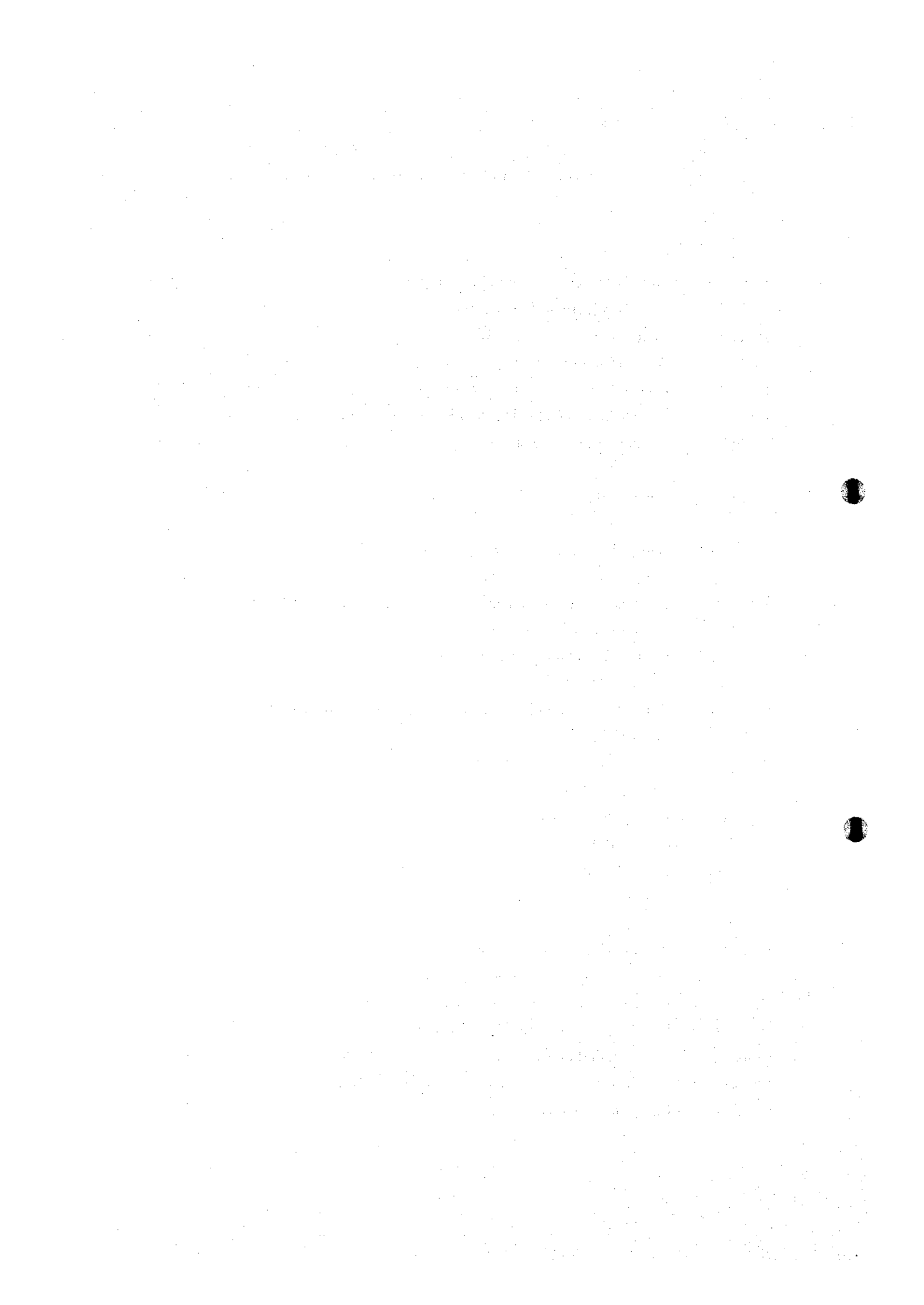
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ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
ADP	Annual Development Program
APO	Asian Productivity Organization
ASEAN	Association of South East Asian Nations
BANSDOC	Bangladesh National Science and Technology Documentation Center
BASIC	Bank of Small Industries and Commerce Bangladesh Ltd.
BCAS	Bangladesh Center for Advanced Studies
BCIC	Bangladesh Chemical Industries Corporation
BCSIR	Bangladesh Council for Scientific and Industrial Research
BEPZA	Bangladesh Export Processing Zone Authority
BG	Bank Guarantee
BIDA	Bangladesh Industrial Development Authority
BITAC	Bangladesh Industrial Technical Assistance Center
BIWT	Bangladesh Inland Water Transport Authority
BIPP	Bangladesh International Production-linkage Polis
BMDC	Bangladesh Management Development Center
BMRE	Balancing, Modernization, Replacement and Expansion
BOI	Board of Investment
BOO	Build-Own-Operate
BSB	Bangladesh Shilpa Bank
BSC	Business Support Center
BSCIC	Bangladesh Small and Cottage Industries Corporation
BSRS	Bangladesh Shilpa Rin Sangstha
BSTI	Bangladesh Standard and Testing Institute
BTMS	Bangladesh Transportation Modeling System
BWDB	Bangladesh Water Development Board
CAAB	Civil Aviation Authority Bangladesh
CBD	Central Business District
CCC	Chittagong City Corporation
CCCI	Chittagong Chamber of Commerce and Industry
CDA	Chittagong Development Authority
CD Co	Chittagong Development Company
CEPZ	Chittagong Export Processing Zone
CIC	Chittagong Investment Corporation
CIDP	Chittagong Industrial Development Plan

CMM	Chittagong Merchandise Mart
CTGD	Chittagong District
CWASA	Chittagong Water Supply and Sewerage Authority
DCF	Domestic Capital Formation
DFI	Development Finance Institutions
DTT	Deloitte Touche Tohmatsu International
EPB	Export Promotion Board
EPZ	Export Processing Zone
ES	Expert System
EU	European Union
FA	Foreign Assistance
FDI	Foreign Direct Investment
FY	Fiscal Year
GATT	General Agreement on Trade and Tariffs
GDP	Gross Domestic Product
GNP	Gross National Product
GOB	Government of Bangladesh
GRDP	Gross Regional Domestic Product
GSP	General System of Preferences
HRD	Human Resource Development
ICSTE	International Center of Science, Technology and Environment
IES	Industrial Estates
IIDP	Industry Related Infrastructure Development Plan
IPDP	Industrial Park Development Plan
IS	Import Square
ISAP	Industrial Special Allocation Plan
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
JOIN	JETRO Overseas Investment Cooperation Scheme
L/C	Letter of Credit
LFS	Labor Force Survey

mgd	Million gallons day
MITI	Ministry of International Trade and Industry
MOA	Ministry of Agriculture
MOC	Ministry of Communication
MOF	Ministry of Fisheries
MOF	Ministry of Finance
MOI	Ministry of Industry
MOJ	Ministry of Jute
MOST	Ministry of Science and Technology
MOT	Ministry of Textiles
MPLs	Manufacturing Public Corporations
MRD&C	Ministry of Local Government, Rural Development & Cooperative

NAFTA	North American Free Trade Area
NGO	Non Governmental Organization
NIDP	National Industrial Development Plan
NIEs	Newly Industrialized Economies
NMST	National Museum of Science and Technology
NOPI	National Oceanographic Research Institute
NPO	National Productivity Organization

OECF Overseas Economic Cooperation Fund

p.a.	Per annum
PC	Public Corporations
PCI	Pacific Consultants International
PCO	Public Call Office
PHED	Public Health Engineering Department
PMO	Prime Ministers Office

RADP Research and Development Policy

SCI	Small and Cottage Industries
SEZ	Special Economic Zone
SIDR	Special Industrial Development Region
SPC	System of Preferential Credit
SPM	Suspended Particle Matter

UNCHS United Nations Center For Human Settlements

USF **Unclassified State Forests**

VAT **Value Added Tax**

WASA **Water Supply and Sewerage Authority**

WHO **World Health Organization**

WTO **World Trade Organization**

**CHAPTER 1:
GENERAL**

CHAPTER 1 GENERAL

1.1 Project Goal and Objectives

The overall short to medium term goal of the Study is to advise on the establishment of a Special Economic Zone (SEZ) at Chittagong. For the purpose of clarification, a SEZ may be defined as a specific economic development area with a high quality physical environment where machinery and raw materials can be imported, stored, processed, manufactured and exported, with the benefit of a liberal regime free of taxes, duties and trade restrictions. Such a Zone will typically be managed by a dedicated Zone Authority and will usually have a range of special incentives involving tax holidays, high standards of infrastructure, good international transport communications, streamlined procedures for customs clearance, streamlined bureaucracy for project approval and permission for the operation of foreign currency accounts.

Within this context, the primary objectives of the Study required the identification of:

- The types of economic and financial conditions required for the successful inception and development of the zone
- The legislative, fiscal and other incentive requirements
- The organisational requirements
- Planning and physical development needs
- The appropriate funding strategy
- The necessary marketing and promotion initiatives
- A detailed strategy for human resource development (e.g., special training/retraining requirements)
- A review of prospects for developing the support infrastructure
- The role of a SEZ in the context of the economic and social development of the Chittagong economy
- A practical programme on SEZ development, management and promotion
- A set of guidelines and proposals for the development of a SEZ in Chittagong, and
- Proposals on how the SEZ can be strategically positioned as a growth pole initially for the Chittagong region and eventually Bangladesh as a whole.

1.2 Approach to the Study

A key feature of the concept is aimed at introducing and promoting a consensus-based approach to the development of a SEZ in Chittagong. The journey to sustainable economic development is considerably shortened if a meaningful consensus can be achieved. The best consensus is that which allows for many viewpoints, focused on a common goal. In addition to being an essential pre-condition to the attraction of foreign investment, consensus and the spirit of co-operation and partnership which it engenders have proven to be essential in the development of an enterprise culture which has been proven to foster growth in many of the Asian states and elsewhere.

1.3 The Existing Promotional Structures

The lack of any outstanding competitive advantage in Bangladesh's current economic environment makes clear that the task of pro-actively promoting foreign investment in Bangladesh can be seen to be complex, arduous and intimidating to any promotional agency. It also makes clear that the promotional role in the development of the Bangladeshi economy is, without exaggeration, fundamental.

The key ingredient for success will be the ability of such agencies to adopt a pro-active stance, pushing for continued evolution and proper implementation of a favourable investment climate in Bangladesh.

The promotional agencies must become the catalyst for the whole process. Nothing less will suffice for the actual impact to begin to meet the immense development challenge that the country faces.

1.3.1 The Need for Effective Promotional Structures

An organisational structure is the form under which strategies are pursued and resources are harnessed so that goals, objectives and outputs may be achieved. As such, structures are the means towards an end. The value of a given structure, in terms of harnessing resources effectively and impacting attitudes and work performance, are major concerns in any organization development process. The existing structures in which the Board of Investment (BOI) and the Bangladesh Export Processing Zone Authority (BEPZA) operate must be considered in the light of the task facing the country. In examining and developing structures regard has to be taken of the following factors among others:

- The BOI/BEPZA's relative inexperience in promotional activities and their lack of exposure to international best business practices
- The need to harness and organise resources if they are to achieve their objectives
- The need for effective decision making and information flow processes inside and outside of both organizations
- The need for clarity of roles and to avoid duplication of scarce resources and effort between the organizations involved in investment generation
- The need to develop a pervasive, positive "can-do" culture in both organizations and other relevant government ministries (departments)
- The need for clarity of job activities and expected performance standards if sustainable good performance is to be achieved, and
- The need to develop "best international practice" procedures and expertise in all areas of investment promotion activity.

1.3.2 Outside Influences on Promotional Structures

The BOI/BEPZA's capacity to develop a "best-business practice capability" in investment promotion can be constrained by the actions and attitudes of other key governmental institutions on the investment stage and their ability to influence their actions. Putting in place proposals to radically overhaul, restructure and re-skill the BOI/BEPZA would be ineffective, if they continue to operate in an unreasonable, regulatory-driven governmental environment.

To achieve their mission the promotional agencies must develop a role and a capacity for acting as a catalyst for desirable change in key aspects of the investment environment in Bangladesh. They must ensure a primacy for foreign investment on the political and economic agendas. All investment promotion related activities must be co-ordinated and appropriate standards developed and maintained in all areas of the public sector in dealing with potential investors. The country's ability to perform these tasks will be determined in part by the positioning of the investment promotion activities and the "clout" afforded to it within the government system.

This in turn will be influenced by:

- (a) Its reporting relationship with the Government system, and
- (b) Its operational relationships with other institutions.

1.3.3 The Existing Promotional Structures

BOI/BEPZA seeks to perform in a very competitive market where "the buyers" are all commercially focused and the competitors are fighting for an investment pool much smaller than the needs of all the competitors combined. Consequently, in order to succeed their structures must be market oriented and designed to facilitate performance. Above all else the structure must permit an action oriented management style to flourish without the inhibiting influence of traditional bureaucracy or undue political interference.

Both promotional agencies have different reporting structures. The BOI is part of the government system or civil service, while BEPZA was set up under the Bangladesh Export Processing Zones Authority Act 1980 and is a body outside the direct government system. The BOI reports through a Board chaired by the Prime Minister, while the BEPZA reports through a Board of Governors also chaired by the Prime Minister. The objectives of both organizations are the same, i.e. the promotion of Bangladesh for investment, but there would not appear to be any co-ordination or even communication between either organization.

Neither organization as presently constituted has any direct or explicit role in the development and formulation of government policy on foreign investment. They should have as they are the eyes and ears of government in the investment community. A structure is needed therefore whereby both can provide the information they have accumulated that is relevant to policy, and participate in policy making.

Both organization's operational flexibility to respond to new situations and access the required calibre and quantity of human and financial resources are critical ingredients for successful investment promotion. Their capacity to meet these conditions while remaining part of the formal government structure is limited for many reasons. Extreme budget stringency constrains the resources available from the government, particularly in the case of the BOI (BEPZA generates some limited financial resources of its own from its property holdings). The salary structures do not permit either organization to hire people with the kind of investment promotion skills that are needed. Finally, governmental organizations are not typically flexible nor sufficiently autonomous to chart policies and programs that will be sustained long enough to achieve results.

In both organizations regulation and process should be replaced by a focus on targets and how to achieve them as quickly as possible. The targets must be a function of the requirements of the market relative to what Bangladesh can offer. The means of their achievement must be related to the needs and prejudices of those who can facilitate or frustrate their achievement, namely, potential investors. The processes are not at all administrative and are much more

concerned with the analysis of markets and the dynamics of human behaviour. In a phrase the whole focus of the promotional effort must be on the "customer" and his or her needs.

1.3.4 The Need for New Structures

Several governments have attempted to deal in part with these problems while still keeping their foreign investment agencies within the confines of the central government structure. For example, some governments have obtained additional resources outside the government budget and have used them to contract with individuals or firms that can provide the skills required. They sometimes even contract out whole functions. There are problems of organization and control with these approaches, however, and at best they provide a temporary and inadequate solution to the problems outlined above.

A number of governments have found a better solution by establishing quasi-government agencies to conduct their investment promotion, screening and monitoring programs. Quasi-government agencies typically have their own boards of directors appointed for a fixed period (usually five years) and report through the Board to a Minister, without being part of the ministry. They recruit staff outside of the regular public sector pay scales as required. Their boards are usually composed of public and private sector members. The President or Chief Executive is appointed on a fixed term contract by the Minister on the recommendation of the Board.

The fundamental difference between this type of structure and those in Bangladesh is that authority to develop and implement policy in foreign investment, including decision-making, is given down to a Board from the Minister and most importantly it has continuity and stability at Board and senior management level.

Bangladesh should seriously consider following the lead of countries such as Singapore, Malaysia, Scotland and Ireland, who have adopted this quasi government approach. The long term benefits in terms of continuity of policy, flexibility of response, ability to attract and maintain the correct skills at executive, management and Board levels, clarity of reporting links to the Governmental system and effective representation at Cabinet via the responsible Minister could be substantial.

1.3.5 Recommended New Institutional Structures

As discussed earlier, there are substantial benefits associated with quasi governmental structures, in terms of freedom and flexibility of operation, continuity of policy and ability to attract and retain key personnel. To begin in putting together such a structure in Bangladesh and to start the essential process of rationalisation and co-ordination between the development/promotional agencies it is recommended that, at the appropriate time, the existing Export Processing Zones in Dhaka and Chittagong should be revitalised as SEZs.

CHAPTER 2:
SITE PLANNING & INFRASTRUCTURE

CHAPTER 2 SITE PLANNING AND INFRASTRUCTURE

2.1 Selection Of Industrial Estate Development Sites

2.1.1 Condition of the Site

The Chittagong City Corporation (CCC) has proposed two new industrial sites, one in the Kalurghat area and the other in the Northern part of the city, near the Chittagong University. The Board of Investment (BOI) has proposed six new industrial sites, all of which are located on the East Bank of Karnaphuli River. Figure 2.1 shows both, the location of the existing and all newly proposed industrial sites. Table 2.1 identifies the size of the proposed site areas.

Table 2.1 Area of Proposed New Industrial Sites

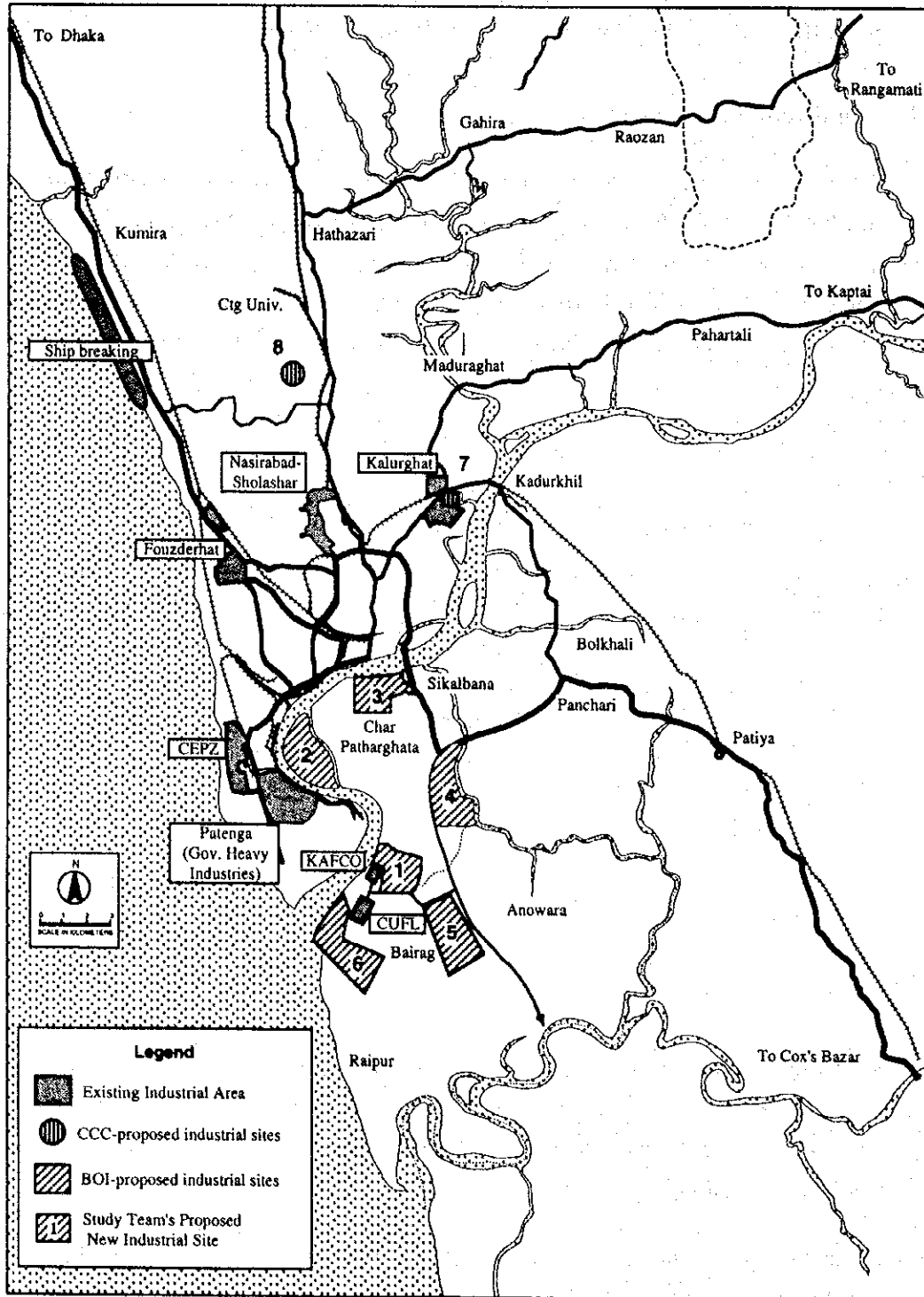
Site No.	Site Area (ha)	Location
1	460	East bank of Karnaphuli
2	540	do
3	400	do
4	400	do
5	400	do
6	400	do
7	5	West bank of Karnaphuli
8	80	do

The Study team has evaluated the eight areas as an industrial development site through field survey. The eight sites were apparently not selected based on a future land use plan and a structure plan of the Chittagong District. The sites seem to have been selected because of easiness of land acquisition.

The Study team believes that sites for industrial development should be selected based on the overall development plan including future land use and structure plan of the Chittagong District.

The results of the evaluation may be summarised as follows:

Figure 2.1 Map of Existing and Planned Industrial Sites



(1) East Bank Of Karnaphuli River

The East side of Karnaphuli river has not been developed much yet. The area lacks in basic infrastructure such as roads, water, sewage and so on.

Because of insufficient communication with the West side of the River, the area has remained less developed although the 1961 plan stated some industrial use on the East side.

The area has plenty of good farmland. However, these farmlands are prone to flood not only by cyclone but even in the ordinary rainy season due to its inadequate flood control measures.

Each of the six sites proposed by BOI is land of more than 400 ha in area. Site No. 1 is land from which KAFCO cut earth for construction of their plant. The land condition is good, because it is higher than the adjacent areas. On the South of the site, the CUFL road runs East-West and links up to the regional road and then the national road.

Site No. 2 is low lying land located between the Karnaphuli River and a channel. This site can be accessed by ferry. There is no road connecting the site with the national road and it would be necessary to build a new road to link the site with the national road.

Site No 3 is located right on the Karnaphuli at the foot of Karnaphuli Bridge. The site is West on the national highway and facing the river. This site has good access of road and ferry among the six proposed sites.

Site No. 4 is near the cross-section of the national and regional roads on the East side. It has good access to the roads among the six sites. The site is good farmland (paddy field).

Site No. 5 is located on the North of the intersection of the CUFL road and the regional road. To the South of the site is good farmland and to the North is a hill area.

Site No. 6 is on a wet land located to the north of KAFCO and CUFL and the site faces the Karnaphuli River. The site can be accessed by the CUFL road.

(2) West Bank Of The Karnaphuli River

Both sites proposed by CCC are in the growth direction of the City and near the areas, which can provide urban services, functions and infrastructure.

Site No. 7 is an area adjacent to the North of the Kalurghat industrial area. It is unutilized land linked with the main roads.

Site No. 8 is located on flat land around 2km to 3km West of Chowdharyhat and around 12km to 13km North from downtown. A hilly area stretches from East to West along the East of this site.

2.1.2 Selection of the Site

In conclusion of the evaluation of the proposed new eight industrial sites, the following may be summarised:

- It will require quite substantial investments into infrastructure (roads, drainage, power, water, housing and so on) to develop any of the sites on the East side of the Karnaphuli River
- All sites but for No.4 and 5 will need flood control and improvement of soft soil condition. Particularly, sites No. 2,3 and 6 require protection against surge caused by cyclones
- Sites No. 1 and 4 would be selected in the short run, because of their accessibility to the national road system, relative easiness of land arrangement and flood control
- Development of the two sites on the West side has few problems in access to infrastructure, easiness of land arrangement and safety from natural disaster. The Study team recognises these are potential areas for industrial use. However, the sites are relatively small and may limit the contents and scale of development. In addition, there seem to be other potential areas on the West side of the River aside from the two proposed sites
- Selection of sites suitable for development must also be consistent with the future picture and long-term master plan of the Chittagong District, regardless of the length of development period, contents of development and scale of development.

2.1.3 Actual Situation Around the Proposed Site

For the general natural and social conditions, refer to Chapter 11 of this report.

(1) Laws and regulations

Quarrying soils from the hills in the Proposed Site (called the Site) is prohibited at present. However, the hills were already flattened in the vicinity of the KAFCO fertilizer plant on the Southern side.

(2) Land possession and land prices

Most part of the land of the Site is owned by the Government. Therefore, it is considered easy to acquire the land in its entirety. The market price of the land was estimated at approximately 200,000Taka per acre in 1990.

(3) Roads

There is a road (approximately 9 m in width) traversing from East to West on the Southern perimeter of the Site that links to the fertilizer plant. This road will be used as the main access road to the Site. This road is linked to the Chittagong Anwara road, a provincial road, on the Eastern side of the Site. The provincial road runs from North to South linking to the Chittagong City via the Karnaphuli Road Bridge and also linking to the new Cox's Bazar connecting road approximately 12 km north of the City. Along the Western side of the Site, there is a road traversing from North to South which links to the Marine Academy.

(4) Harbor

The existing jetties for the CUFL and KAFCO fertilizer plants are located at the bank of the Karnaphuli. Another jetty is also located on the Western side of the Marine Academy, which is used for the ferry commutation across the Karnaphuli.

(5) Water supply

There is no water supply by CWASA over the Southern bank of the Karnaphuli including the Site. Water supply will be needed in the future if extensive industrial development is to be executed, but so far no piped water is available in the area.

CUFL independently collects the surface water from the Karnaphuli and KAFCO also independently collects the groundwater from the deep wells located in the Site. KAFCO has three deep wells (approximately 200 m in depth) for its own use. There is a water supply pipe for CUFL running along the road on the Southern side of the Site.

(6) Gas

A 16" main gas pipeline traverses from East to West across the Karnaphuli on the Southern side of the Site. A 6" branch pipe traverses from North to South on the Western side of the Site and its off-take facilities are located in the vicinity of the Marine Academy. Pipes can be installed to major gas consumers at the BGSL's own expense.

(7) Power

A 33 kv electrical line extends from North to South on the Western side of the Site.

The present conditions in and around the Site are shown in Figure 2.2 and Figure 2.3.

Figure 2.2 Existing Situation of Infrastructure

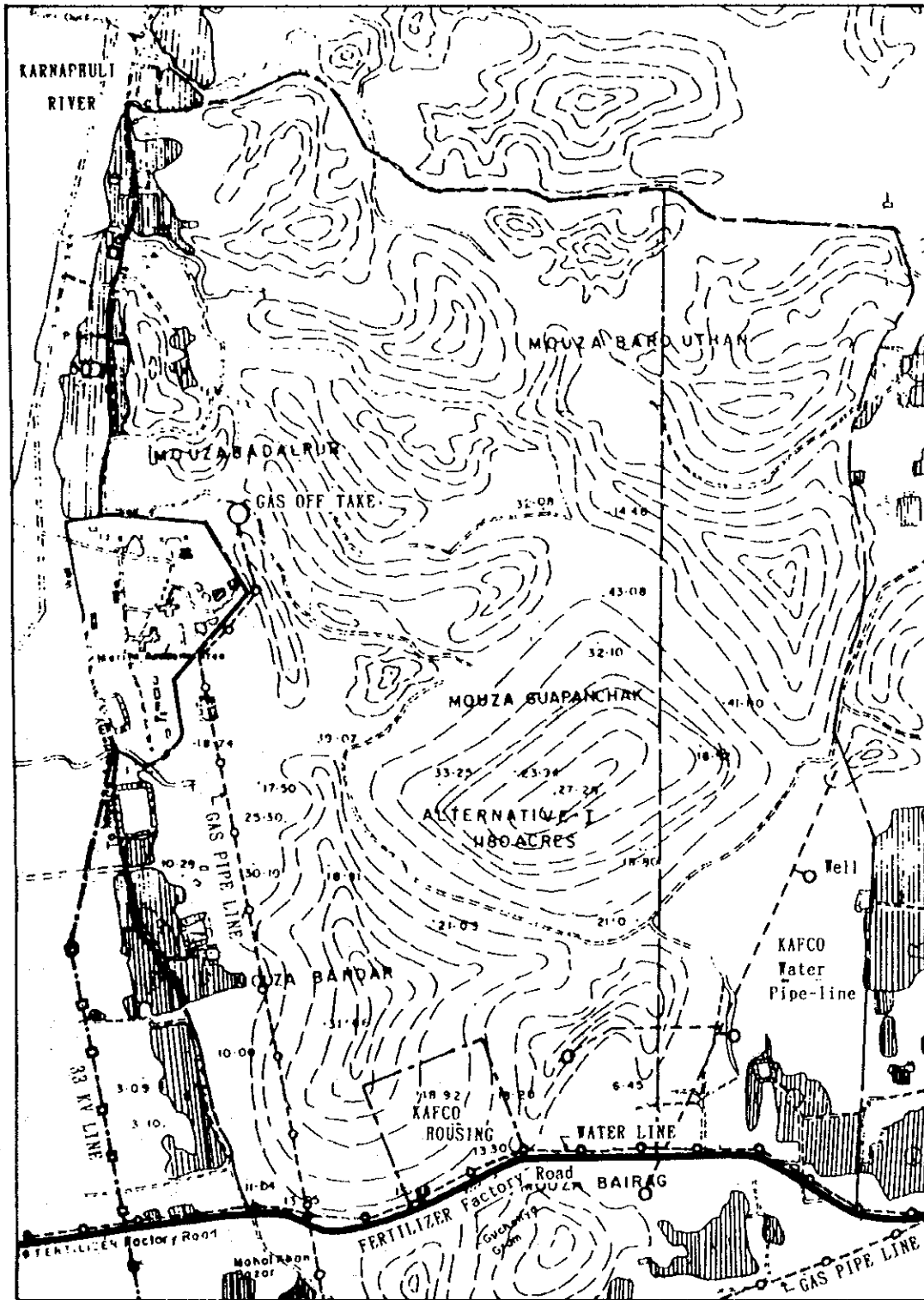




Figure 2.3 Road Network

2.2 Study on Planning Conditions

2.2.1 Basic Policies for the SEZ Services

The following basic policies will be introduced for the SEZ services:

- To create a comfortable and innovative environment, which provides comfortableness and a sense of security for work
- To provide an environment filled with plentiful green by green belts and parks in order to minimize adverse affects on the rural landscape with rich farmland
- To establish center facilities (called "the Center Area") to cater for the SEZ enterprises for convenience of their employees, and to establish bonded facilities (called "the Bonded Area") to support export and import industries, and
- To provide a residential area (called "the Residential Area") for foreign and local employees of the industrial estate which will lead to enhance attractiveness for investment.

2.2.2 Establishment of the SEZ Development Frame

According to Chapter 10, the SEZ development frame is conceived as follows:

Table 2.2 SEZ Development Frame (Site 1)

		Land (ha)	Employ- mento	GVA (000TK)	GAS (000QFT)	Electricity (KW)	Water (m ³ /D)
SITE NO. 1	GRAND TOTAL	170.38	29,723	5,701,638	1,352,331	37,841	22,609
	EPZ Total	100.64	21,532	4,352,710	1,174,584	16,790	4,938
	Textile/Light industries	52.82	14,338	2,587,850	884,300	11,433	2,613
	Electronics	20.88	5,709	1,462,109	4,453	3,628	856
	Metal/Machinery	26.95	1,485	302,751	285,831	1,728	1,469
	GIE Total	69.73	8,191	1,348,928	177,747	21,051	17,670
	Food Processing	55.15	7,113	1,285,577	110,642	20,095	17,136
	Wood processing	10.90	710	39,256	59,512	623	284
	Metal/Machinery	3.68	368	24,095	7,593	333	250

Source : JICA Study Team

2.2.3 Study on Planning Conditions

(1) Land use configuration

The land use of the Site will be configured by the industrial estate (for EPZ and GIE), Center Area, Residential Area, roads, parks, green belts and utilities (waste water treatment, solid waste disposal, water distribution repository, electricity sub-station).

(a) Industrial Area

The size and location of lots in the industrial area should flexibly respond to the future demand of the enterprises in the SEZ.

(b) Center Area

Building facilities will be constructed to provide the enterprises in the industrial estate and their employees with various services and social welfare programmes. The Center Area should be so arranged as to ensure that users for both EPZ and GIE can equally enjoy its services. Approximately 2 ha of land will be secured for provision of the Center Area.

(c) Residential Area

Housing for 10,000 people, which are about 1/3 of the probable total number of employees of the industrial estate, will be constructed adjacent to the industrial estate in order to attract the investment of foreign and local enterprises by securing the housing for their employees. The 10,000 employees include 1,000 management category (family status) and 9,000 general employees (single status).

(d) Parks and Green Belts

2 to 3% of the Site will be secured for use of sports and recreation for employees and for the purpose of using as emergency shelters. In addition, parks will be concentrated on 2 or 3 locations for an integrated utilization of the facilities. A buffering green zone of 10 to 15 m wide along the inside of the Site boundary will be secured to create an image of being surrounded by verdure and to form a good working environment.

(e) Utilities

A waste water treatment plant and a solid waste disposal site will be constructed to control and manage both domestic and industrial hazards and sanitary conditions within the SEZ and the neighborhood.

(2) Study on Utilities Systems

(a) Water supply

Water supply by CWASA is not available at the Site and its neighborhood. Therefore, in line with the SEZ development, water supply facilities such as deep wells will be constructed at the cost of the SEZ development to supply water to each factory and housing in the SEZ.

(b) Rainwater Drainage

Rainwater from the Site will be led to the drains alongside the roads and discharged outside through the main waterway along the Main Access Road.

(c) Sewage

After being preliminarily treated at each factory, industrial waste water will be led to sewage pipes and collected at the treatment plant in the Site, where secondary treatment is applied before finally being discharged to the main waterway outside the Site.

d) Electrical power

Electricity will be tapped from the high voltage transmission lines running near the Site to the sub-station that will be built in the Site and then distributed to each facility in the SEZ.

2.2.4 Alternatives of Land Use Plan

Two alternative land use plans are examined taking into consideration the land use basic policies and planning conditions. For comparison, the planning policies will be determined as follows.

Alternative Plan A

The gas pipelines, KAFCO wells and its pipeline and existing houses in the Site will be relocated from the Site.

EPZ and GIE will be allocated on the Western and Eastern sides respectively, taking into consideration the future port development.

The Residential Area will be located along the Main Access Road towards the fertilizer plant and East of the existing KAFCO residential area.

The North-South major access road (called "the Central Boulevard") will be provided to access the EPZ and GIE from the Main Access Road to the Site. Furthermore, in consideration of a port construction at the waterfront of the Karunaphuli, a major East-West arterial road (called "the East-West Boulevard") will also be constructed in the Site.

The Center Aea will be located along with the Central Boulevard at a place easily accessible from the EPZ, GIE and the Residential Area.

Alternative B

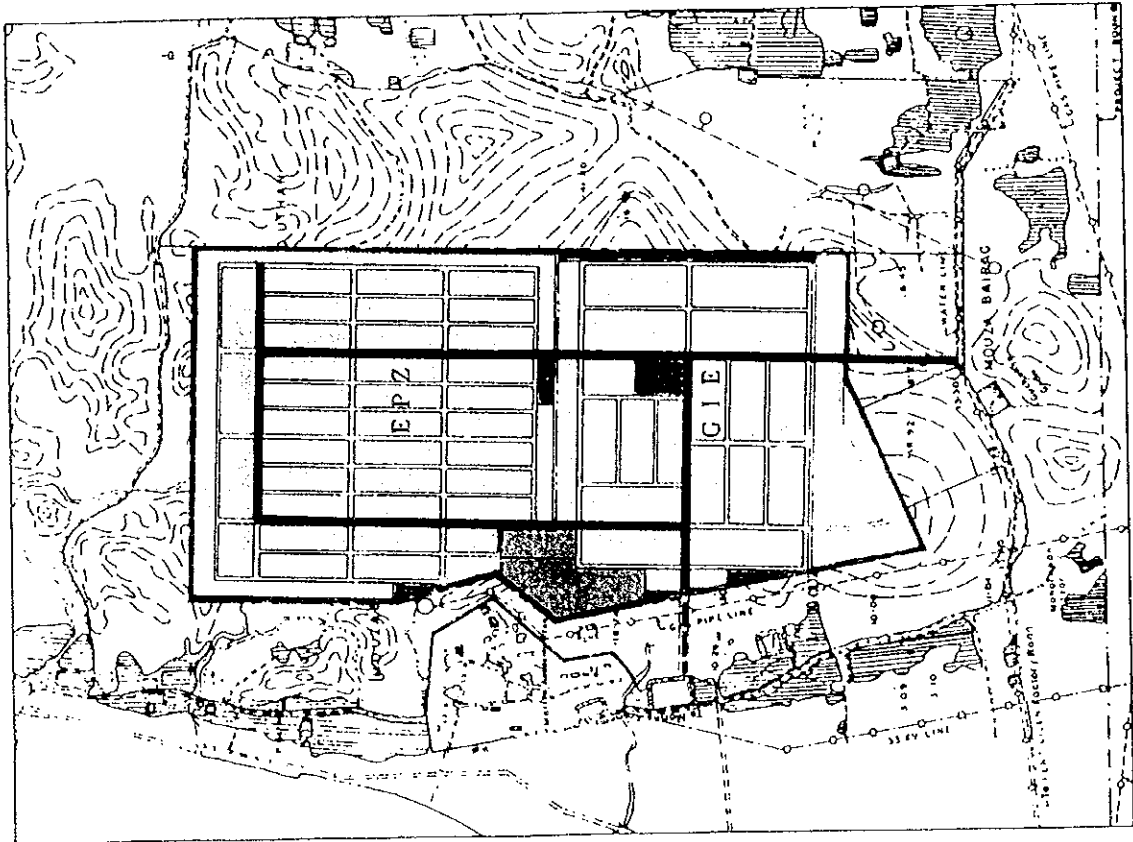
The gas pipelines, KAFCO wells, water supply pipes and existing houses in the Site will remain where they are.

The Residential Area will be located adjacent to the North of the KAFCO residential area, and GIE and EPZ will be located further North to the Residential Area.

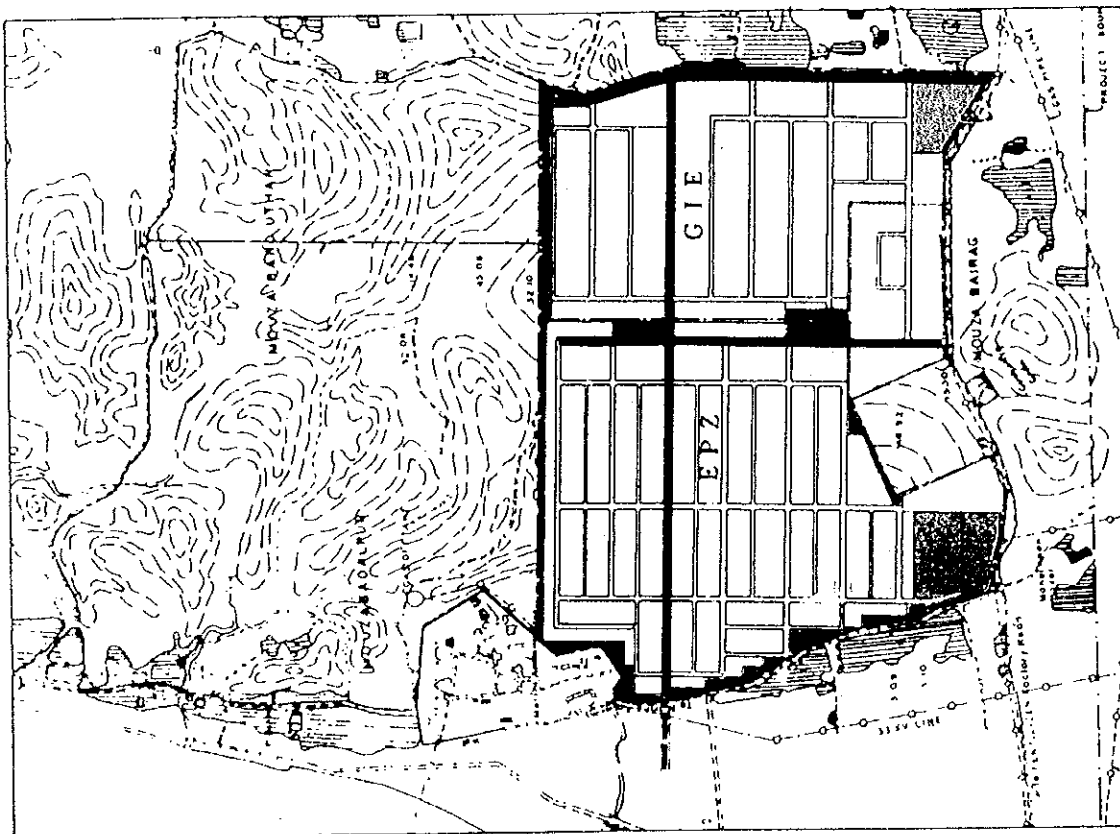
The major access roads to the Site will be aligned from the Main Access Road to pass through the Residential Area and further down to the Industrial Area from South to North (the Central Boulevard), and then to form a loop within the industrial estate. In consideration of the construction of an industrial port, the East-West Boulevard will also be constructed in the Site. The Center Area will be located along the Central Boulevard at the intersection to the East-West Boulevard.

The land use plan and overall features of Plan A and Plan B are as shown in the Table 2.3 below.

Figure 2.4 Comparative Plan



Plan B



Plan A



Table 2.3 Land Use Comparison Table

Plan		Plan A		Plan B	
		Area (ha)	%	Area (ha)	%
Land use	Plant site				
	EZP	100.7		104.9	
	GIE	71.4		69.9	
	Subtotal	172.1	62.4	174.8	63.6
	Warehouse	0.9	0.3	0.9	0.3
	Center	2.0	0.7	2.0	0.7
	Residential area	16.2	5.9	16.6	6.0
	Roads	46.4	16.5	44.7	16.3
	Parks	8.7	3.2	7.0	2.5
	Green tract of land	17.2	6.2	16.8	6.1
	Supply & processing				
	Water distribution repository	1.1		1.1	
	Waste water disposal plant	2.5		2.5	
	Waste disposal plant	8.6		8.4	
Subtotal	12.2	4.4	12.0	4.4	
Total	275.7	100.0	274.8	100.0	
Amount of soil removed m ³		2,700,000		3,400,000	
Road extension	Trunk (w=28m)	4,900m		5,520m	
	Auxiliary (w=17m)	13,000m		8,400m	
	Section (w=12m)	8,800m		12,400m	
	Total	26,700m		26,320m	
Features		<ul style="list-style-type: none"> *Can use the site interior effectively. *Location of EPZ, CIE and residential area *Smooth expansion of future estate *Smaller amount of soil removed *Requires dismantlement cost. 		<ul style="list-style-type: none"> *Uses the center of the site interior and there will be restrictions when in the future different land use is applied to the neighborhood. *Large amount of soil removed *Does not require dismantlement cost. 	

2.3 Industrial Estate Development Plan

A Comparison of the above alternative land use plans showed that the cost for construction of Alternative Plan A will be more expensive than that of Plan B, due to the cost for relocation of the KAFCO water supply system (wells and pipes) and BGSL gas pipes. Notwithstanding, the SEZ development will be implemented based on Plan A for the following reasons.

- Better locational balance between EPZ, GIE and Residential Area
- Equal service ability of the Center Area
- Access roads inside the industrial estate can be more conveniently secured for EPZ and GIE
- A large reserved area (called "the Reserved Area) can be secured to the North of the Site, and
- Higher flexibility in terms of the land use plan for the Reserved Area (for future expansion of the industrial estate, Residential Area, Center Area, or for any other development purpose).

2.3.1 Land Use Plan

The land use plan in Alternative A is as shown in Figure 2.5. The Industrial Estate that includes a standard industrial area (called "the Standard Factory Area") of 2.0 ha, includes 100.7 ha for EPZ and 71.4 ha for GIE, 172.1 ha in total. 16.2 ha is secured for the Residential Area for the employees inside the Industrial Estate taking also into consideration its future expansion. In addition, 2.0 ha for the Center Area, 0.9 ha for the bonded warehouse (called Bonded Warehouse Area), 25.9 ha for parks and green belts and 12.2 ha for utilities are secured respectively.



Figure 2.5 Land Use Plan for Industrial Park



Figure 2.5 Land Use Plan for Industrial Park

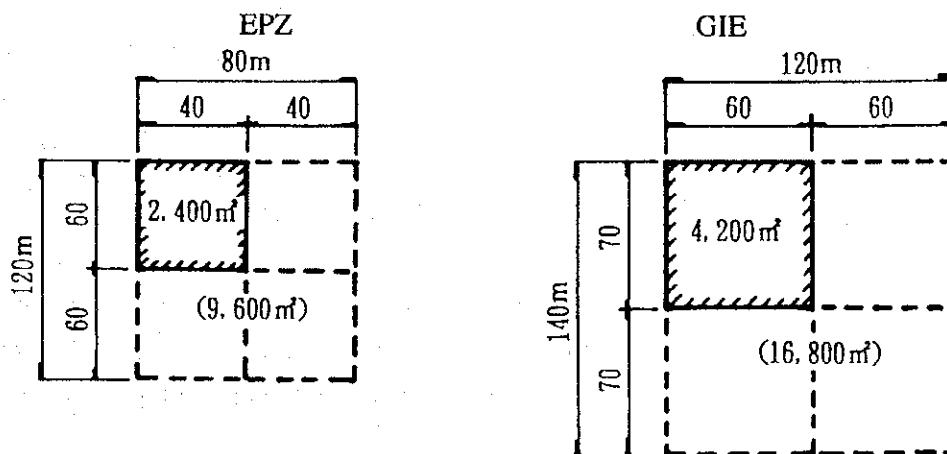


2.3.2 Industrial Site Plan

(1) Standard size of Industrial Lots

The standard size of industrial (factory) lots for the EPZ and GIE will be determined taking into consideration the lot size of the existing EPZ and other industrial estates. The results are shown below. Accordingly, a road layout planning is made taking into account the case where multiple lots will be used by one factory.

Figure 2.6 Standard Size of Industrial Lot



(2) Building coverage ratio, floor area ratio, and green coverage ratio

The building coverage ratio, floor area ratio, and green coverage ratio that should be adopted by any enterprise in the Estate will be determined as follows, taking into consideration the safety, comfort, openness and green environment:

- Building coverage ratio: 60% or less (1,440 m² or less for the lot size of 2,400 m²)
- Floor area ratio: 200% or less (4,800 m² or less for the lot size of 2,400 m²), and
- Green coverage ratio: 20% or more (480 m² or more for the lot size of 2,400 m²).

(3) Standard Factory Area

The Standard Factory Area will provide standard factories built for the purpose of saving time at the initial startup of medium to small-scale industries and of helping to reduce the initial investment. The area will be provided within the EPZ located north to the Center Area to ensure sufficient public services in the SEZ, and 2 ha (400 m x 50 m) will be secured for the area.

The total floor area of the standard factories will be 36,000 m² taking into account the building coverage ratio of 60% and floor area ratio of 200%:

$$20,000 \text{ m}^2 \times 60\% \times 3 \text{ floors} = 36,000 \text{ m}^2 < 40,000 \text{ m}^2.$$

(4) Warehouse site

Enterprises in the EPZ will import raw materials and export their products. Also, it is presumed that some enterprises in the GIE will export their products.

The Bonded Warehouse Area of 0.9 ha will be provided to serve shipping and storage procedures, custom clearance, and other supporting services for trade such as inventory control and arrangement, temporary container storage, repair and processing of import/export goods.

The Bonded Warehouse Area will be located in the EPZ but adjacent to the GIE so that enterprises in the GIE can also easily receive the services. The total floor area of the Bonded Warehouse Area will be 8,000 m².

2.3.3 Facilities Plan for the Center Area

The Center Area will provide overall services for enterprises, employees, and other users of the SEZ, having functions of controlling information to promote interrelationship among enterprises. The Zone Development Company will operate the Center Area and also operate and manage the SEZ in its entirety. 2.0 ha of land will be secured for the Center Area in the place easily accessible from EPZ, GIE, and the Residential Area.

According to the roles of the Center Area, the following facilities will be established in the Area:

- Office for business
- Exhibition and convention

- Information center
- Shops and restaurant
- Service facilities such as customs office, bank, post office and clinic
- Administration office
- Social welfare facilities
- Open space, and
- Training Centre.

2.3.4 Parks and Green Plan

The area of parks should be at least 3% of the area of the Site.

- The area of parks = 275.7 ha (Area of the Site) x 3% = 3.3 ha < 8.7 ha.
- Parks are provided for each of the EPZ, the GIE and the Residential Area.
- Parks are provided around the EPZ, the GIE and the Residential Area as buffering zones.
- Parks are effectively functioned to secure safe and comfortable spaces for workers and residents.
- Parks are able to meet a variety of needs for recreation activities in the SEZ.
- Parks are designed to be harmonized with the environment and landscape.
- Green belts of approximately 10 m width are secured around the Site and along the boundary between the EPZ and the GIE.
- Green spaces are also prepared for an excellent working environment.
- Green spaces also function as a buffer zone to minimize the influence to the surrounding community.

A total of 17.2 ha will be secured for the green belts and zones in and around the Site.

Tree planting should be carried out in advance because there is virtually no vegetation available in the Site. Intensive tree planting should be carried out in order to enhance the function as a buffering zone. Trees that are appropriate for the Site should be selected. Planting and sowing should be carried out in the Site while attempting to create the better green areas and beautiful landscape.

2.3.5 Road and Traffic Planning

(1) Basic policies

The basic policies for preparing a road and traffic plan are as follows:

- Planning should be co-ordinated with the regional road network
- The existing road to the fertilizer factory should be designated as the Main Access Road to the SEZ
- Roads in the Site should be formed in a grid configuration consisting of the Central Boulevard, East-West Boulevard, and auxiliary arterial roads and service roads.
- Smooth flow of people and traffic as well as comfortable and safe transportation should be ensured.

(2) Existing conditions

The access to Site No.1 starts from the center of Chittagong City, passing the New Karnaphuli Bridge (2-lane bridge), running the national highway (main national highway) and major provincial road and then down to the Main Access Road linking to the Site and KAFCO/CUFL. It takes about 40 minutes from the center of Chittagong City to Site No.1. According to the survey carried out by CDA, the number of passengers crossing the Karnaphuli by using the CUFL jetty is as follows:

- Passengers coming into Chittagong: 1,852 passengers/day
- Passengers going out from Chittagong: 1,314 passengers/day
- Total number of passengers: 3,166 passengers/day.

On the other hand, cargoe handled at the CUFL jetty are as follows:

- Cargoe coming into Chittagong: 71.51 tons/day
- Cargoe going out from Chittagong: 45.05 tons/day
- Total cargo volume: 116.56 tons/day.

The number of employees at the CUFL area is estimated as about 1,000 people (1992-1993), while about 1,500 workers are working at KAFCO during the construction stage. Hence, the modal share of the commuters by the inland water transport through the CUFL jetty is about 65%, and the remaining 35% of the commuters are considered to use other transport modes, such as buses operated by respective factories.

(3) Estimate of traffic generation/attraction

The traffic generation/attraction in the SEZ is classified by traffic purpose into three classes with the following estimated traffic:

- Cargo traffic: traffic related to cargo transport
- Business traffic: traffic by business related trip, and
- Commuter traffic: traffic related to commuting of employees.

The traffic is estimated for the year 2010 (Site No.1 only) and 2020 (Sites No.1, 4 and 5). The total traffic volume is estimated at 5,890 and 27,660 vehicles/day, respectively.

(a) Cargo traffic

According to the results of the interview survey by the JICA Study Team, the annual cargo input/output volume was calculated by using land areas and unit volume of cargo input/output by type of industry. Then the cargo traffic generation volume was estimated. (See Table 2.4) In this case, cargoes transported by ocean going ships were also included on the assumption that transshipments at the port were required.

Table 2.4 Annual Cargo Input/Output Volume

	Cargo Total			Out-going		Exports	
	OUT ton	IN ton	TOTAL ton	LAND ton	SHIP ton	SHIP ton	AIR ton
SITE No.1	879,911	934,678	1,814,589	719,090	160,821	124,793	10,587
SITE No.4	457,107	475,234	932,341	442,144	14,963	79,280	19,796
SITE No.5	2,836,276	2,885,780	5,722,056	1,864,484	971,792	308,681	19,454
TOTAL	4,173,294	4,295,692	8,468,986	3,025,718	1,147,576	512,754	49,837

In-coming		Imports		Out+In-coming	
LAND ton	SHIP ton	SHIP ton	AIR ton	LAND ton	SHIP ton
627,660	307,018	533,311	5,776	1,346,750	467,839
466,461	8,773	212,333	10,632	908,605	23,736
824,690	2,061,091	2,333,068	7,102	2,689,174	3,032,883
1,918,811	2,376,882	3,078,712	23,510	4,944,529	3,524,458

- Annual working day: 300 days
- Average loading capacity of truck: 4 tons
- Loading efficiency: 60% (Assumption: 100% for output and 20% for input)

- Cargo traffic generation volume (vehicles/day) = Annual cargo input/output volume (tons/year)/Annual working days/(Average loading capacity of truck x Loading efficiency)
<estimate in year 2010>
= $1,814,589 \times 1/300 \times 1/(4 \times 0.60) = 2,520$ (vehicles/day)
<estimate in year 2020>
= $8,468,927 \times 1/300 \times 1/(4 \times 0.60) = 11,760$ (vehicles/day)

(b) Commuter traffic

The commuter traffic volume at each site was estimated from the number of employees at each site, which was obtained from the result of the interview survey and a modal share as follows:

Modal share of commuter traffic

The present modal share of commuter traffic is estimated at 35% by bus and 65% by inland waterway transport. To consider the road development and the modal shift from inland waterway transport to bus, as well as the capacity restriction at the nearby jetty, an assumption was made that the modal share of bus would increase to be doubled at 70% and the remaining 30% by inland water transport.

<estimate in year 2010>

- By factory buses : $70\% (19,727 \times 0.7 \times 2)/40 = 690$ vehicles
- By inland waterway : $30\% (19,727 \times 0.3 \times 2) = 11,840$ passengers
(The maximum number of passengers utilizing the existing jetty is about 22,000 passengers/day, hence it will be possible to utilize the existing jetty).

<estimate in year 2020>

In this case, it is assumed that about one-third of employees live in each site and the remaining employees commute to each site according to the modal share mentioned above.

- By factory buses: $70\% (127,181 \times 0.7 \times 2)/40 = 4,450$ vehicles
- By inland waterway: $30\% 127,181 \times 0.3 \times 2 = 76,310$ passengers.

(The maximum number of passengers utilizing the existing jetty is about 22,000 passengers/day, hence it will be necessary to construct another three public jetties in the future. However, it is assumed that in 2020, there will be changes in selection of transport means and passengers utilizing waterways will increasingly switch to the land transportation).

(c) Business traffic

The business traffic volume is estimated from the number of employees in the industrial estate multiplied by a unit value of business trip generation, which is assumed as 0.045 (vehicles/people x day).

<estimate in year 2010>

$$\begin{aligned} \text{Traffic volume} &= \text{Number of employees in 2010} \times 0.045 \times 2 = 29,723 \times \\ &0.045 \times 2 = 2,680 \text{ (vehicles/day)}. \end{aligned}$$

<estimate in year 2020>

$$\begin{aligned} \text{Business traffic volume} &= \text{Number of employees in 2020} \times 0.045 \times 2 \\ &= 127,181 \times 0.045 \times 2 = 11,450 \text{ (vehicles/day)}. \end{aligned}$$

(4) Road planning

(a) Layout

Major Arterial Roads

They will integrate the traffic in the SEZ and connect to the Main Access Road (the fertilizer factory road). The Central Boulevard and the East-West Boulevard are under this category, and these major arterial roads play a role as symbol roads in the SEZ.

Minor Arterial Roads

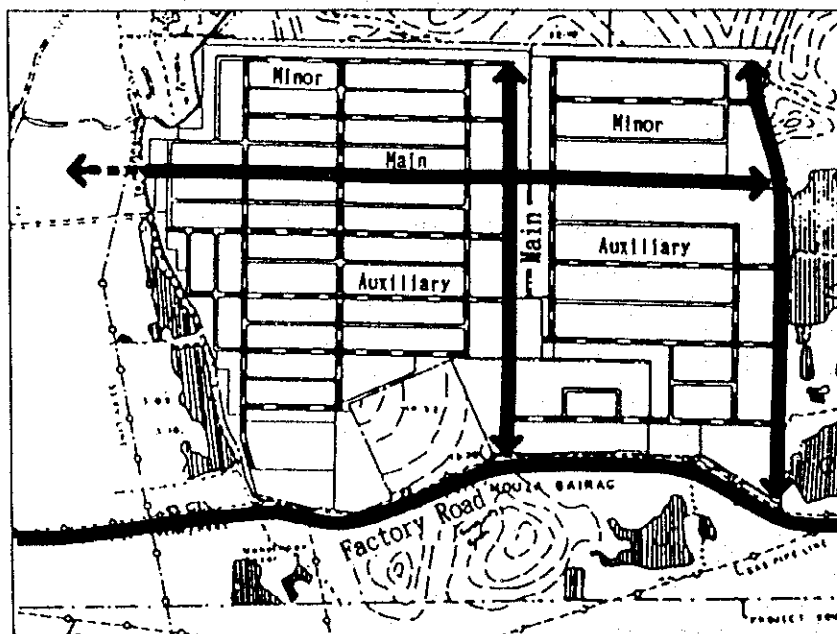
They complement the major arterial roads and form the backbone of the road network in the SEZ, and connect between the major arterial roads and service roads to gather the traffic from the service roads and disperse them efficiently to the major arterial roads.

Service roads

Offer access to each factory site.

The road network in the SEZ is as shown in Figure 2.7.

Figure 2.7 Road Network in the SEZ

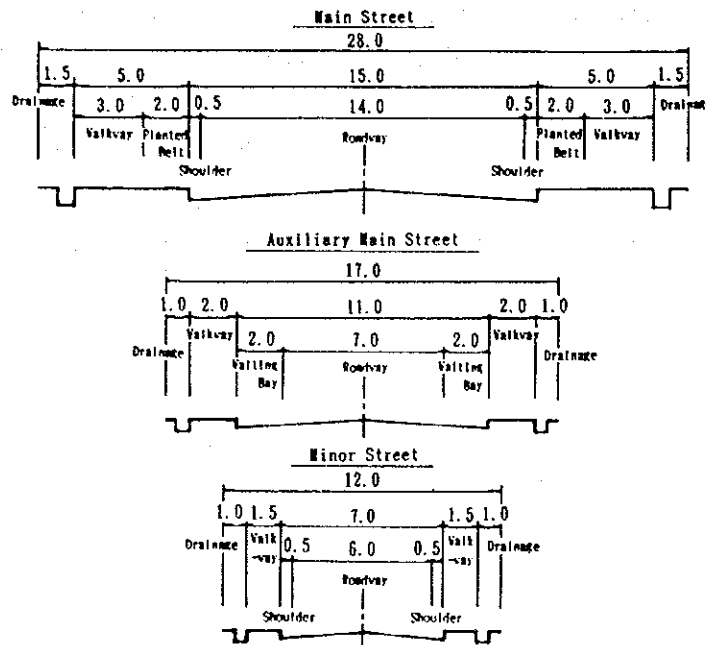


(b) Road section

The standard sectional configuration for each category of road is shown in Figure 2.8, since large-size cars are expected to use the major arterial roads that play a symbolic role in the SEZ.

Moreover, the roads accessing the SEZ, which includes the Site are designated to be the future Main Access Road to the SEZ and therefore their road sectional configuration will be the same ($W = 28\text{ m}$) as that for the major arterial roads in the SEZ. The existing access roads need to be widened, since the actual width is only 5.5 m (paved).

Figure 2.8 Standard Section



(c) Design Concept

A road should secure safe and smooth traffic of people and goods, and also play an important role in terms of landscaping. However, it tends to form a limited marginal space if not controlled and therefore appropriate regulations need to be applied to secure a buffer zone, which allows road space compatible with the building space of factories.

In order to form a comfortable road view, the following services will be planned:

- A tree zone consisting of shrubs and tall trees will be prepared along the major arterial roads to serve as separation zone between sidewalks and roadways and to secure safe traffic
- Objects obstructing landscape such as electrical wires and electric light poles will be eliminated as much as possible and wirings will be buried underground together with water supply pipes, sewage pipes and gas pipes
- Sidewalks will be constructed paying attention to vista and installation design to secure excellent vista and comfortable walk spaces
- In selection of materials and colors for sidewalks, what is important is they must offer ease to walk, calmness, ease to maintain, and that they are not spoiled easily and even when they become old it should not invite attention.

2.3.6 Utilities plan

(1) Water supply plan

(a) Basic policies

The basic policies for the water supply plan are as follows.

- Groundwater is used as the water source for the SEZ, and
- The water supply facilities will be constructed by the Zone Company.

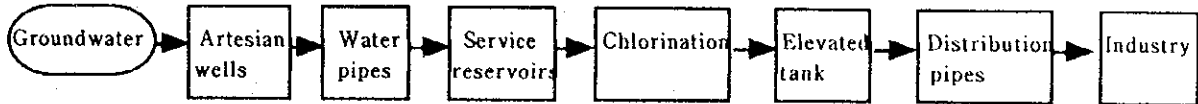
<Reasons>

- Groundwater will be made available as known from KAFCO records. At present, no groundwater development programs are expected.
- The groundwater is of good quality so that it can be supplied for drinking use by applying chlorination process only.
- Construction and operation cost for the groundwater system is cheaper than the one for the surface water system.

(b) Water supply system

The water supply system for the SEZ is shown in Figure 2.9.

Figure 2.9 Water Supply System



The well fields are to be selected towards the Northern part of KAFCO's well fields. The groundwater is pumped up from production well sand collected to service reservoirs. Upon chlorination, treated water is distributed to the industry by distribution pumps through elevated tank. Distribution pumps are to be automatically regulated by the water levels in elevated tank.

(c) Estimate Supply Volume : 22,610 m³/d.

Intake: 22,670 m³/d x 1.1 = 24,900 m³/d (including leakage and extra flow)
 Maximum Distribution: 24,900 m³/d/24 h x 1.2 = 1,245 m³/h (peak hour demand)
 Fire-fighting: 4 m³/min x 60 min = 240 m³/h (1 m³/min/hydrant x 4 hydrants)
 Average distribution (including fire-fighting): 24,900/24 + 240 = 1,280 m³/h
 Service reservoir capacity: 1,280 m³/h x 12 h = 15,360 m³

(d) Facilities plan

The water supply systems consist of the following facilities.

Well

- Deep well: 6 and 1 standby, total 7 wells
- Production capacity: 4,150 m³/d = 2.9 m³/min.

Raw water intake facilities

- Production wells, submersible motor pumps, electrical facilities, flow meter, flow control valve and pump houses
- Collection pipeline: PVC pipe and steel pipe, valve.

Distribution facilities

- Reservoir: Retention time 12 hours x 2 reservoirs

(7,680 m³ x 2 = 15,360 m³)

- Distribution pump, electrical facilities, flow meter, flow control valve, traveling crane, chain-hoist, pump houses, instrumentation
- Chlorination facilities: chlorinator, dosing pumps, chlorine container, chlorinator house
- Elevated tank
- Distribution pipeline: PVC pipe and steel pipe, valve.

(e) Water supply plan for other estates in SEZ

It is assumed that the future water demand for the industrial estates at Sites No.4 and No.5 will be considerably high. The water source for these facilities should be from the Karnaphuli, which offers stable raw water. The water intake point should be upstream of the river to avoid the sea water intrusion. After treatment, treated water will be supplied to SEZ, as well as the residential areas and town centers which will be created in line with development of the SEZ.

(2) Waste water plan

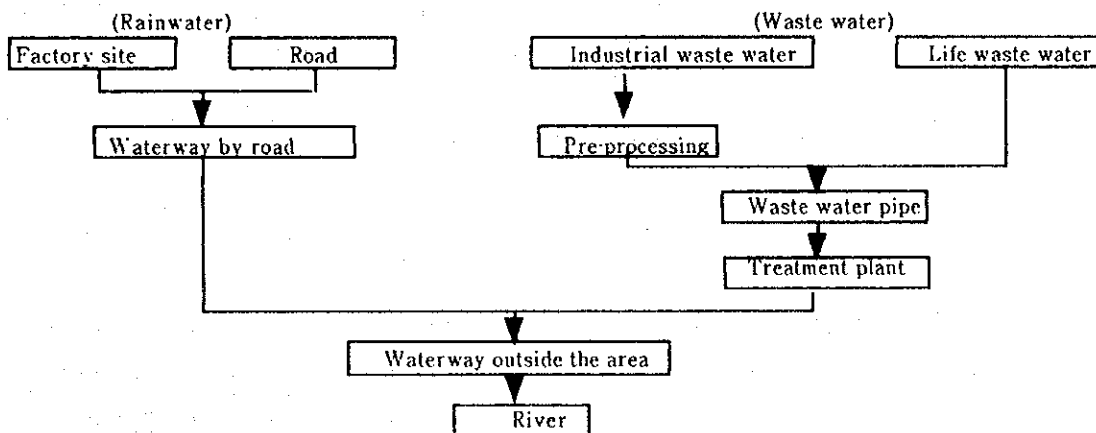
(a) Basic policies

The basic policies for the waste water plan are as follows:

- Rainwater is discharged to the river through the road side open ditch
- Pre-treated waste water (elimination for oil and heavy metals) by each industry is discharged to the waste water treatment plant through waste water pipe line and discharged to the river after secondary treatment
- The amount of waste water is presumed to be the same as supply water, and
- It is assumed that waste water includes both industrial waste water and domestic waste water.

The waste water system is shown in Figure 2.10.

Figure 2.10 Waste Water System



(c) Contamination load and waste water quality standards for effluent

Special treatment such as removal of color, grease, oil and toxic substances shall be conducted by each industry. The treatment plant is to reduce to the tolerable levels the biological oxygen demand (BOD), chemical oxygen demand (COD), suspended solids (SS), total nitrogen (T-N), total phosphorus (T-P) and bacteria.

Table 2.5 Contamination Load and Waste Water Standards

Items	Estimated Value of Contamination	Standards Value of Wastewater Effluent	Removal Rate
BOD	516 (mg/l)	40 (mg/l)	92 (%)
COD	318	-	-
SS	1,049	100	90
T-N	14	250	-
T-P	8	25	-

Note : BOD ; Biochemical Oxygen Demand
SS ; Suspended Solid
T-P ; Total Phosphorus

COD ; Chemical Oxygen Demand
T-N ; Total Nitrogen

The contamination loads of T-N and T-P are assumed below the standard values, so that the key goal of the treatment works is put to reduce BOD and SS.

(d) Planned waste water flow rate

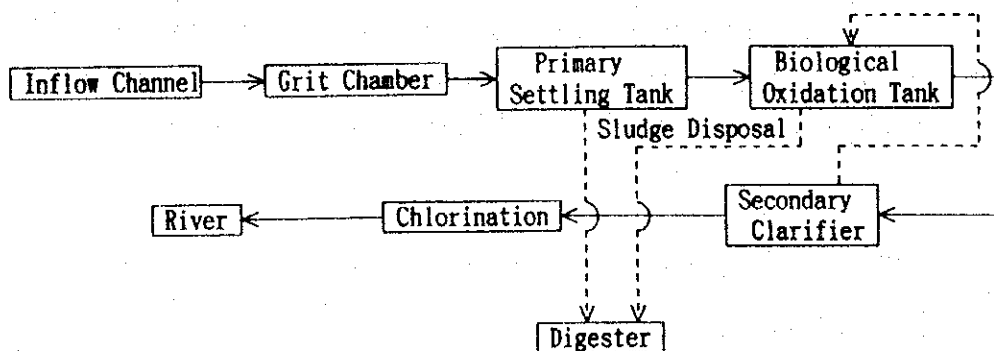
The planned waste water flow rate for waste water pipes and waste water treatment plant is presumed to be the same as the supply water flow rate.

Planned waste water flow rate $Q = 1,245 \text{ m}^3/\text{d}$.

(e) Waste water treatment process

The treatment process to remove the contamination up to the standard values is recommendable for the secondary treatment process of a biological oxidation process. For removal of coliform group and bacteria, a chlorination process is applied. The flow of the treatment process is shown in Figure 2.11.

Figure 2.11 Waste Water Treatment Process



(f) Location and scale of waste water treatment plant

Since waste water from each plant is discharged and led by gravity flow in principle, the waste water treatment plant will be located in the South-Western part of the Site with an area of 2.5 ha.

(g) Waste water treatment facilities plan

The facilities include waste water pipelines and waste water treatment facilities. The contents of these facilities are:

Pipeline:

PVC pipe and reinforced concrete manhole, discharge pump, electrical facilities, pump houses, pump well, traveling crane, chain-hoist, flow meter, treated water discharge pipe, junction well.

Treatment facilities:

Inflow channel, automatic racking screen, flow meter, grit chamber, primary settling tank, chain-belt type sludge scraper, desludging pumps biological oxidation tank, air-blower, secondary settling tank, rotary type sludge scraper, desludging pumps digester.

Chlorination facilities:

Chlorinator, dosing pumps, chlorine containers, chlorinator house, contact tank, instrumentation.

(3) Solid Waste disposal plan

(a) Disposal system

Combustible and non-combustible industrial wastes generated by the industry are assumed to be about 30 tons/d. The land-fill method will be employed in the Site for the industrial waste disposal together with the processed sludge generated from the waste water treatment. The dumped waste is compacted daily by a compactor and covered with a layer of compacted soils by bulldozers. The land-fill yard should be lined by impermeable soils such as clay so as to prevent infiltration of leachate from waste. In addition, in order to collect and discharge the leachate and rainwater, porous pipes will be buried on the bottom and an observation well will be dug for observation of the water quality state of groundwater.

(b) Location and scale of disposal system

According to a policy that waste generated from the Industrial Estate should be disposed in the Site, two disposal systems will be secured, one for the EPZ (4.5 ha) and the other for the GIE (4.1 ha), 8.6 ha in total in the Southern part of the Site.

(c) Land-fill disposal plan

- Prerequisites -

Land-fill disposal per day :	30 ton/day (total estate)
Annual plant working days :	300 days
Apparent specific weight of waste :	0.5 ton/m ³
Soil coverage ratio :	Waste : soil = 1 : 0.25
Effective utilization area of disposal yard :	70%
Green coverage :	30%
Land-fill depth :	3 m
Disposal yard area :	8.6 ha = 86,000 m ² .

According to the above conditions, the land-fill disposal plan will be developed as follows:

Annual total disposal = 30 ton/day x 300 days/year = 9,000 ton/year
Waste capacity = 9,000 ton/year / 0.5 ton/m³ = 18,000 m³/year
Amount of land-fill = 18,000 m³/year x 1.25 = 22,500 m³/year
Disposal yard capacity = 86,000 m² x 70% x 3 m = 180,600 m³
Maximum disposal years = 180,600 m³ / 22,500 m³/year = 8.03 years.

Assuming that all plants are constructed simultaneously in the Industrial Estate, the maximum land-fill years in the disposal yard will be 8 years.

(d) Environmental protection and safety measures

Environmental protection measures in the disposal yard are as follows:

Burial of porous pipes and installation of waste water pipes

- Discharge of seepage water into waste water pipes

Daily soils coverage (approximately 25 cm thick) and the final soils coverage (approximately 50 cm)

- Prevention of offensive odor and scattering, prevention of intrusion of birds, beasts or insects

Preservation of surrounding green tract of land

- Coverage with trees, buffering effect

Installation of fences

- Prevention of human intrusion.

(e) Waste disposal facilities plan

The waste disposal yard facilities include the land-fill yard facilities and land-fill equipment, and the contents of these facilities are as follows:

(i) Land-fill yard facilities

- Excavation, stacking of impermeable soil, catchment pipes, observation well, drainage pump, electrical facilities, drainage pipes

(ii) Land-fill equipment

- Steel wheel compactor, loader, bulldozer, dump car.

(4) Power supply plan

(a) Basic policies

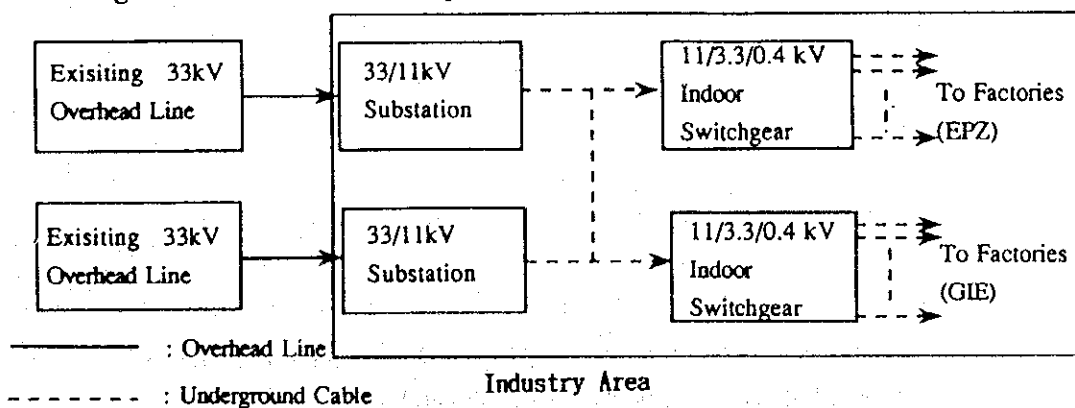
The basic policies for the power supply plan are as follows.

- Power supply will be extended from the two existing lines of the BPDB (Bangladesh Power Development Board) to the Site and overhead power transmission will be used.
- The power reception facilities will be installed at the site where power is introduced into the Site.
- Distribution lines for each industry in the Site will be buried underground.

(b) Power reception/distribution system

The power reception/distribution system will be as shown in Figure 2.12.

Figure 2.12 Power Reception/Distribution System in Estate



(c) Power reception method, power reception location and substation specifications

Power supply will be extended from existing 33 kV overhead transmission lines of BPDB (Bangladesh Power Development Board). Power will be fed to the Industrial Estate through one line from the East and West side of the Site, two lines in total.

Two sets of transformer of 20 MVA (natural cooling)/25 MVA (wind cooling) will be installed to receive power and the 33 kV equipment of disconnecting switch (DS), circuit breaker (CB), will be located outdoor. After the transformers, power is distributed to each user through a distribution panel installed indoor.

The installation space for 33 kV outdoor equipment is approximately 10 m x 20 m (2 locations). The installation space for 11 kV, 3.3 kV and 411 V electrical chambers is scheduled to be approximately 20 m x 70 m (2 locations).

(d) Power distribution method in the estate

Power is planned to be distributed to each plant through 11 kV, 3.3 kV and 400 V underground cables, and demand is classified depending on the scale of each plant as follows:

200 kVA or below	400 V power distribution
200-2,000 kVA	3.3 kV power distribution
2,000 kVA or greater	11 kV power distribution

(3.3 kV power distribution is used because a voltage drop through 400 V power distribution is problematic for intake well pumps which are located at a considerable distance of several kilometers from the electrical chamber).

2.3.7 Land development plan

(1) Basic policies

The basic policies for the land development plan are:

- To minimize earthwork to reduce cost in order to offer inexpensive site supply
- To use development mode making the most of actual topography
- To apply balanced earthwork in the Site, and

- To establish a flood-resistant Site.
- (2) Land development plan
- (a) Direction of land development inclination and minimum planned height

The actual topography in the Site is inclined from North to South. The Karnaphuli flows in the Western part of the Site and waste water from the surrounding areas including the Site is led to this river. Therefore, the land development inclination in the Industrial Estate should be planned to direct from North to South and from East to West.

No bulkhead is provided on the left bank of the Karnaphuli (East side) and no bulkhead provision plan exists. Therefore, when the tide and surge levels of the Karnaphuli during the monsoon period increase, a wide range of land including the Site may be flooded. According to a UNDP report, the estimated maximum tide and surge water levels of the Karnaphuli at Patenga during the monsoon period and cyclone period are as shown in Table 2.6. On the other hand, the lowest point in the Site is approximately 4.0 m in the Southern part of the Site. Therefore, the minimum planned height in the South-Western part of the Site will be set to approximately 5.0 m in preparation for the maximum tide and surge levels of the Karnaphuli for the level of cyclones generated once every 10 years (5.0 m) or monsoon once every 100 years (4.68 m).

However, in preparation for the level of cyclones generated once every 10 years or longer, another Karnaphuli River (left bank) bulkhead provision plan will be developed independently of the construction of the SEZ.

Table 2.6 Estimated Maximum Tide and Surge Levels at Patenga

Return period in year	Max. tidal levels in monsoon period	Max. stillwater levels arising from cyclonic surges	Max. stillwater level arising from combined effect of tide and cyclonic surge
Mean annual	3.11	—	—
5	3.46	4.11	4.1
10	3.75	4.72	5.0
20	4.04	5.33	5.6
40	4.30	5.83	6.2
50	4.40	6.03	—
100	4.68	6.55	6.8

Notes: 1. Source of data – Hay & Co. Consultants(1987), cited in Kamrux (1992).
2. All levels are in metres above MSL and refer to Patenga.

(b) Land development plan

The land development plan based on the above basic policies, direction of the land development inclination and minimum planned height is as shown in Figure 2.13.

The amount of soils to be removed according to the land development plan is approximately 2.7 million m³.

2.3.8 Development Cost Estimate

A development cost based on the basic plan is estimated as shown in Table 2.7. The estimated cost is for planning purpose only and hence, they should be reasonably refined through preliminary and detailed engineering designs.

Table 2.7 Development Cost Estimate

Type of Work	Unit	Quantity	Unit Price	Cost	Remarks
Direct Cost			('000 USD)	(mil. USD)	
Inside estate					
Earthwork	mil. m3	270	5.000	1.4	
Road work	m2	46,400	0.072	3.3	
Water supply work					
Raw water intake	Set	1		4.8	
Water distribution	Set	1		7.0	
Subtotal				11.8	
Sewage work					
Waste water treatment facilities	Set	1		15.9	
Pipeline	Set	1		2.4	
Subtotal				18.3	
Electrical work					
Power reception / distribution	Set	1		9.3	
Underground buried cable	Set	1		0.5	
Subtotal				9.7	
Waste disposal					
Land-fill yard	Set	1		0.2	
Land-fill equipment	Set	1		0.6	
Subtotal				0.7	
Park work	m2	87,000	0.002	0.1	
Building					
Center facilities	m2	18,000	0.227	4.1	
Standard factory	m2	36,000	0.122	4.4	
Warehouse	m2	8,000	0.081	0.7	
House	m2	40,000	0.122	4.9	
Dormitory	m2	27,000	0.122	3.3	
Subtotal				17.3	
Dismantlement / restoration work					
KAFCO water supply facilities	Set	1		1.2	
Gas pipeline	Set	1		0.1	
Subtotal				1.3	
Total (1)				64.0	
Outside estate					
Road work	m2	131,600	0.045	5.9	# 1
Electrical power work	km	20	15.000	0.3	# 2
Total (2)				6.2	
Total (3)				70.2	(1) + (2)
Indirect cost					
Expenses	Total (3)	5		3.5	
Engineering Fee	Total (3)	7		4.9	# 3
Contingency	Total (3)	5		3.5	
Total (4)				11.9	
Grand Total			Total (3) + (4)	82.2	

* However, no site cost is included.

* Site cost for 275.7 ha is as follows :

275.7 ha x 500,000 TK / ha = 137.5 million TK

1 : Widening of access road 1 = 4700m

2 : Transmission line drop

3 : Investigation / design / control, etc.

CHAPTER 3:
HUMAN RESOURCES DEVELOPMENT

CHAPTER 3 HUMAN RESOURCES DEVELOPMENT

3.1 Human Resources Development Guidelines

Training needs and priorities can be examined under several categories corresponding to the groups involved. Three principal groups are identifiable in the context of Chittagong and the proposed Special Economic Zone:

- SEZ Licensed Projects
- SEZ Development Compan, and
- Liaison Agencies (e.g., Customs).

The training needs and priorities will be different across the three groups. The nature and extent of the training required under each of the substantive headings will vary also, depending on the existing skill profiles within each group and the specific weaknesses/shortfalls when profiles are matched with anticipated needs.

Eight substantive or functional areas has been identified as follows:

- General Business Administration
- Financial Management
- Marketing
- Languages
- Computing Skills
- Information Technology and Management Information Systems (MIS)
- New Technology, and
- Training Function Management.

It is to note that Training Function Management is one of the functional areas included in the needs assessment. The basis for its inclusion is the critical requirement that training in the Company and in licensed projects be tailored to specific needs. In this respect, the training process includes needs assessment, programme design, resourcing, delivery, monitoring, and evaluation.

3.2 Training Needs Assessment for Zone Projects

It can be expected that projects coming to the SEZ will require business management skills in its prospective workforce. However, it is likely that the management ability and experience of investing companies, especially those more used to competing and operating on a multinational basis, will leverage greatly the process of identifying and providing for necessary skills. This factor is of considerable importance, not just to securing the success of these new projects themselves, but as role models for managing internationally-competitive businesses.

In this context also, it is clear that the establishment of the SEZ and the setting-up of an SEZ Development Company will provide an opportunity and a possible mechanism for facilitating the development and funding of appropriate training inputs. The priority areas of general training needs will be largely common across potential licensees, and the SEZ Development Company itself. To the extent that the future viability and competitiveness of the Company and the success of incoming projects depends not simply on the availability of manpower but on the ability to match available skills with the needs of competitive business performance, it is very much within the ambit of the SEZ Company to take a lead role in this area, if only until such time as the available infrastructure was upgraded and its operation tied in with serving the needs of companies operating in the Zone.

3.3 Funding for Training Development

The provision of funding for training programmes must be a priority in terms of the planning and development of the SEZ. It would be important in this regard that the provision of training funding is linked to the process of project approvals. Any project applying for approval will be required to indicate (i) the extent to which jobs will be created and (ii) how training deficiencies are to be addressed.

3.4 Training Requirements of the SEZ Development Company

The operational management of the SEZ itself will generate its own training requirements. While this will be true for the proposed SEZ Company itself and its own staff, it is particularly the case in respect of institutions and agencies with which the SEZ Company will have to work. The implementation of the SEZ proposals will change the operating environment for a number of such bodies. The Customs Authority, for example, are centrally affected by the SEZ proposals, with the SEZ carrying specific performance obligations for it and its staff. It is critically important to the success of the SEZ initiative that all relevant institutions and

agencies needing to work with the SEZ and its Company be required to provide for any necessary staff training in respect of changes in operating regulations and/or procedures.

The SEZ Development Company itself may require broad-based training inputs, depending largely on how it is staffed. In the short-term, recruitment of key senior managers in conjunction with a programme of technical assistance would overcome the pressing need for the SEZ Development Company to be effectively functioning from the outset.

3.5 Training Requirements of Liaison Agencies

It will be a priority task for the SEZ Company as soon as possible after its creation to set up clear lines of communication between it and the liaison agencies with which it will have to work and whose co-operation and assistance will be vital if the SEZ is to operate effectively. As part of this process the training requirements of the agencies will need to be clearly identified and addressed.

CHAPTER 4:
INSTITUTIONAL ISSUES

CHAPTER 4 INSTITUTIONAL ISSUES

4.1 Introduction

This institutional review is based on research, surveys and consultations conducted throughout the Study and addresses the following areas of key importance to the successful development of an SEZ:

- Customs
- Banking and finance facilities
- Taxation
- Company formation, and
- Government guarantees.

4.2 Customs

Apart from the Company, the customs administration is the most important agency involved in SEZ development.

4.2.1 The Role of Customs in a SEZ

The customs interest in foreign trade is primarily to protect revenue, i.e., to ensure the collection of duties and taxes on imported goods that are to be placed on the home market. The customs regime should not be a hindrance to legitimate traffic and, where the promotion of such import - export activity is part of the Government's social or economic policy (e.g. the development of an SEZ), customs controls should be a positive or enabling factor.

The criteria by which a customs system or regime should be judged in a SEZ context are:

- The manner in which it facilitates the speedy movement of imported goods from the point of import to the SEZ and from the SEZ to the point of export or sale on the domestic market in respect of finished goods
- That the documentary and clearance procedures operate in a simple and consistent manner, and
- That the systems and procedures are successful in preventing unauthorised sale of duty free goods within the State.

An inefficient or corrupt customs administration can seriously damage the prospects for SEZ development. There are many examples around the world of the customs administration causing delays and problems (including increased costs) for Zone users. One approach to the resolution of this problem, which is used in many parts of East Asia, is to empower the Zone Authority to supervise the operation of customs activities within the Zone. This has the effect of reducing inefficiency within the Zone.

Another approach is that the customs authorities in the SEZ have an off-line reporting role to the Chief Executive of the Company. This type of arrangement helps to establish a regime of co-operation between the customs administration and Company in solving problems as they arise.

This co-operation is greatly facilitated if the customs administration is involved from an early stage in the planning and the development of the SEZ, including the drafting of legislation.

In order to develop linkages between the SEZ and the domestic economy, it is desirable that a formal procedure should be established both to permit and control the temporary removal of goods to and from the SEZ for the purposes of repair, further manufacture, commercial exhibitions or marketing. This can be achieved through the issue of a Regulation of the Central Board of Customs. Procedures need to be formulated to control such temporary removals.

4.2.2 Bangladeshi Customs Administration

With the many changes creeping into trading practices in the country it is an inevitable consequence that a general wariness, an extra cautious approach to freight clearance on the part of customs officers will occur. In meetings with trading interests, there have been a number of complaints about the operation of customs procedures generally including those in duty free zones.

In addition to the apparent problems of customs clearance of goods, there is the added problem of obtaining refunds on duty paid on capital equipment. On the import of capital equipment for export industries the duty payable is supposed to be refundable under certain circumstances. But in many cases this is proving to be very difficult to arrange and the entrepreneurs are being sent from department to department trying to arrange although all the stated formalities have been complied with.

The other principal complaints raised were:

- A lack of human resources to deal with the increasing volume of trade
- Inadequate physical facilities
- A very high degree of physical inspection
- Cumbersome financial arrangements for duty payment, and
- Necessity of many documents.

It is acknowledged that the primary function of customs is the protection of state revenue interests. Nevertheless, the appointment, at an early stage, of a Director of Customs, who is sympathetic to its aims, conscious of its potential, and imaginative in addressing difficulties within his/her competence, can make a major contribution to the success of the SEZ.

4.3 Banking and Finance Facilities

The financial sector in Bangladesh is split into the normal type of structure of a Central Bank and the commercial banking both publicly and privately owned. The most urgent issue is the financial situation of the banks and the need to maximise competition and efficiency. All the banks suffer from similar problems with respect to their financial structure, medium term strategy, operational systems and staff skills. The sector remains uncompetitive and oligopolistic in nature.

Real lending rates in the banks are at an historic high at around 10% to 12%. The growth rate of credit in the private sector is dismal reflecting both supply and demand problems.

The sector is burdened with huge debts and has become very conservative in its lending policies. The increased caution in the system has led to an accumulation in liquidity and reflects the weak competition in the sector and the need to allow new entrants in to improve competition and so reduce interest rates. But there is little demand from international bankers to enter the market because of its poor performance. Under performing loan portfolios have contributed to keeping interest rates high as a compensating measure and high manning at the nationalised banks have led to high costs which must be passed on to the borrower.

While the immensity of the problem is recognised it is necessary to further emphasise the significance of an efficient banking systems to the foreign investment drive. Local joint venture partners have, for instance, to be able to raise their share of the capital through the banking system. Current criteria with respect to collateral and the total lack of risk capital will significantly impede the potential to maximise the local ownership of investments and the ability

of local partners to weather the inevitable downturns, changes and mistakes they will face in building internationally competitive businesses.

Foreign investment will be seriously constrained pending the determination of the true financial position of the banks, and particularly the extent of bad debt accumulation as public industry is restructured.

4.3.1 Banking Requirements for a SEZ

Banking facilities required in the context of the successful development of an SEZ should include:

- Foreign and domestic currency accounts
- International transfers
- Overdraft
- Term loan
- Working capital loan
- Bank guarantees
- Discounting / factoring
- Credit risk reduction / elimination products
 - bills of exchange
 - letters of credit
 - export credit insurance
- Foreign exchange risk elimination products
 - forward contracts
 - hedge contracts
 - currency options
 - currency swap
- Interest rate risk elimination products
 - future rate agreements
 - interest rate swaps
 - interest rate options, and
- Leasing.

While it would be unrealistic to expect that this range of facilities would exist in any developing country it should be at least part of a reform programme for the sector to aspire to.

4.3.2 Recommendations

- A major study be undertaken to develop and implement an appropriate plan of action to stimulate commercial and merchant banking activity in the Bangladeshi economy via joint ventures with or buy outs of existing banks or through greenfield arrangements.
- There is an urgent need to determine the precise conditions under which major international banks would be interested in participating in the Bangladesh economy and to build these factors and conditions into policy for the evolution of the sector.
- AA policy has to be devised on the key issue of debt write-offs in the present system.
- The difficulties involved and the skill requirements necessary for effective promotion in this area are recognised.
- As an efficient and internationally based banking sector is vital to the development of the economy it is imperative that the Government in conjunction with the authorities in the Central Bank and the existing commercial banks give their wholehearted support and assistance in the development and implementation of such a plan of action.

4.4 Taxation

All countries in the region offer tax based incentives for foreign investments. The tax system in Bangladesh still remains complex and non neutral inspite of the introduction of reform measures.

The country offers many tax incentives including tax holidays and accelerated depreciation. Tax holidays, which range in duration from five to nine years are available virtually to all investors and have often been found to be wasteful or ineffective as an instrument for investment promotion. There are proposals to re-evaluate the tax holiday which expires in 1995 with the possibility of extending it or alternatively replacing it by such alternatives as accelerated depreciation allowances. This examination should be given top priority for as long as new provisions are not in place the country's tax incentive provisions will be rather uncompetitive.

At present the extent of the tax holiday is determined by the location of the industry and it is recommended that consideration be given in the re-evaluation to retain discretion to award additional tax breaks to companies fulfilling specific criteria (e.g. major export projects, key infrastructural developments). However, such additional incentives should not be available for

projects where the key attraction to the investor is access to domestic consumer and industrial markets.

In relation to direct taxation measures corporate tax rates play a pivotal role in attracting investors. The current rate of corporate tax in Bangladesh does not compare favourably with the rates prevailing in other competitor Asian countries. At present corporate tax has been fixed at 45% and 50% in the industrial sector and company sector respectively. In countries like Singapore, Malaysia, South Africa, Thailand corporate tax rates vary from 20% to 30%. The Indian Finance Minister Mammohan Sing recently proposed corporate profit tax to be reduced from 50% to 46%.

Exporters who export 100% of their production either directly or through other exporters can import duty free through a bonded warehouse system. Similar facilities are also given to exporters operating in either of the two Export Processing Zones located in the country. In these cases all duties paid should be refunded through the Duty Drawback Office (DEDO).

4.4.1 Tax and Other Incentives

The following proposed incentives are considered necessary in a location such as Chittagong, in order to make investment in the Zone Area attractive to capital that is mobile and which can choose between other investment opportunities throughout the world.

Qualifying Works and Qualifying Period incentives should apply for 10 years to all construction/reconstruction works carried out within a five year period of the approval of the planning scheme by the relevant Minister and the making of the relevant order by the Minister of Finance.

The principal incentives proposed are as follows:

- Rates Relief
Full remission for 10 years in relation to existing buildings, new buildings and full remission for 10 years on the increase in rateable valuation of existing buildings that were enlarged or improved in the qualifying period.
- Capital Allowances For Commercial Development.
Allowances of 100% would be provided by way of write-off of capital expenditure in the qualifying period.

- Double Rent Allowance against Trading Income.
The tax allowance of double the rent actually paid by a person who carries on a trade, activity or profession will be available for a period of 10 years. The allowance applies where a new lease is entered into in respect of qualifying commercial premises in the qualifying period.
- Corporation Tax Exemption
Provision for the continuation and application of the Corporation Tax exemption (due to expire in 1995) to approved activities within the Zone. In the case of Zone consideration should be given to an additional sliding scale reduction for a further five year period for selected industrial sectors such as engineering based activities but not for assembly or distribution type activities.
- Employment Subsidy and Training Incentives
The possibility of providing for incentivisation of investment in training and retraining schemes should also be considered.

4.5 Company Formation

There would appear to be a general concern regarding the number of agencies whose permission is required before business may commence trading.

While it is recognised that the Bangladeshi Authorities need to control the operation of both foreign and local investors, it would seem that the complexity of these requirements is a deterrent to foreign investors in particular which are considering locating in Bangladesh.

It is recommended therefore that in the case of the SEZ, the Company would be directed and resourced to obtain the necessary permits for a new business and would be empowered by statute to issue a certificate stating that all requirements had been met and that this certificate would exonerate the incoming investor from any prosecution or constraints under Bangladeshi Law arising out of non-compliance with the seeking of permission.

4.6 Guarantees

With regard to foreign investors locating in Bangladesh, it is and will be a matter of concern that any concessions and exemptions given by the Bangladeshi Government could be removed at some point in the future by the Government.

It is recognised that it is not possible for the Government to give enforceable guarantees covering this situation. It must however, be understood that foreign investors need such comfort regarding the security of their investment.

It is therefore recommended that appropriate arrangements are made by the Government in relation to such investors to ensure that the exemptions, incentives and concessions granted by the Government will be honoured.

**CHAPTER 5:
INVESTMENT STRATEGY**

CHAPTER 5 INVESTMENT STRATEGY

5.1 Direct Investment Attraction

Fundamental to the formulation of an investment strategy for the Chittagong SEZ will be the embedding of the concept of competitiveness in the formulation process. In the case of Chittagong it is critical that the appropriate concept or concepts of competitive advantage are identified and on this basis to move forward and formulate development policies to implement the strategy.

The competitive advantage of Chittagong needs to be viewed in terms of its capacity to compete in international trade, which encompasses both trade in products and trade in assets.

Over recent years the growth of world trade has been accompanied by enormous growth in foreign investment. This is clearly evident in many parts of the Asian continent with the arrival of many international corporations into many of its countries. The most dynamic element of the growth trend in foreign investment has been of private long-term investment by companies. In the context of Chittagong the most important form is direct investment which involves more than just an international transfer of money capital.

Money capital is but one element in a package of resources which comprises direct investment. This package includes ownership, control, management, technology and other resources. These types of Foreign Direct Investment (FDI) are now some of the most important elements of international competition.

FDI strongly shapes the international pattern of production. It has taken quite distinct patterns in shape, time and across industries. Its direction has shifted significantly in the past 30 years. Its nationality has also changed. There has been a fall in the shares of the UK and US investment and an increase in the shares of Germany and Japan among others. Its timing has also been uneven after growing faster than world trade in the 1960s there is some evidence of a fall in FDI in the 1970s and 1980s. Overseas investment has also displayed very definite sectoral patterns and these differ between different nationalities. Given these very distinct yet changing patterns in FDI it is important that they are taken into account in formulating a strategy for the Chittagong SEZ.

In recent years there has been an upsurge in the pace of FDI into East and South-East Asia particularly Malaysia, Singapore, Thailand, Indonesia and nearer home in India and Pakistan and it is crucial that Chittagong begins to win its share of this investment flow.

5.2 Types of Foreign Direct Investment

The growth of FDI has led to the growth of the multinational corporation (MNC). There are three different types of FDI typically involving different types of multinational enterprise. They are:

- Horizontal FDI, which occurs when a company locates the manufacture of the same product in plants in different countries (such a company is referred to as a horizontally integrated MNC). This is the most common form of FDI investment.
- Vertical FDI and a vertically integrated MNC, which arises when a company locates different stages in the production of a product in different countries (such a company is referred to as a vertically integrated MNC). An example of this is the computer industry, where industries like Intel, Digital, Fujitsu have been involved in this type of FDI.
- Conglomerate FDI, which occurs when a company acquires an interest in a foreign company involved in production of an unrelated product or service (e.g. if a textile company bought another company in the consumer sector like toys or cosmetics for example).

5.3 Local Intra-Firm Trade

It is also important to acknowledge that a significant proportion of international trade is intra-firm. Unfortunately there is little intra-firm trading between the foreign companies at present operating in the EPZ in Chittagong and the local indigenous companies operating in the region. A recent estimate put the figure at about 3% of raw material input of the foreign firms that were sourced on the home market. This is a situation that has to be improved and it is a very important factor to be taken into consideration in formulating a strategy for the Chittagong SEZ.

5.4 Investment by Bangladeshi Firms

There are increasing positive signs that many local Bangladeshi firms are investing and expanding their operations in the local economy. A good example of this is the continuing growth of the Beximco group of companies. The prospect of attracting companies like this to

locate their additional investments in Chittagong SEZ has to be actively pursued. Also there are public and private sector initiatives underway to try and enable Bangladeshi entrepreneurs to participate in the privatisation process and the encouraging signs of the increase in business activity in Bangladesh. It is important that Chittagong and the SEZ capitalise on these initiatives.

5.5 Strategic Alliances

Over recent years there has been evidence of the growth in forms of international business involvement other than trade and direct investment. These strategic alliances include joint ventures, licensing agreements, management contracts, turnkey operations and international sub-contracting.

Whereas FDI involves the transfer of a package of resources (including money capital, ownership, control, management and technology) these new forms of involvement include some of these resources and exclude others.

International joint ventures involve the establishment of a company in which two or more firms of different nationalities have an equity stake. These have become increasingly prevalent in the manufacturing sector. In some sectors joint ventures are particularly common amongst smaller less well known and less experienced firms, which want to expand overseas. In this regard Chittagong could offer itself as an attractive joint venture partner for smaller East Asian firms, which are interested in expanding their operations.

Licensing agreements are agreements between the owner of technical knowledge and a user. Such agreements often seek to separate the technology component from the investment of capital and the transfer of ownership and control, which characterise FDI. This for instance may provide a worthwhile choice for many of the local industries as they seek to upgrade their designs and technology.

**CHAPTER 6:
BUSINESS STRATEGY**

CHAPTER 6 BUSINESS STRATEGY

6.1 Introduction

The variety of the different international business involvement to day demonstrates that the strategy which the Chittagong SEZ adopts must encompass the concept of trade in its widest context, i.e. for the SEZ the idea of international trade must include both trade in products and trade in assets.

The implications of this for the SEZ is that its strategy must give consideration to Chittagong's competitive advantages and disadvantages in home production, trade of various sorts, inward foreign investment and inward Bangladesh investment.

In formulating a strategy for the SEZ it is important to do so on the basis that Chittagong can become the home base for successful international competitors in an industry or industries. The future prosperity of Chittagong will be determined by it becoming the home base for many competitive firms.

The home base is where the firm's strategy is set and the core product and process technology, in their broadest sense, are created and maintained. Usually, though not always, much of the sophisticated production takes place there. In some cases firms will perform other activities in other locations.

The home base should be the location of many of the productive jobs, the core technologies and the most advanced skills.

By having the home base present in the SEZ it will stimulate the greatest possible influence on other linked industries and will lead to other benefits of competition. As a home base it should become an net exporter and enjoy the consequent benefits.

Ultimately the SEZ should have a number of companies which have a true home base there and thereby they will retain effective, creative and technical control. In this context the ultimate ownership of firms is not so relevant, the nationality of the shareholders is secondary. Chittagong will reap most of the benefits of the firms economy, even if the firm is owned by foreign investors or by a foreign firm.

6.2 Industry Clusters - The Strategic Approach for the SEZ

Strategically the SEZ should adopt an industry clustering programme as the route to developing a number of successful international competitors in an industry or industries cluster. Clustering is one of the most pronounced patterns in the process of geographical industrialisation.

The reason for this is partly that the process of creating skills and the important influences on the rate of improvement are intensely local. Examples of this can be seen internationally in the aerospace industry where clusters have grown in California, Washington, St Louis, Florida, Southern France, Northern Germany, Northern England, Northern Italy, Singapore and Honshu. Other examples of this is the electronics industry clusters in Malaysia, Singapore and Silicon Valley, the clothing industry in Mauritius and Sri Lanka and so on.

6.3 Key Success Factors for Developing Clusters within the SEZ

The key success factors for developing clusters within the SEZ are:

- The identification of cores of industry strength which are be built upon
- The encouragement of a geographical concentration of chosen industries into one area
- The encouragement of linkages within the area of the various industries
- The fostering of companies, which will create sophisticated demand for other companies in the cluster
- The encouragement of rivalry between companies in the area
- The promotion of R & D among all the companies
- The attraction of trade delegations
- The identification and development of support services, and
- The definition and installation of appropriate infrastructures.

These key factors are outlined below.

6.3.1 The identification of cores of industry strength which are be built upon

This will involve the identification of existing or potential clusters of successful individuals and businesses within Chittagong. Potential clusters may be those that incorporate a specific technology, in which Chittagong can be a leader or which are particularly suited to the

skills of the local workforce, e.g. agricultural machinery and equipment or which satisfy a demand that is particularly sophisticated in Bangladesh, e.g. jewellery.

6.3.2 The encouragement of a geographical concentration of chosen industries into one area

From a wider Bangladeshi Government policy perspective, it should nominate Chittagong as the local centre for the chosen industry clusters. For example, all food processing initiatives should be located in Chittagong. This could include the establishment of a national centre of excellence in food processing in Chittagong which would have a research and training centre. This geographic concentration will heighten the systems' effect of clustering. It will allow both, public and private sector participation.

6.3.3 The encouragement of linkages within the area of the various industries

This involves the development of the sub-supply base to the companies operating within the Zone. The Company should have a linkage development team, which would invest in developing the major technologies and capabilities that cut across the industries in the cluster. Such investments will deepen and broaden the cluster. They should include development of local technology as well as acquiring best practice technology from abroad.

6.3.4 The fostering of companies who will create sophisticated demand for other companies in the cluster

This will create a demand pull for the smaller sub-supply and service companies in the cluster. The larger firms in the cluster should be encouraged to impose strict supplier qualification criteria thereby upgrading the overall standard and capability of firms within the cluster. This should also include the identification of holes in the cluster in terms of the supplier and related industries that are not well developed in the SEZ. By filling the gaps in the cluster the entire structure will be strengthened. The gaps should be filled by using the targeted attraction to the SEZ of Bangladeshi firms from outside of Chittagong and of foreign investment if necessary.

6.3.5 The encouragement of rivalry between companies in the area

This will promote upgrading by all companies in the cluster. A competitor benchmarking programme should be put in place whereby the best industry practices in all of the companies located in Chittagong are identified and the other local companies are encouraged to introduce similar industry practices and indeed improve upon them. The permeation of rivalry among firms in the cluster will be a safeguard against vulnerability to firms in more dynamic environments.

6.3.6 The promotion of R & D among all the companies

This would include the encouragement of research linkages between the individual companies and the educational establishments. R&D in this context should include process developments. Information flows between firms and individuals in the cluster will be a tremendous stimulus in the further development of the clusters.

6.3.7 The attraction of trade delegations

Frequent customer visits should be encouraged. Trade delegations should be attracted to visit and thereby encourage further information flows. A capabilities' profile of the Chittagong cluster should be published highlighting the facilities and services in the region

6.3.8 The identification and development of support services

Support services should be identified and developed e.g. manpower training, education, banking, freight, warehousing, energy, utilities and transport. Service industries by their own right will be significant employment creators. Research shows that in many industries, two service jobs are created as a direct result of each manufacturing job.

6.3.9 The definition and installation of appropriate infrastructures both within and outside the Zone

Appropriate infrastructures should be defined and installed including electricity, water, sewerage and gas. As well as these physical facilities an industrial training centre should be built, which would have a particular relevance to the cluster needs. Competition is now firmly

rooted in efficient and cost effective communication between businesses. It will be essential that the SEZ develops as soon as possible an efficient and modern digital telecommunications network.

6.4 Strategy Statement for the Chittagong Development Company

The Special Economic Zone strategy is to develop Clusters of Industries which are connected through horizontal relationships (companies involved in similar type technology) and vertical relationships (companies involved in the manufacture of different stages of production of similar type products). The horizontal relationships will give access to the best technology that may spread over a number of industries whilst the vertical relationship will permit the firms in the cluster to take advantage of world class suppliers of equipment and practices.

These clusters will involve a range of industry types including:

- Labour intensive
- Resource intensive
- Scale intensive
- Differentiated, and
- Science based.

In the case of each industry classification the Chittagong Development Company will endeavour to determine what is the key source of competitive advantage and then will implement policies to maximise upon it. The Chittagong Development Company will implement programmes which will foster the development of the clusters by implementing appropriate development programmes which address factors for developing clusters of industry within Chittagong.

6.5 Benefits which will accrue from the Chittagong Clustering Strategy

The following benefits will accrue from a SEZ clustering strategy.

- Both manufacturing and services will become mutually supporting
- Benefits will flow forward, backward and horizontally
- Aggressive rivalry in one industry will tend to spread to others in the cluster by way of spin offs and related diversification by established firms and through the exercise of bargaining power
- R&D will be stimulated by entry of new firms within the cluster

- New strategies and skills will be introduced by the new entrants
- Information will flow freely and innovations will be introduced speedily through the contacts between suppliers and customers who are in contact with many competitors, and
- New ideas and new ways of doing old things will be generated through the interconnections within the cluster.

6.6 The Role of the SEZ Company

The Company will need to be structured so as to act as a catalyst in developing the industry clusters and in undertaking strategic planning for its future activities.

It will also have a promotion/marketing function to encourage both overseas and domestic businesses to locate in the Zone. From a day to day development viewpoint it will be important for the Company to involve itself in management and employee training thus ensuring the adoption of best international management and work practices.

From the cluster viewpoint it will be critical that the wider external environment develops alongside the actual Zone itself. Hence the Company should have a focal regional involvement in the development of the Chittagong regional infrastructure, including education. International business demands the highest level of infrastructure which cannot be fostered without the best telecommunications networks and language skills. Similarly to days business community demands top quality hotel and restaurant facilities. All this type of regional development priorities have to be uppermost on the working agenda of the Company.

The Company will act as a critical strategic planner and facilitator in implementing the key success factors for developing industry clusters within Chittagong.

6.7 Formulating an Industry Clustering Strategy

In formulating an industry clustering for the Chittagong SEZ it is essential that the traditional strengths and core competencies of Chittagong and its regional catchment area be capitalised upon and harnessed for the purposes of development of the area in the form of the new Chittagong Special Economic Zone.

Based upon an analysis of Chittagong the fundamental underlying core competencies can be summarised as being:

- An established track record in many engineering technologies, including electrical industrial machinery, sewing machines, motor cycles and auto rick-shaws,
- A tradition in the garment industry including knitwear, sports and athletic goods, and
- A keen knowledge of leather tanning and finishing.

A clustering strategy for industry and business development in the SEZ is recommended. This strategy should be developed around traditional strengths and core competencies of Chittagong and the surrounding region. This approach must address the crucial concept of developing a distinctive competitive edge for the SEZ. Competitiveness is crucial to ensuring that the businesses operating within the SEZ will have a solid platform on which to build viable and sustainable business activities which can survive and prosper in international markets.

CHAPTER 7:
CHITTAGONG SEZ FRAMEWORK

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7.1 Overview

7.1.1 Definition

A Special Economic Zone (SEZ) as the team is used in this study, may be defined as a special economic development area with a high quality physical environment where machinery and raw materials can be imported, stored, processed, manufactured and exported, with the benefit of a liberal regime, free of taxes, duties and trade restrictions. Such a Zone will typically be managed by a dedicated Special Economic Zone Company (the SEZ Co.) and will usually have a range of special tax and other incentives to promote the economic development of an area by attracting domestic and foreign investment.

As such the SEZ concept employed in this study goes beyond the SEZ concept already used in Bangladesh in the income tax subsidies scheme. The EPZ's and the four District in Chittagong Hill tract are designated as SEZ under the existing income tax subsidies scheme.

7.1.2 General Issues

The establishment of the above SEZ concept requires a unique solution containing all of the following elements:

- The need for the SEZ solution to make provision to be as all embracing as possible, in terms of its applicability to the development of the Chittagong Region as a whole;
- The need for the SEZ solution to accommodate as wide a range of activities as possible, with the overall objective of promoting both foreign and domestic investment in manufacturing, distribution and any other relevant activities;
- The need for the SEZ solution to address and insofar as possible accommodate the interests of potential investors, the strategic market interest of which may include the domestic Bangladeshi market, and
- The need for the SEZ to contain a duty free area.

It is believed that any legislative proposals, if necessary, should be of a general nature (i.e. rather than Chittagong specific). The legislation should include a special statutory provision for declaring a particular area to be a SEZ and for such area to be defined in a Statutory Planning Scheme. In order to protect the "exclusivity" of SEZs, the number of areas designated as SEZs

should be limited, thereby giving them a significant incentive advantage. The following sections outline an overall framework for the planning and development of a SEZ and include a draft of principal SEZ legislative proposals.

7.1.3 Special Economic Zone Company

It is proposed that a dedicated Special Economic Zone Company (the SEZ Co.) should be established by Government as soon as possible with a statutory brief and with powers for the planning, development and management of the SEZ in accordance with an approved planning scheme and approved by the relevant Minister(s). The SEZ Co. shall be a body corporate with perpetual succession and power to acquire, hold and dispose of land.

7.1.4 Duty and Functions of The SEZ Co.

It shall be the general duty of the SEZ Co. to secure the development of the defined Zone Area and for that purpose it shall have the following principal functions:

- To acquire, hold and manage land in the area for its development, re-development or renewal
- To prepare a Planning Scheme(s) for the development, redevelopment or renewal of the area
- To develop, redevelop or renew or secure the development, redevelopment or renewal of any land in the area or otherwise to secure the best use of any such land
- To dispose of land:
 - on completion of its development, redevelopment or renewal; or
 - to secure its development, redevelopment or renewal; or
 - to secure its best use
- To encourage and promote investment in the area, and
- To provide such infrastructure and to carry out such works of amenity development, or environmental improvement as, in the opinion of the SEZ Co., may be required to encourage people to invest, work, shop or otherwise use the facilities provided in that area.

In general, the SEZ Co. should have powers to carry on any of the activities that appears to be requisite, advantageous or incidental to, or which appears to facilitate the performance of any of its functions under the relevant legislation including the promotion and marketing of the Zone

Area. The SEZ Co. should also have the power to do all such things as are necessary or expedient for the purposes of the functions assigned to it under the legislation.

7.1.5 The Zone Area

Much discussion and investigation has centred on the selection of the most suitable site on which to construct the first SEZ in Chittagong. The Board of Investment proposed six sites for examination and consideration by the Study Team. All are located on the Southern side of the Karnaphuli River. Likewise the Chittagong City Corporation proposed an additional two sites on the Northern side of the river.

Each of the proposed sites were considered as to their suitability against the following set of criteria:

- The location would best facilitate the future development of infrastructural facilities such as water supply, drainage, sewerage and electricity and a good efficient road transport network system
- The site should comprise an area of not less than 500 hectares, which is considered necessary for a development of this nature
- Labour availability within a reasonable commuting distance
- The site when developed as an SEZ that would make the greatest positive social and economic impact on the Chittagong Region
- The site should have some association or be near to existing industrial development
- The site can be easily acquired in a cost effective manner with the minimum amount of social disruption or disturbance, and
- The site should be free from flooding and can be developed economically.

Site No 1 when considered against the above set of criteria was thought to be the most suitable and it is accordingly recommended as the site on which to develop the first SEZ in Chittagong.

A key consideration in the definition of such an area must be the need to facilitate a focused and concentrated investment effort in the initial phase of the zone development. This is considered essential in order to enable a critical mass of activities and employment to be created in the short term to maximise the advantages of existing infrastructure provision and investment in the area.

In the case of Chittagong, it is proposed that the SEZ Co. would seek duty free status for the whole of the initial designated Zone Area.

7.2 Planning and Development Framework

7.2.1 The Planning Scheme

One of the principal elements is the preparation of a concept plan called a Planning Scheme for the defined zone area. The SEZ Co. shall be required to present such a scheme as soon as possible after its establishment. The scheme shall consist of a Written Statement and a Development Plan indicating the manner in which the SEZ Co. considers that the defined Zone Area should be developed and in particular:

- The nature and extent of the proposed development(s)
- The proposed distribution and location of uses
- Proposals in relation to the overall design of the proposed development including the maximum heights and the external finishes of structures, and
- Proposals relating to the roads layout, the provision of parking places and traffic management.

In general, in preparing a Planning Scheme under this section the SEZ Co. should:

- Comply with any general directives as given to it by the relevant Minister
- Consult with the relevant regional and local authorities in their immediate area
- Have regard to any existing development plans made by these authorities, and
- Make arrangements for the making of submissions by interested persons in relation to the scheme and the considerations by the SEZ Co. of any such submissions.

7.2.2 Development Plan

In addition, the preparation of a development plan must have regard to other specific considerations including location, standards of existing infrastructural provision, anticipated employment levels and industry type, cost of land and infrastructure upgrading, development programme and phasing, and related investment.

The development plan will provide a mechanism for the correlation of these various considerations within an approved planning scheme through incorporating:

- An optimum development layout

- A land use zoning strategy identifying locations within the development for a range of specific activities, and
- A phased programme of development.

The main features identified the indicative development plan include:

- Main access to factory sites including the provision of a new Marketing Centre
- Areas for new building development
- Proposed landscaping and amenity areas, and
- Further land area(s) for the future expansion of the SEZ.

As with all plans, the zoning plan should be subject to constant review and modification to meet current requirements.

7.2.3 Land Use Zoning

A proposed land use zoning have been devised with the objective of facilitating the early preparation of a statutory planning scheme for the designated SEZ area. This land use zoning takes account of a range of activities likely to develop within the SEZ and includes the following:

- Warehousing/distribution activities associated with rail, road and air cargo transportation and handling. All such buildings have particular dimensions and profiles suitable for such activity
- Sites that may be devoted in their entirety or by subdivision into smaller units for use for small-light industrial activities
- Activities relating to high technology industries and services, which are located near the main entrance to the SEZ. This is the preferred location as buildings associated with these activities tend to have high quality architectural facades and design standards and would help to present a favourable aspect at the main entry point to the SEZ development
- The balance of the undeveloped sites and buildings have been zoned for medium/large scale general industry which would probably cover most industrial activities that might be expected to locate in the SEZ, and
- A large area running diagonally throughout the factory sites and also along the outer periphery of the site has been zoned for landscaping and recreational activities; the selected areas and their interrelationships are such as to create an

attractive image and environment and generally enhance the appearance and character of the overall site as a pleasant industrial park.

As would be normal, the land use zoning as incorporated in the approved planning scheme should be subject to regular review and modification to meet changing circumstances and development requirements.

7.2.4 Approval of the Planning Scheme

A planning scheme shall be submitted by the SEZ Co. to the relevant Minister for approval and a copy thereof shall also be sent to the regional and local authorities in the area at the same time.

Where a scheme under this section is submitted to him by the SEZ Co., the Minister should consider any objections made to him within a reasonable period of receiving the planning scheme and may modify the scheme in such manner and to such an extent as he thinks proper and may approve the scheme or the scheme as so modified. Once the planning scheme is approved, each of the following shall be exempted from the normal planning process that would apply within the area of the local authority in which the zone area is located:

- The carrying out by the SEZ Co. of any development in the zone area, which is consistent with the scheme prepared and approved under this section, and
- The carrying out of any development in the zone area by a person other than the Authority and which is certified by the SEZ Co. to be consistent with the scheme prepared and approved under the legislation.

The inclusion of a provision of this type will help to minimise delays at the planning and pre-construction phase of new projects.

In performing this function, the SEZ Co. shall be required to inform itself of all relevant planning and environmental considerations and especially of the impact and consequences of all development proposals on the particular zone area itself and on the surrounding area.

The feasibility of implementing the above planning scheme approach was discussed with relevant key interests at Interim Report Stage of the Study. The Study Team was informed that it may be more appropriate to maintain the existing planning process for individual development proposals whereby the Chittagong Local Authority would approve individual projects within the

defined zone area once these proposals were consistent with the approved planning scheme. The desire to maintain a local community and administration involvement in the approval of development proposals within the SEZ is understandable. It would be an acceptable procedure provided that it does not lead to delays in the pre-construction phase of new projects. It is crucial to ensure that an unduly bureaucratic approach does not delay project start-ups; that unjustified obstacles are not placed in the way of badly needed development and employment, especially at a time when there is such intensive competition for internationally mobile investments.

7.3 Methodology

The SEZ Co. will be required to inform itself of the impact and consequences of the defined zone area on the particular area itself and on the surrounding urban area.

7.3.1 Transportation

The impact of the projected developments on existing and projected patterns of public and private transportation have been assessed on a preliminary basis as part of this Study. The SEZ Co. shall aspire to the creation of a strong transportation focus based on the existing port, rail network and airport and shall also evaluate in detail the improvements required in the road network, serving the zone area.

7.3.2 Infrastructure

The scale of the development and redevelopment involved will demand renewal or improvement of the existing site and local infrastructure. An appraisal of existing systems has been carried out as part of this project and further detailed evaluations will be required in the context of the preparation of the planning scheme.

7.3.3 Design and Architecture

Mediating between design and architectural specificity and design flexibility is a challenge peculiar to the planning scheme concept. The SEZ Co. must therefore approach its statutory obligations and its developmental role in a manner that will ensure: