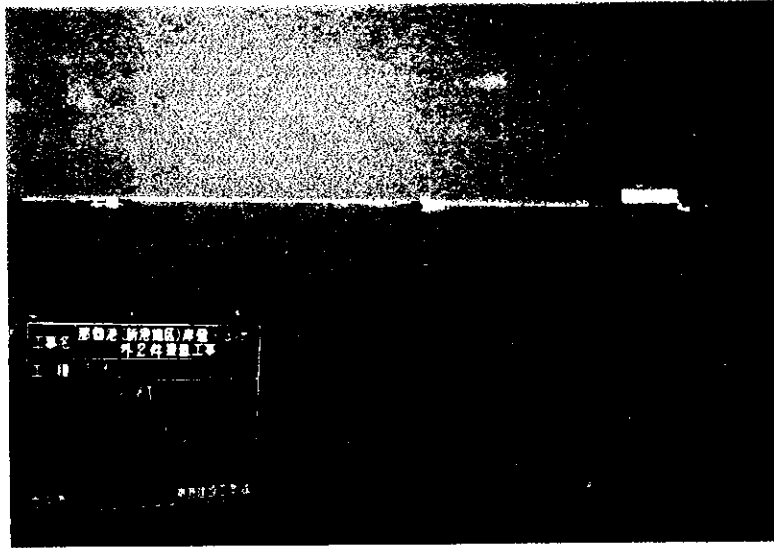
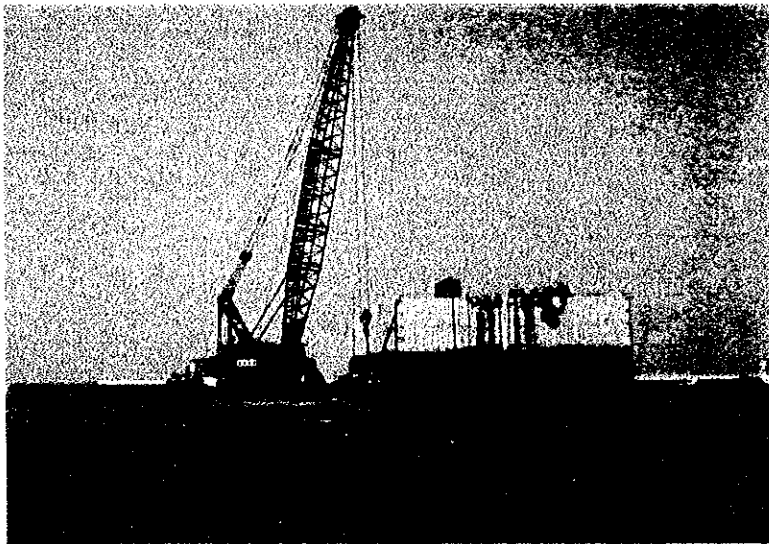


28 Towing Caisson on sea

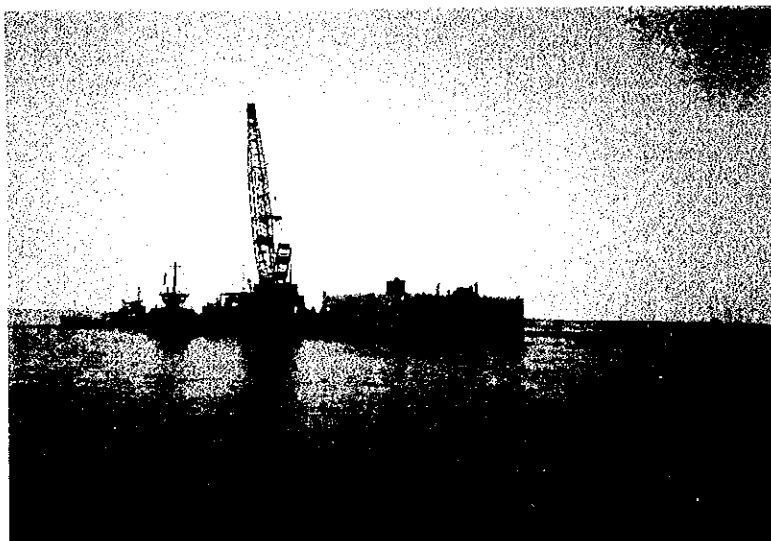


OHP 20

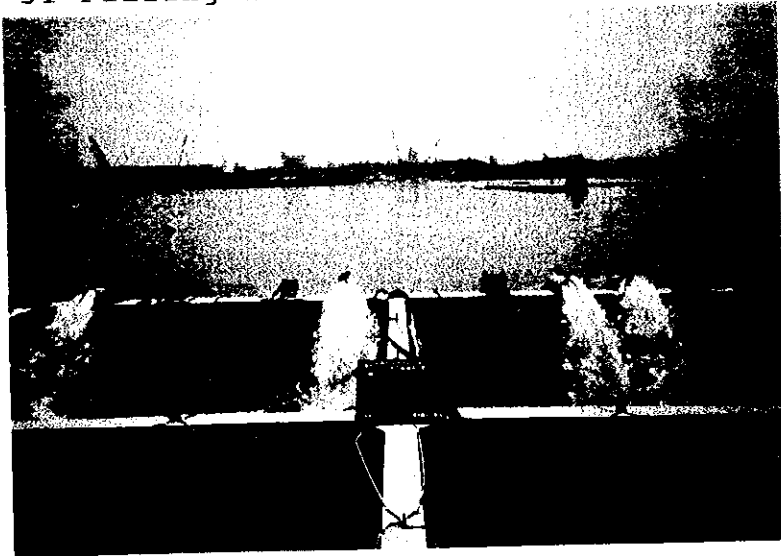
29 Installation of Caisson on sea



30 Installation of Caisson on sea

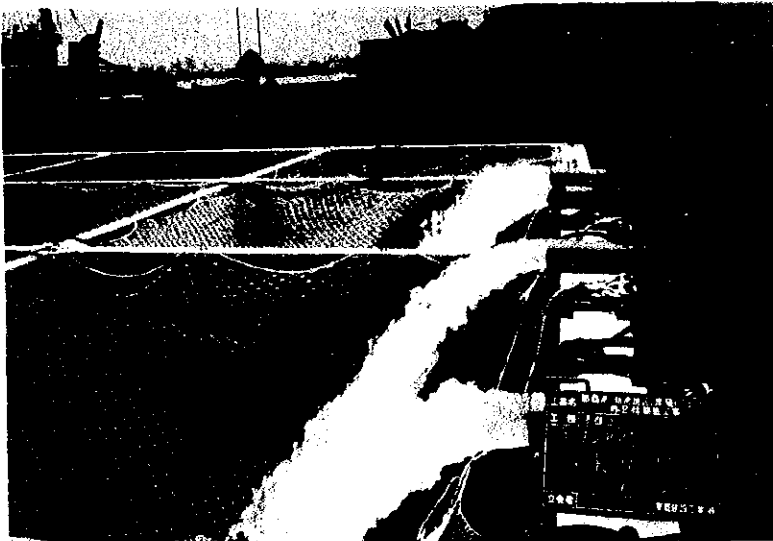


31 Filling Water inside Caisson

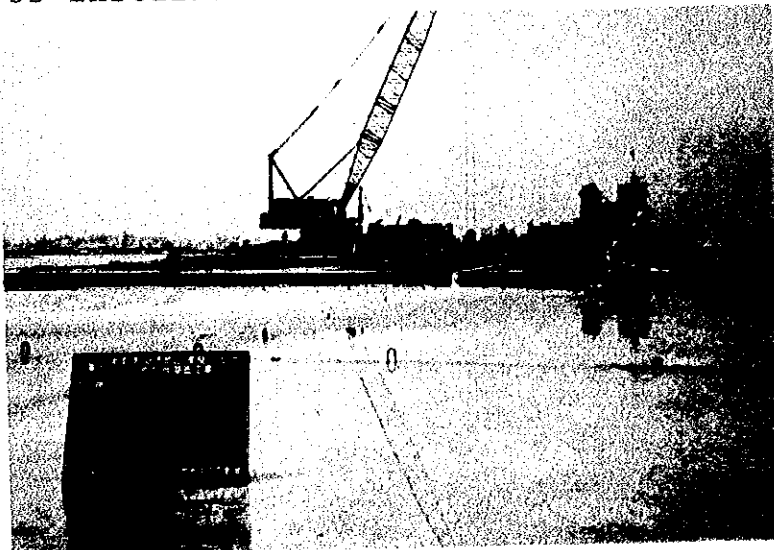


OHP 21

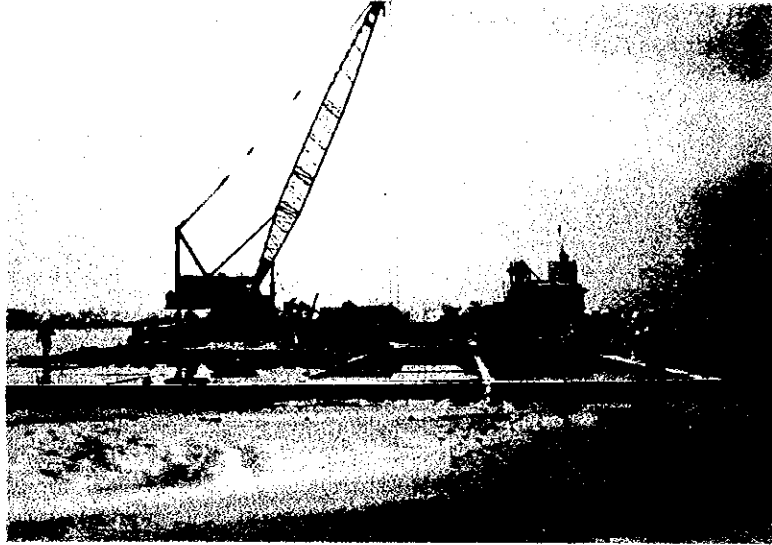
32 Filling Water inside Caisson



33 Installation of Caisson



34 Installation of Caisson



OHP 22

35 Filling Sand inside Caisson



36 Casting Cover Concrete



5. Port Management and Operation, Economic Analysis, Financial Analysis

Mr. T. SASAKI

Thank you Mr. Chairman, ladies and gentlemen;

For about forty minutes sleepy after lunch, I have to speak about a little complicated matters. Cooperate with me for a while.

Vietnamese government has been constructing Cai Lan Port and is intending to develop the port. Representing the government, VINAMARINE has already constructed Berth No.1 through the branch Construction Board 213.

This is the VINAMARINE's organization chart. Construction Board 213 is here. VINAMARINE is a very big organization, even though its tasks are limited to maritime affairs.

(OHP-1, Figure 17-1-1)

For future development, it is necessary to evaluate the port development project based on economic and financial analysis. TEDI and JICA Study Team have been studying since the end of last year and have been able to present the results of the economic and financial analysis. I am going to summarize these results.

At first we have to assume the financial port unit especially for the financial analysis.

VINAMARINE has two kind of organizations concerned with ports. The "port authority" is to manage navigable zone on the sea water surface and the "port" is to manage all port facilities to distribute cargoes. The port is focused on cargo handling, and has a number of divisions and departments to carry out this tasks. Some of them are independent as "enterprises".

(OHP-2, Figure 17-1-3)

Quang Ninh Port Authority has already been controlling the navigable zone from Cam Pha port to Cai Lan port. The Figure on the screen shows the navigable zone under the control of Quang Ninh Port Authority.

The area surrounded by blue lines represents navigable water zones and the green lines does shipping routes.

It is, therefore, very natural that we assume "Cai Lan Port" to be the management body of Cai Lan port and to be an independent financial body. After this, I will use "Cai Lan Port" in this meaning.

The main operation system in a port is the cargo handling system as described in Chapter 12, but it is too specialized a matter to explain here.

Based on the type of system to be adopted at Cai Lan port, we have estimated the required number of workers to be 580.

Secondly, financial analysis has been done based on this Cai Lan Port. Financial analysis of a project has mainly two objectives. One is to examine loan repayment capability and the other is to evaluate profitability.

For the first objective, a profit/loss table, a balance sheet and a cash flow table are commonly used. For the second one, a financial internal rate of return(FIRR) is used.

Premises of Financial Analysis are as follows:

(Next, change to the Screen!!!)

(1) Summary of Investment

	1,000 US\$
Berths	55,200
Dredging of channel etc.	26,270
Yard pavement and others	1,940
Transit sheds	4,923
Container freight station	775
Inner roads	1,243
Utilities	105
Revetments	8,101
Port office	660
Handling equipment	43,083
Administration, Eng. service	12,100
TOTAL	154,400

(2) Investment schedule is as follows:

1996	3.020 million \$
1997	3.020
1998	28.570
1999	38.741
2000	81.053

(3) To calculate depreciation, facilities and equipment are assumed to have the following service lives:

Wharf, Revetment, Channel	40 years
Transit shed, C.F.S., Office	25 years
Yard pavement, Road, Utilities	20 years
Handling equipment	15 years

(4) Conditions of loan

1) Long term loan

"Cai Lan port construction project" is based on a low-rate long term loan of a foreign country's ODA. Its conditions are set as follows:

Interest	1 %/year
Repayment period	30 years
Grace period	10 years

2) City bank loan

Interest	6 %/year
Repayment period	5 -15 years

(5) Port income

Cargo volumes estimated in Chapter 9 bring various incomes to Cai Lan port. Ships which transport this cargo also provide the port with income via navigation charges and dues.

Port revenue is estimated by combining "Port Due and Charge Tariff" of Vietnam with the estimation of ship calls, cargoes and their handling styles described in CHAPTER 12.

PORT REVENUE

ITEMS	1,000 US\$
Navigation Charges and Dues	5,347
Berthage and Wharfage Dues	614
Charges for Discharge/Loading Cargoes	8,092
Storage Charges	231
Domestic	604
TOTAL	14,891

(6) PORT OPERATION COST

ITEMS	1,000 US\$
Salary	261.0
Social Insurance	52.2
Fuel	710.8
Electricity	117.4
Water	29.1
Maintenance Dredging	500.0
Maintenance and Repair (Equipment)	2,150.0
Maintenance and Repair (Facilities)	547.1
Tax (4% of Income)	595.6
TOTAL	4,263.2

Cai Lan port construction is executed using the funds loaned on the premises mentioned just before. Interest must be paid annually from the beginning of the loan and the principal part must be also repaid uniformly for twenty years after the initial ten years. If a shortage of money occurs, at least the same amount of money must be borrowed from a city bank with a higher interest rate and no grace period.

The financial status of Cai Lan port project has to be examined at least for thirty years after the last loan to confirm full repayment of all loans. A balance sheet and a profit/loss table are shown in the figure on the screen as the base case.

This base case is calculated on the same conditions as the long term loans mentioned just before.

But city bank loans which will be introduced to cover cash shortages in the first 5 years and in the 34th year have 5-year obligation of repayment. The former is assumed for training cost to operate the new port with cargo volume of 2.7 million tons. The latter will occur in a little shortage of cash. And a large scale replacement investment to equipment in 21st year is based on 15-year repayment.

(OHP-3, Figure 20-3-1)

In the figure on the screen, we can see that the balance of long term loan reaches its highest point in the 5th year, and then remains the same for the succeeding 10 years. After that, the balance will decrease year by year by principal repayment, finally vanishing in the 35th year.

This financial planning can fully pay the long term loans and the city bank loans .

This case also produces a financial internal rate of return (FIRR) of 3.8% that is higher than the long term loan rate. Regarding sensitivity of FIRR, two main factors are selected and their influence on FIRR is examined.

It can be seen that decrease in port revenues affects FIRR to a greater extent than an increase in construction cost.

FIRR: Financial Internal Rate of Return

CASE	FIRR
Base case	3.8 %
Construction cost increases by 5%	3.4 %
Construction cost increases by 10%	3.1 %
Port revenue decreases by 5%	3.2 %
Port revenue decreases by 10 %	2.5 %

I am going to change my subject to Economic Analysis, which is a more important evaluation especially for public works.

Economic analysis of a project is to evaluate its developing effect on the whole country economy. It is, therefore, very natural to select GDP(Gross Domestic Product) Vietnamese as the measure of economic benefits and to discuss increments of GDP that would be produced by the Cai Lan Port Investment.

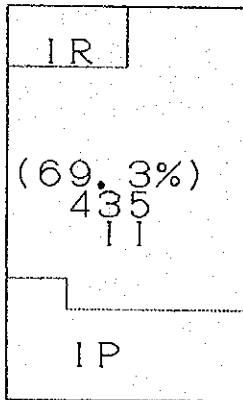
GDP is a summation of "value added" which each economic unit produces. Therefore, we also use "value added" as a synonym for a part of GDP after this.

(OHP-4)

We must explain the relation between the increment of GDP Vietnamese and the investment to Cai Lan port. Even if the port plays a very important roll in increasing GDP, it is only one element of the total system. The total system includes roads and various industries. We define the total project as Cai Lan port construction, constructions of 4 factories and road construction of about 40 km long connecting 4 factories and the port.

In the figure on the screen, the total investment IT consists of IP:investment to Cai Lan port, IR:investment to Roads and II:investment to 4 industries.

OHP 4



IR: Investment to Road
34 (5.4%)

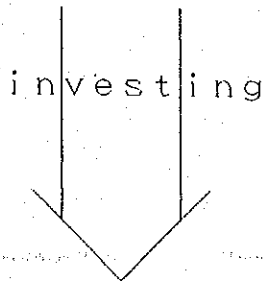
(69.3%)
435
II

IT: Investment Total 628 (100%)

II: Investment to Industries

IP

IP: Investment to Port
159 (25.3%)



Value added of Port		VP	14.2
Value added of Industries		VI	158
		VO	172.2

GDP
VIETNAMESE

$$VP = VT * IP / IT = 43.6$$

Each economic unit produces its value added. VP means the value added by Cai Lan Port, VI means the summation of values added of 4 industries. Any value added through the roads is neglected here.

For example, Cai Lan Port will get an annual revenue of about \$ 1.5 million after all berths open. This revenue includes only fuel price as a intermediate goods to be excluded from the "value added Vietnamese" which is related with the port, because only the fuel price flows out of Vietnam when importing. On the other hand, the electric power price consumed in the port, for example, will be changed into the value added of some other economic unit producing electricity in Vietnam and then should not be subtracted from the "value added Vietnamese". We call the amount of this kind of value added as VO:value added of other industries. Boundaries shown in the figure are not real, but imaginary ones. VP, VI AND VO are in the figure only as conceptual meanings. VT is the summation of VP, VI and VO. Fortunately, we need only the total VT as the increment of GDP Vietnamese. So, we can get the increment of GDP Vietnamese, that is same as the total value added:VT, by summing up the values added subtracted only imported value.

Next, we have to estimate the benefit solely concerned with Cai Lan Port to evaluate its Construction Project. We can not help assuming the benefit to be the shared portion of the total value added: VT mentioned above with the ratio IP/IT. Real figures are shown on the screen. But these are not shown in economic prices. Besides, the port investment includes physical contingency and is a little larger than the value in financial analysis.

Besides, the local currency part of the annual investment will cause the annual increase of GDP Vietnamese during the first 5-year investing period.

For the economic analysis, prices are expressed in economic prices. There are various methods to convert the market prices into economic prices. Here, the economic prices are calculated by eliminating transfer items, such as taxes, subsidies, custom duties and so on.

In general, all the costs and benefits are divided into three categories; traded goods, non-traded goods and Labor. Labor is further divided into skilled labor and unskilled labor. The cost of skilled labor is obtained by multiplying its market price by the Conversion Factor for Consumption (CFC), and the cost of unskilled labor is calculated by multiplying its market price by a rate of the Shadow Wage Rate and the CFC. Traded goods are expressed by the C.I.F. value for imports and by the F.O.B. for exports. As for non-traded goods, the economic price is calculated by multiplying the Standard Conversion Factor(SCF).

(OHP-5, Table 19-5-1, 19-5-2)

We applied these adjustment to the benefit and the investment cost, getting the tables for economic price on the screen.

The value added by 4 new industries totals up to 158 million US\$ per annum.
The investment cost totals up to 155 million US\$.

The total value added consisting of Cai Lan port's 14.2 million US\$ and 4 new industries' 158 US\$ is divided into Cai Lan port's portion of 43.6 million US\$.

These yearly series of the benefit and cost related to Cai Lan port are summarized in the Table on the screen, giving EIRR = 21.6 %.

Thus, this Short-term Development Project is feasible from the viewpoint of the national economy. Furthermore, this EIRR-value does not include the increments of GDP Vietnamese by the first 5-year investment. If this is included in the benefit time series, the EIRR will be estimated to be larger by few percent than the present value by brief calculation.

1. CAI LAN PORT CONSTRUCTION PROJECT TO 2000

This Environmental Impact Assessment (EIA) has been prepared as part of the requirements of the Feasibility Study. It assesses the effects of port construction and operation up until the year 2000. The aim of the EIA is to identify any environmental constraints on the port development at Cai Lan. The port designers will then be able to incorporate appropriate measures into the detailed design phase of the project, to avoid, minimise or mitigate any negative effects of the development.

(OHP 1)

2. EIA CONTENTS

The EIA is set out in five main parts. These are:

1. **The project**, which includes key environmental issues, information sources and legal requirements; and describes the construction and operation of the port.
2. **Social environment and effects** which describes the existing social and economic environment and infrastructure of the Quang Ninh, Bai Chay and Cai Lan areas and sets out the effects of development.
3. **Physical and biological environment and effects** which describes the meteorology, geology, terrestrial ecology mangrove ecology and water and sediment quality of the area. It then describes the effects on the physical and biological environment.
4. **Mitigation, monitoring and management**
The describes how the effects can be managed so that the project can be allowed to proceed.
5. **Conclusions and future issues.** This summarises the findings of the EIA and briefly sets out the likely issues which will arise during the wider economic development of Ha Long City.

My presentation summarises the information presented in the EIA document. First I will briefly describe the Cai Lan port area. I will then describe the key environmental issues arising from the construction project. Then I will describe the approach and methods used in environmental impact assessment.

After that I will summaries the construction plans for Cai Lan Port. Then I will describe the effects of the port construction project and the management methods which should be used to minimise those effects.

3. LOCATION OF CAI LAN PORT

(show OHP 2)

I will now show the main features of Cai Lan Port and its local environment. This map shows the location of Cai Lan Port. It is within the newly created Ha Long City, which includes the towns of Hon Gai, Bai Chay and Gieng Bay. Bai Chay Bay is an estuary with an areas of approximately 33 square kilometres.

Mangrove vegetation covers a large part of the intertidal area in the estuary on the northern shores of Bai Chay Bay. But near Cai Lan the mangroves are spares, with only a small area of mangroves in the mouth of Cai Lan estuary. Bai Chay Bay drains to Ha Long Bay via Cua Luc Strait, approximately 2 km east of the port site.

(SLIDE 1 OF CAI LAN PORT SITE from route 18)

Cai Lan port site has been modified by human activities already. Much of the site is bare of vegetation. The hills have a grass and scrub vegetation cover. Some buildings are present in the area of the port.

(SLIDE OF PORT FROM THE AIR)

A single berth structure has already been constructed at the site. The small Cai Lan settlement lies at the base of the hills in the background. Approximately 80 people live there.

The immediate vicinity of Cai Lan port is sparsely populated.

Two pagodas are present in the vicinity of the port site, this one being approximately 200 m from the existing berth.

(SLIDE OF PAGODA)

The second pagoda is on the shore of the Cai Lan estuary.

(SLIDE OF ESTUARY)

A few houses are present on the hillside near Cai Lan estuary, below the existing route 18.

(SLIDE OF CAI LAN)

The small village of Cai Lan is approximately 1 km from the port site.

But not far away are the population centres of Bai Chay and Hon Gai, which are on either side of Cua Luc Strait and face Ha Long Bay. Bai Chay, which is shown on this slide, has numerous hotels and restaurants along the foreshore.

(SLIDE 3 OF BAI CHAY TOURIST AREA)

Ha Long Bay is a well known tourist attraction with great potential for future development.

(SLIDE 4 OF HA LONG ISLANDS)

The main attractions are the scenic islands offshore, with their many caves, the clean beaches and clear water; and the fresh seafood which is available in the hotels and restaurants.

The area has a strong nautical flavour and a long history of fishing and port activities. Port facilities are already present at Hon Gai which is the main coal-fields of Quang Ninh Province. B-12 Oil Port is located near Hon Gai within Bai Chay Bay **(SLIDE OF B12 OIL PORT)** and ships anchor within the Bay during loading and unloading of their oil cargo. Quang Ninh Port also operates as a floating port near Hon Gai, loading and unloading cargo from ships at anchor offshore in Ha Long Bay.

(OHP 3)

4. KEY ENVIRONMENTAL ISSUES

Cai Lan Port site is in an area rich in natural resources, with many special features. The key environmental issues associated with the port development include:

- Water quality
- Bai Chay Bay mangrove ecosystem
- the tourism industry
- socio-economic effects
- aesthetic effects (landscape, recreation, rural beauty)
- growth of industry associated with the port

All of these issues are addressed in the EIA.

I will now describe the legal requirements for the EIA and the approach taken in the EIA study.

(OHP 4)

5. APPROACH TO EIA

- The Law on Environment Protection was enacted by the Vietnamese Government on 10 January 1994. This sets out the principles and philosophy for environmental protection in Vietnam. Article 18 of this law requires an environmental impact assessment to be prepared for projects involved in socio-economic development, such as the Cai Lan port construction project.

- Terms of reference for the EIA were agreed with the Ministry of Science, Technology and Environment during the commencement of this project.

- Discussions were held with numerous scientists and organizations in Hanoi and Quang Ninh during the data collection and analysis phase of the project. The intention was to consider all aspects of the environment which might be affected by port construction at Cai Lan. Data and information used in preparing this EIA came from several sources. There included

- An ecological survey of the mangroves in Bai Chay Bay, and an ecological survey of Cai Lan port area; carried out by project team members

- Also, field surveys were commissioned by the project team and carried out by Vietnamese and overseas organizations, including:

- Hydrological survey.
- Water quality and sediment quality survey.
- Topographic survey.
- Bathymetric survey.

- A collection of data on the social and natural environment of Quang Ninh Province was also commissioned.

- To interface between the environmental studies and port design, preparation of the EIA has taken place at the same time as preliminary port design and planning. This has allowed environmental matters to be included as early as possible in the port design.

- A key part of the EIA is to recommend management practices to minimise the effects of port construction. These include mitigation plans and management plans to be developed during the detailed design phase, and if necessary, remediation works to be carried out during and after construction.

- The EIA also recommends monitoring to be carried out and suggests some tentative interim water quality guidelines for Bai Chay Bay.

I will now outline the port construction project.

(OHP 5)

6. OUTLINE OF CAI LAN PORT CONSTRUCTION PROJECT TO 2000

The main features of the construction project are the following (SHOW OVERHEAD OF PORT PLAN)

- One berth already constructed
- Six more berths to be constructed.
- 412,000 square meters for cargo storage and handling.
- Port office, warehouses, workshops etc to be constructed.
- Machinery to include mobile cranes, fork lifts, bulldozers, etc.
- Dredging of navigation channel, anchorage and turning basin to depths of between -9 and 13 m.
- A road will be constructed along the same route as the railway line, and an access road to the port will be built along the estuary.

The key activities that are important from an environmental perspective, are the following.

(OHP 6)

(Read from overhead).

Now I will describe the likely effects of the port construction project on the social environment in the vicinity of Cai Lan Port.

(OHP 7)(OHP 8)

7. EFFECTS ON THE SOCIAL ENVIRONMENT

Population:

- The population of Cai Lan area is small (around 80 people). There is likely to be an increase in the local population as workers are required at the port. Already, new shanty

houses are springing up at the port entrance. An increase in population will affect the availability of social services such as health, education, policing, etc.

Employment:

- There is likely to be an increase in jobs for local residents though they may have to compete for jobs with workers from elsewhere.
- There will also be economic spin-offs for local residents to provide goods and services for port employees and ship crews. Stalls selling food and drink etc. are already being set up at the port gates.

Infrastructure:

- There will gradually be an improvement in services as roads and railways are upgraded in the vicinity of the port.
- If Route 18 through Cai Lan is upgraded for use to 2000, there will be short term impacts on residents from construction including noise, dust, traffic hazards.
- Building of a new road to bypass Cai Lan will decrease the noise, dust and traffic hazards near the houses. However, houses closer to Gieng Day will continue to be affected.
- The new road will affect people living on the edge of Cai lan estuary and along the adjacent hillslope below route 18. There will be a great increase in noise and dust there.

Cultural values:

- Two pagodas are present near the port. The preliminary port design plans call for the removal of one of the two pagodas. People who use this pagoda will be affected by its removal. Ha Long People's Committee will discuss this issue with the users of the pagoda, with a view to relocating the pagoda. The Peoples Committee has been able to achieve a satisfactory outcome in a similar case.

Shipping traffic:

- An increase in the number of ships may increase the accident hazard in Cua Luc Strait area.
- To 2000, if 7 - 8 ships per day pass Cua Luc Strait, ferry traffic may be slowed somewhat as it gives way to the ships.

- Fishing boats may be prevented from operating in the shipping lanes between Cua Luc and Cai Lan. Small local craft use this area.
- The main fishing grounds are well away from Bai Chay area, offshore in outer Ha Long bay and further up the coast. There is not expected to be a decrease in fisheries catches due to shipping increases.

Amenity effects (noise, dust, vibration, visual/landscape):

- Noise, dust and vibration will increase in Cai Lan while Route 18 is used for access to the port. Effects will be similar to that experienced in other towns on main roads in the region. Once traffic uses the new route, these factors will diminish to background levels.
- The port is approximately 1 km from Cai Lan village. Noise from the port will be audible in Cai Lan but is expected to be at levels within guideline values.
- Noise, dust, visual and landscape quality will be affected for residents around the foreshore east of Cai Lan estuary. Berth 7 will be present just offshore. Noise levels may be higher than guidelines during port construction and operation. The quality of life of these residents may be considerably affected by port development. Continued development to the east after 2000 and the possible development of a road around the estuary will increase the stresses on the small population in this area., Consultation with the affected parties should commence. Relocation may be desirable as the port construction proceeds beyond 2000.

Access to coastal resources:

- Access to mangroves along the berth line will no longer be possible. Local people use this area to collect shellfish. The area appears to have been overused as the stocks of shellfish are very small and the value of the resource is now low. Access to the larger mangrove system in mouth of Cai Lan Estuary will remain to 2000.
- Fishing access within the Cua Luc - Cai Lan Channel may be diminished, because of the increase in shipping traffic but access to fishing elsewhere in Bai Chay Bay will be unaffected. The area which will be affected by the port development and shipping is small relative to the size of the Bay.

Land use:

- If migrant workers settle in Cai Lan this may affect the current agricultural land use. The longer term developments after 2000 will put continued pressure on the area as land values rise.

Tourism:

- Increase in road, rail and port facilities may benefit the tourist industry.
- Positive feedback effects between tourism and other economic developments including the port are likely to increase the overall level of service.
- Increase in shipping may change the perception of Hon Gia as a small port. Hon Gai is already a busy coastal port.
- No effect of an increase in shipping traffic is expected on the tourist boat routes in Ha Long Bay.
- Water quality issues are likely to be important in maintaining the perception of Ha Long Bay as an unspoilt natural environment.

(OHP 9)(OHP 10)

8&9. EXISTING PHYSICAL AND BIOLOGICAL ENVIRONMENT

The factors shown on this overhead were all considered in the impact assessment.

Physical characteristics, hydrology and geology were investigated. These natural conditions are unlikely to have a negative impact on the port development and they are not considered further in this presentation.

The terrestrial flora and fauna were assessed. The area has been very much modified in the past, as we saw on a previous slide, and the vegetation and habitats present are mainly grass and scrub.

The physical factors of most importance are the water and sediment quality and the existing status of the mangrove ecosystem.

A range of water quality and sediment quality parameters were sampled in two surveys, summer and winter. This map shows the location of sampling sites inside Bai Chay Bay and in Ha Long Bay. (OHP 12, cf. Figure 7.2.1). Twenty sites were sampled in all. These tables show the parameters measured, (OHP 13, cf. Table 7-2-2, 7-2-7). The results of the survey showed that in general, water quality in Bai Chay bay and Ha Long Bay is within acceptable limits for most parameters, at present. However, the effects of activities and land uses can be seen in some results, for example, higher E coil counts in waters near Hon Gai and Bai Chay towns; higher BOD in the mouths of rivers near to settlements.

However, data supplied by Quang Ninh Province on the trace elements lead and cadmium showed that these parameters were above acceptable levels in the vicinity of B-12 oil port.

The provisional Vietnamese coastal water quality guidelines were also exceeded in these cases: dissolved oxygen at site F3, pH at site F3, oil and grease at site F6 and F8, zinc near site F8 and copper near site F6.

The mangrove ecosystem was surveyed. The mangroves of Bai Chay Bay were compared with mangroves in other parts of Vietnam. A broad classification of the status of mangroves in Bai Chay Bay was made. (OHP 14, Figure 11-2-27). This map shows seven areas, nominally called A to G. While the mangrove areas around the northern part of Bai Chay Bay were ranked medium to high in economic-ecological value, those around the southern shores near Cai Lan port were ranked low in value. The mangroves around the port area are sparse and very small, and there are few shellfish or other marine fauna.

(OHP 15)

10. EFFECTS ON THE PHYSICAL AND BIOLOGICAL ENVIRONMENT

Terrestrial vegetation and fauna of Cai Lan Port:

- The ecological value of the area is low and no rare species are present.
- Excavation and road development will remove only small areas of habitat.
- Similar habitats are present elsewhere in the vicinity of the port.
- No effect on the biodiversity or ecology of the area is expected.

Coastal vegetation and fauna of Cai Lan Port:

- Small areas of mangrove to the east of the existing berth will be covered during reclamation.
- The mangroves in this vicinity are considered to be of low ecological and economic value and the overall effect of removing these small areas is low in relation to the Bai Chay Bay mangrove ecosystem as a whole.

Topography and hydrology:

- The coastal faces of the small hillocks along the port backshore area will be excavated for yard development, but otherwise the overall topography will not be changed.
- Drainage over most of the flat port area is currently to ponds behind a bund along the Cai Lan Estuary. The surface hydrology of the area will not be significantly affected by the construction.
- Dredging in the vicinity of Cai Lan Port can be expected to remove marine fauna along with the sediments. The area to be dredged is small in relation to the size of Bai Chay Bay. Marine fauna can be expected to recolonise the area once dredging is complete.

Potential effects on water quality and the Bai Chay Bay mangrove ecosystem

- Threats to water quality from increased sediment generated during port construction can be controlled using up-to-date practices. In comparison to sediment entering northern Bai Chay Bay from the rivers entering the estuary, the amount of sediment that could reach the northern mangrove areas from port activities is negligible.
- Sewage discharged from the port and ships could adversely affect water quality and will need to be treated before discharge.
- Hazardous wastes (if these are present), oil and grease, fertiliser and refuse could pose a threat to water quality if untreated.
- Bulk storage areas should be raised above the height of maximum potential storm surge or bunded above that level. Otherwise, a storm surge could wash stored materials into the bay. Although it is known that storm surges occur in this area, the effect on sea level within Bai Chay Bay has not yet been determined and this needs further study.

(OHP 16)

11. MANAGEMENT OF EFFECTS

I have described the possible effects that port construction and operation could have on the Bai Chay Bay area. Direct effects on the environment will be limited to the construction and reclamation near the port area, and dredging of the channel. Provided internationally accepted methods to construct and control the effects of the activities are adopted, degradation of the Bai Chay Bay environment will not occur. It is clear that mitigation and management plans are required to ensure that activities which could contribute to environmental degradation and pollution do not occur.

There are three key factors for which management and mitigation will be necessary.

These are water quality, the quality of the social environment and the tourism potential of the area.

I will now briefly describe the types of mitigation that could be applied to these key factors.

(OHP 17)

12. MITIGATION OF EFFECTS ON WATER QUALITY

To mitigate effects on water quality the following treatment and management systems are required.

- Provide sediment control devices during reclamation and earthworks at the port site. This can include the use of geotextile fabrics in bund construction, the use of silt curtains and water retention during reclamation; use of simple sediment ponds during earthworks. These are all methods in common use internationally.

- Provide a treatment system for rainfall runoff. If water drains directly from the port yards during rainfall, sediment and oils etc will be washed into the sea. By providing drains to catch all runoff and leading to a settlement pond, sediment and other pollutants can be removed before the water drains into the sea.

- A sewage and wastewater treatment plan will prevent polluted water from flowing directly into the sea.

- Garbage needs to be collected, covered and disposed of the present odour and vermin from becoming a problem.

- Because the port is located in a sensitive environment a spill contingency plan is required in case of oil spill or any other spill of pollutants that could damage the water quality.

All of these methods are in common international use. These are examples of the sorts of methods that should be used. But proper plans are required for all treatment systems.

(OHP 18)

13. MITIGATION OF EFFECTS ON SOCIAL ENVIRONMENT

To mitigate effects on the social environment several factors need to be addressed.

- To prevent strain on social services, forward planning is needed to ensure the needs of the present residents and new migrants can be met.

- Noise may need to be minimised, for example by restricting activities at night, and constructing sound barriers. Otherwise, people living in houses near the port may be adversely affected. It may be necessary to relocate these residents.

- Especially during construction, but also during normal port operation, dust will need to be controlled by spraying water and covering stockpiled materials.

- Traffic increases on the narrow roads through Cai Lan may be a hazard to people until

the new roads are built. Speed limits and traffic restrictions could be used to minimise risks.

- One pagoda will need to be moved. This may be able to be relocated to a new site after discussion with the concerned residents and temple officers.

- Changes to landscape quality - by planning reserves near the port, protecting some small hills near the port, protecting as much of the natural environment as possible and replanting and landscaping the port approaches, the port landscape will be attractive to look at.

- Of course, as well as the negative effects of the port which need to be mitigated, there is a major positive effect of economic growth which local people will benefit by.

- I have prepared a summary matrix to show the effects of port construction following the mitigation methods I have described. I have already talked about the information shown in this table, so I will only summarise the main points. (OHP 19, cf. Table 16-2-2) The left hand column shows the different components of port construction and operation, for example, reclamation, earthworks. The factors affected by each component along the top, separated into natural and human environmental components. H stands for a high level of impact, M for medium and L for a low level of impact following mitigation. As can be seen, most of the effects are low. Medium effects will occur on landscape, as the port will be a permanent feature of the environment. Medium effects will also occur as a result of the increasing population. The only high impact will be the long term effects residents beside Cai Lan estuary will experience, living beside a large port. Continuous noise will be the most noticeable effect, but there will also be a visual effect of the port directly in front of them. However, following discussion with residents it may be possible to relocate them, and this would be a satisfactory outcome, leading to a low long term impact.

All of the physical effects can be managed, with low resulting impacts.

(OHP 20)

14. PROTECTION OF TOURIST INDUSTRY

I haven't included the effects on tourism in the matrix of long term effects. This is because the effects on tourism are indirect and less tangible than those on the physical and immediate social environments. I will now summarise these.

- Tourist perceptions. Concerns about the effect of port construction on the tourist industry include the potential effects if Bai Chay Bay water quality were to become degraded, the effects

of increased shipping in Ha Long Bay on tourist traffic, and a possible change in the character of the area. All of these could affect tourist perceptions of Ha Long City. Visitors want to see a healthy environment with fishing, boating and swimming. If proper management methods are implemented at the outset of port development and applied to all other industries which may establish around Bai Chay Bay, in the future in water quality in Bai Chay Bay will remain in a state fit for aquaculture, fishing, and contact recreating such as swimming and diving.

Many large cities world-wide maintain flourishing ports and industries as well as a thriving tourist industry. In fact, the waterfront areas of many cities are becoming an increasing focus of tourism developments as people are attracted to the life and colour of the seafront. Promenades and restaurants can link the working areas of such ports with the more conventional tourist areas. There is great potential for development of this kind along the Bai Chay and Hon Gai shorelines.

- Enhancement of social services. As roads, railway and other infrastructure improve, and the population of residents and tourists increases, new services will need to be developed. This will provide a feedback benefit for tourism.

- The port itself is well removed from the main tourist area. Road traffic to Cai Lan will pass via a separate route to traffic which is going to the tourist area and ferry. However as new and better roads develop, tourists will be able to reach areas of Bai Chay Bay that are presently inaccessible. This may provide economic benefits to small villages and is likely to be an added tourist attraction. The key to tourism success is to keep people in the area longer, by providing more attractions. The hinterland of Bai Chay Bay is very beautiful.

- As I already mentioned, beautifying the port area will ensure that tourists see an attractive landscape as they pass by.

- Another possible effect of the new port on tourism, relates to a change in the nature of the Bai Chay - Hon Gai area. There will be an increase in shipping traffic visible to tourists. However, Hon Gai is already a busy port and the nautical flavour of this whole area is part of its charm. So while the number of ships passing through Cua Luc Strait will increase as Cai Lan Port is constructed, this will not change the character of the area. Tourists in Ha Long Bay focus outward to the beauty of the islands and the perception of this will be unchanged.

- I would like to stress again, that if the port construction is properly managed, there is no reason why it should affect the ongoing success of the tourist industry.

(OHP 21)

15. MANAGEMENT SYSTEMS

The benefits of careful forward planning of all constituents of the Cai Lan Port Construction Project have been emphasised in this assessment. The use of Management Plans to specify mitigation methods for all aspects of construction and operation are a key to this development's proceeding with the minimum possible environmental effect. These plans should be prepared during the detailed design phase of the project, prior to work beginning at the port.

To summarise the plans required: (Read from overhead)

(OHP 22)

16. MANAGEMENT SYSTEM EXAMPLE

To achieve integrated management, an overall management system is needed. The aim of this is to tie together all of the management plans, ensure each is operating effectively. The system sets out the management system and objectives, develops management plans, provides written manuals to ensure all people are aware of how each management plan works. All employees need to be trained to teach them about the management methods being used. This applies to managers and workers. For example, if a fork lift operator sees an oil leak from a tank she or he needs to know exactly what to do about it, and who must be contacted to help. By training all workers management systems can be most effective.

Management systems include monitoring of the environment and it is important that records be kept of all incidents so that any weak points in the management plans can be identified and changes made to improve the environmental effectiveness of the system.

(OHP 23)

17. MONITORING

During port construction and operation, to check on how well the management plans are working, it will be necessary to monitor various aspects of the environment.

- This may include dust and noise in or near Cai Lan and along the hillside below route 18. The latter area is particularly important as it may be necessary to build a case for relocation of residents and data may be required to justify this.
- Water quality in Bai Chay Bay must also be monitored. Vietnam already has criteria to

protect coastal water quality. However, because Bai Chay Bay is an enclosed water area, it may be necessary to derive some new standards more specific to this kind of environment. For example. BOD of 15-20 mg/l may be too high for these waters and a standard of around 3-5 mg/l may provide better protection in this case. Further study on the mixing dynamic of Bai Chay Bay waters would assist in developing these.

- Cai Lan port will need to monitor suspended solids, turbidity and dissolved oxygen in waters near the port and dredging areas, during construction. Later, when the port is operating, other parameters should also be monitored, including oil and grease, BOD, E coli, and nutrients such as phosphorus and nitrogen. If new cargo types are added that could affect water quality, other parameters should be added as appropriate.

- Because many other industries will be establishing in this area, it is important to develop criteria which can be applied to all of these.

- During this environmental impact assessment, we compared various standards from Vietnam, Japan and other Asian countries to derive some interim tentative discharge water quality criteria which could be used for Bai Chay Bay until further investigations can be completed. (OHP 24) These give the most conservative guidelines currently being used by any of these countries, and particularly, any that apply to "inland coastal waters" similar to those in Bai Chay Bay. An alternative would be to use United states Environmental Protection Agency guidelines, which have been thoroughly researched and are based on hundreds of water quality studies. Guidelines for metals and nutrients were developed as well as those shown on the overhead.

(OHP 25)

18. SUMMARY (AS PER OVERHEAD)

(OHP 26)(OHP 27)(OHP 28)

19, 20, 21 AS PER OVERHEADS

20. FUTURE DEVELOPMENT OF HA LONG CITY

As Mr Shiratori has described, there will be much economic activity going on around Cai Lan Port as new factories and industries develop. All of these will also have the potential to affect the environment. As part of the EIA we have briefly described the types of effects that can be expected, and also the way in which the developments could be managed to avoid polluting Bai

Chay Bay. Many of the effects of the economic development will be similar to those for port construction, but at a much larger scale.

(OHP 29)

The importance of ongoing planning must be stressed. As Ha Long City develops it will be very important to protect the environment. Not only for tourism but to ensure a good quality of life for residents in the future.

We recommend that a comprehensive environmental conservation plan be initiated for Ha Long City. This would assess the likely effects of long term development of Ha Long City. It would develop environmental standards and management systems to ensure that the environment is protected. And it would establish an effective institutional framework to implement environmental protection measures.

Developing an environmental conservation plan will be a large project. However, this work does not need to interrupt the economic development which is proceeding in Ha Long City. Such development will go on over a long period into the future. But it is vital to start to develop environmental conservation measures as soon as possible, to avoid the need to undertake costly clean-up operations later, as Mr Aoki demonstrated in his video of Dokai Port.

That concludes my presentation and thank you for your attention.

EIA CONTENTS

OHP 1

The EIA is set out in five parts as follows:

PART I THE PROJECT

- CHAPTER 1 INTRODUCTION
- CHAPTER 2 DEVELOPMENT WORKS INVOLVED IN THE CAI LAN PORT PROJECT

PART II SOCIAL ENVIRONMENT AND EFFECTS

- CHAPTER 3 EXISTING SOCIAL ENVIRONMENT
- CHAPTER 4 EFFECTS OF CAI LAN PORT DEVELOPMENT ON THE SOCIAL ENVIRONMENT

PART III PHYSICAL AND BIOLOGICAL ENVIRONMENT AND EFFECTS

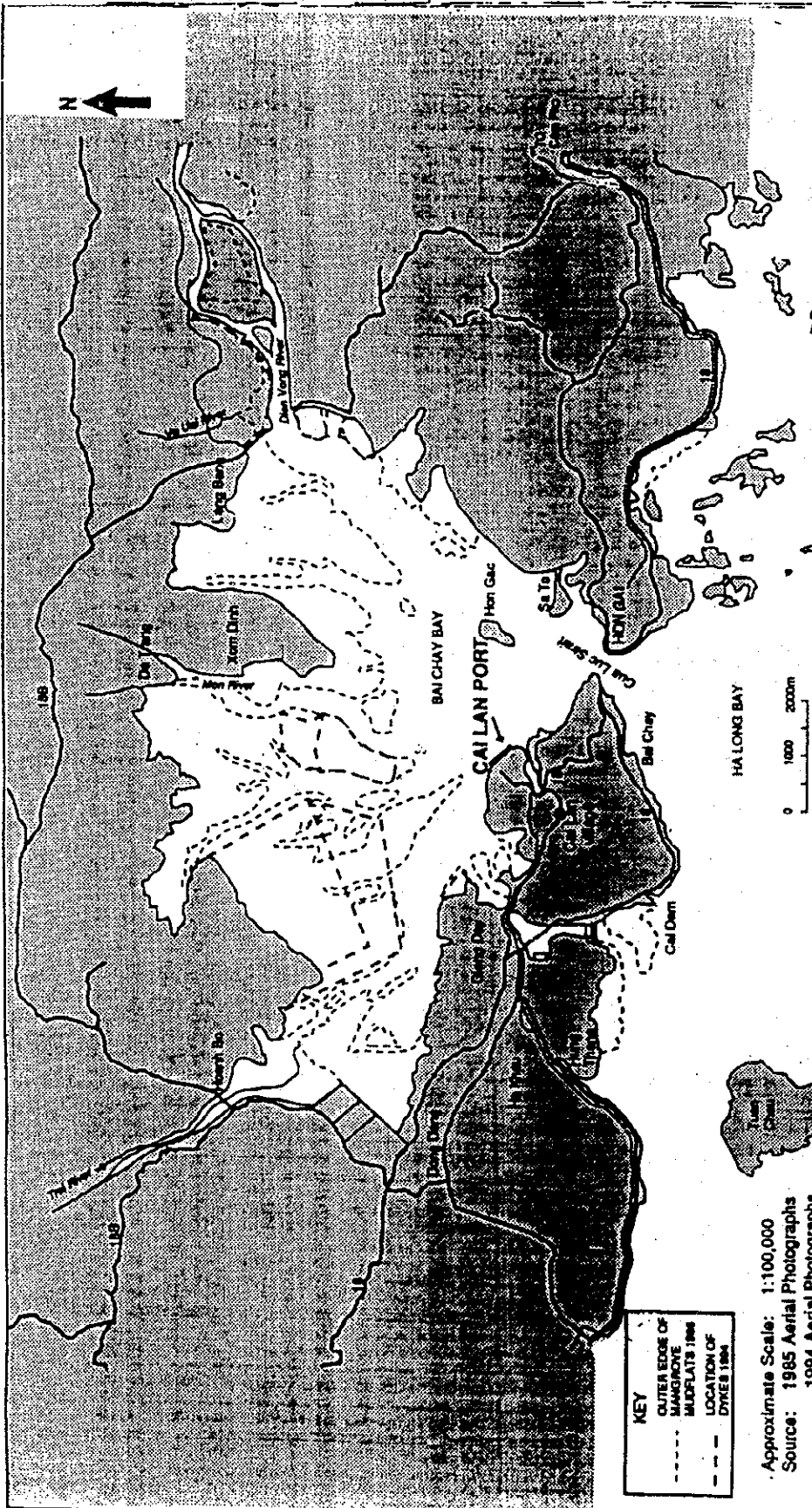
- CHAPTER 5 THE PHYSICAL AND BIOLOGICAL ENVIRONMENT
- CHAPTER 6 THE MANGROVE ECOSYSTEM
- CHAPTER 7 EFFECTS OF CAI LAN PORT DEVELOPMENT ON THE PHYSICAL AND BIOLOGICAL CHARACTERISTICS OF BAI CHAY BAY

PART IV MITIGATION, MONITORING AND MANAGEMENT

- CHAPTER 8 MITIGATION, MONITORING AND MANAGEMENT

PART V CONCLUSIONS AND FUTURE ISSUES

- CHAPTER 9 SUMMARY OF ENVIRONMENTAL EFFECTS
- CHAPTER 10 FUTURE DEVELOPMENT OF HA LONG BAY AND ITS POTENTIAL ENVIRONMENTAL EFFECTS



OHP 2

BAI CHAY BAY AND ENVIRONS

FEASIBILITY STUDY FOR CAI LAN PORT CONSTRUCTION PROJECT

KEY ENVIRONMENTAL ISSUES

Cai Lan Port site is in an area rich in natural resources. Key issues relate to:

- Water quality.
- Bai Chay Bay mangrove ecosystem.
- Tourism industry.
- Socio-economic effects.
- Aesthetic-recreational factors.
- Growth of industry associated with port.

APPROACH TO EIA

- Vietnam's legal requirements: Environment Protection Law 1994.
- Terms of Reference of EIA: agreed with MOSTE during project commencement.
- Interaction with Vietnamese organisations and scientists.
- Consider all aspects of the environment.
- Pro-active environment - design interface.
- Recommend management practices to minimise effects:
 - Mitigation plans.
 - Management plans.
 - Remediation works.
- Recommend ongoing monitoring approach and interim water quality guidelines.
- Recommend ongoing environmental work.

OUTLINE OF CAI LAN PORT CONSTRUCTION PROJECT TO 2000
(Summary of previous presentations)

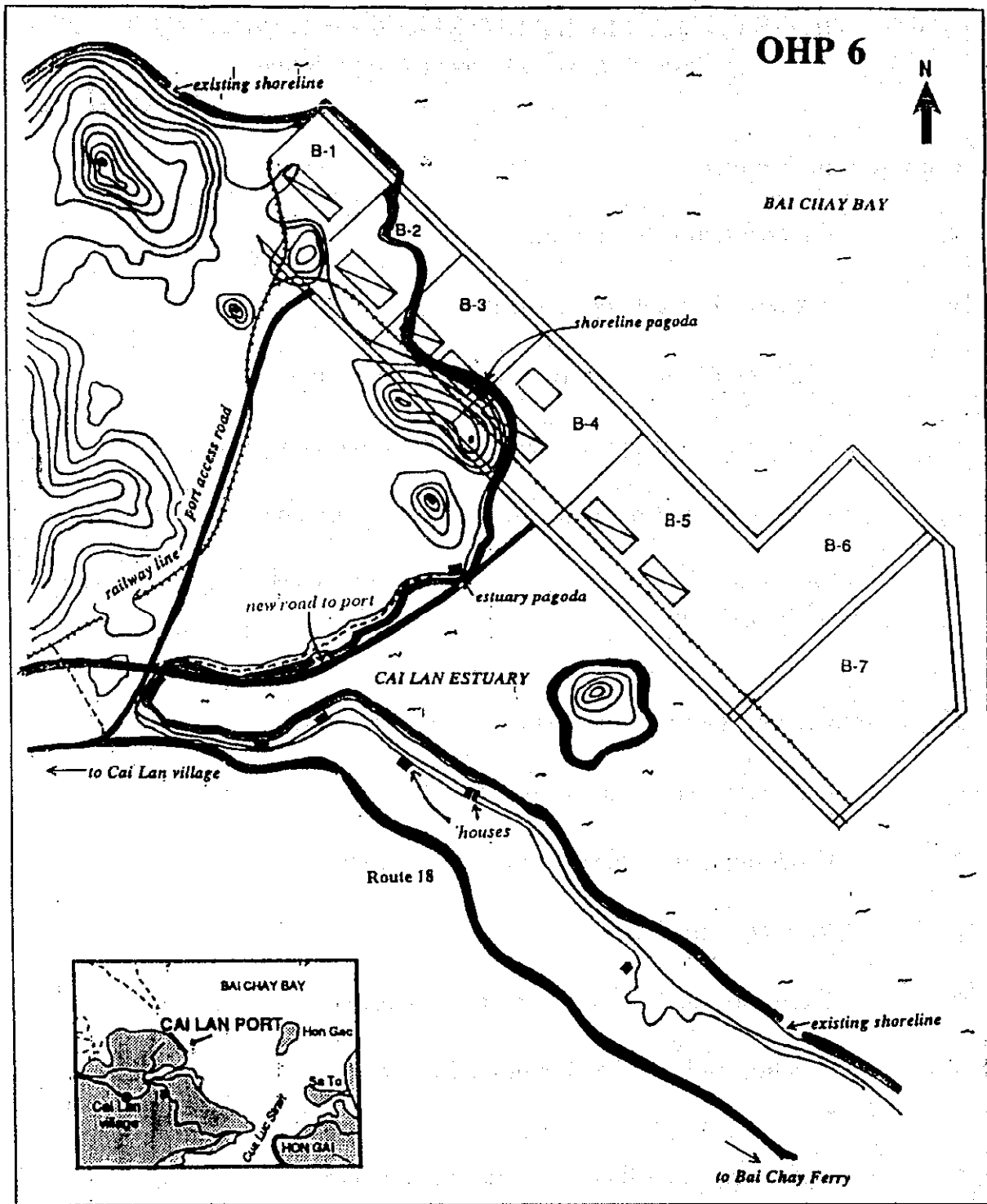
OHP 5

Construction Features

- One berth already present.
- Six more berths to be constructed.
- 412,000 m² yard for cargo storage and handling.
- Port office, warehouse, workshop etc., to be constructed.
- Machinery to include mobile cranes, fork lifts, bulldozers etc.
- Dredging of navigation channel, anchorage and turning basin to depth of -9 to -13 m.

Key Activities and Factors - Environmental Perspective

- Land reclamation, berth construction.
- Dredging and disposal of dredged materials.
- Yard construction.
- Transport route development, traffic considerations.
- Location and construction of land-based facilities (offices, warehouses, etc.).
- Storage areas for fuels, hazardous substances.
- Machinery to be used during construction and operation.
- Garbage disposal, sewage treatment, treatment of stormwater runoff.



CAI LAN PORT DEVELOPMENT TO 2000

SOURCE:
 FEASIBILITY STUDY FIGURES 6-2-5 AND 12-2-1-(1)
 NOTE: CONTOUR LINES INDICATIVE ONLY

FIG. 2-1

EXISTING SOCIAL ENVIRONMENT **OHP 7**

- Quang Ninh Province social structure.
- Bai Chay Bay social structure.
- Existing infrastructure
 - Roads, railways and air transport.
 - Water sources and waste disposal.
 - Health and education.
 - Electricity supply, communications.
 - Sites of cultural significance.
- Traffic
 - Road, shipping.
- Amenity Values
 - Landscape.
 - Air quality.
 - Noise and vibration.
 - Access to coastal resources.
 - Land tenure.

EFFECTS ON THE SOCIAL ENVIRONMENT

- Population and employment.
- Infrastructure.
- Cultural features.
- Land use.
- Traffic.
- Amenity values
 - Noise and vibration.
 - Air quality and dust.
 - Landscape.
 - Access to coastal resources.
- Tourism
 - Effects of increased shipping.
 - Cai Lan area.
 - Bai Chay Bay water quality.
 - Positive effects.

EXISTING PHYSICAL AND BIOLOGICAL ENVIRONMENT

- Physical characteristics
 - Wind, typhoons.
 - Rainfall.

- Hydrology
 - Waves and currents.
 - Storm surges.
 - Sediment load in rivers.

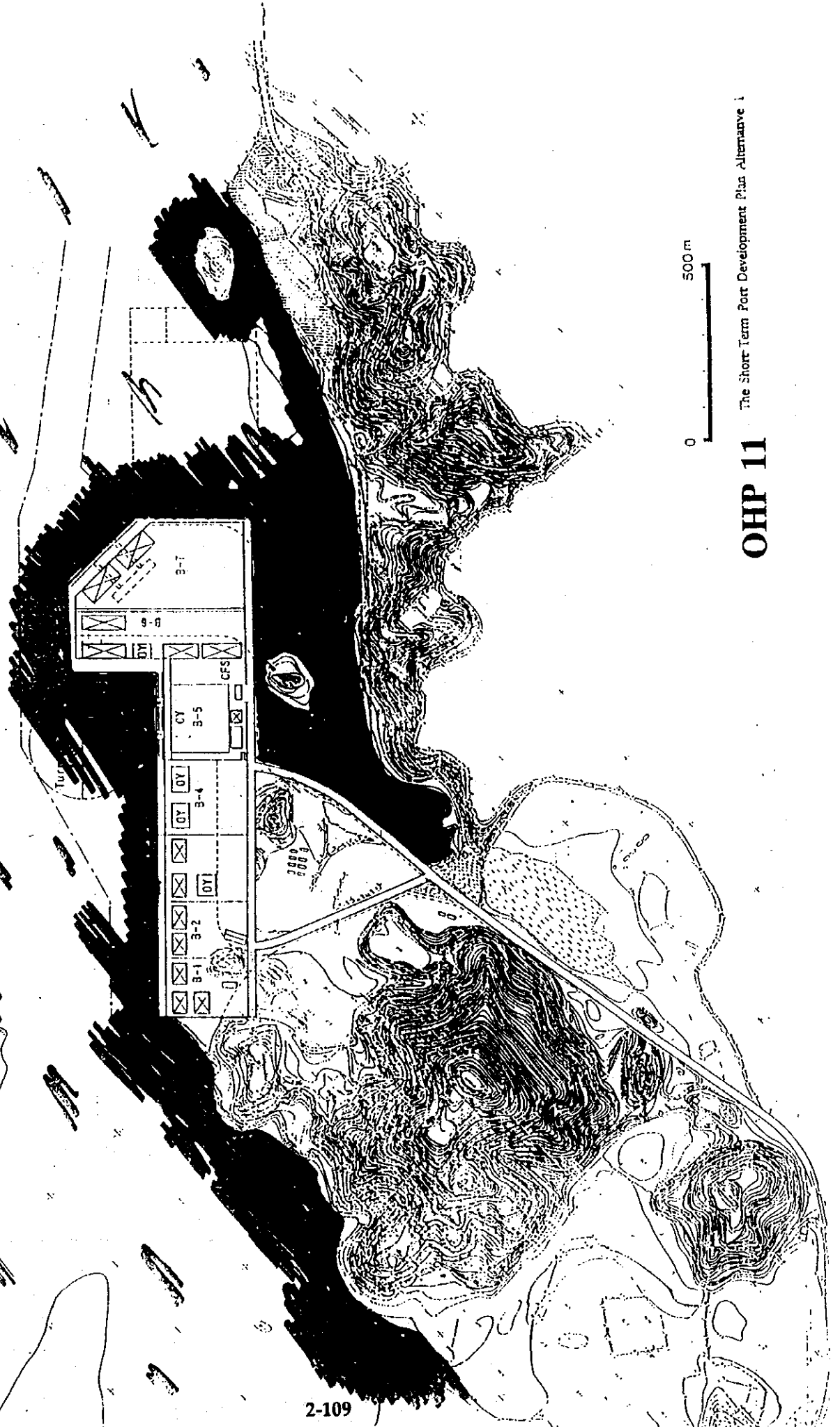
- Geology.

- Vegetation of Cai Lan Port area.

- **Marine and intertidal environment**
 - Existing status due to previous land use practices.
 - Status of coastal and marine environment.
 - Water quality.
 - Sediment quality.

- **Mangrove ecosystem**
 - Field survey.
 - Mangrove zones of Vietnam.
 - Present status of mangroves in Bai Chay Bay.
 - Mangrove - dependent biota.
 - Economic considerations and case studies.

ALTERNATIVE 1



The Short Term Port Development Plan Alternative 1

OHP 11

EFFECTS ON THE PHYSICAL AND BIOLOGICAL ENVIRONMENT

- Direct effects of port construction
 - Effects on terrestrial environment at port site.
 - Effects of construction on coastal environment at port site.
 - Effects of dredging.

- Potential effects on water quality and the mangroves of Bai Chay Bay
 - Existing status.
 - Possible sources of sediment.
 - Other sources of contamination.

- Potential effects of dredging and disposal.

MANAGEMENT OF EFFECTS

Mitigation is needed to control the effects of port construction on these key factors:

- (1) Water quality (flow-on effects on mangroves, tourism).
- (2) The quality of the social environment.
- (3) The tourism potential of the area.

(i) Mitigation of Effects on Water Quality

- Provide sediment control devices during reclamation and earthworks at the port site.
- Provide a treatment system for stormwater (rainfall) runoff.
- Design a sewage and wastewater treatment system for effluent generated at the port site.
- Design a solid waste storage and disposal system to minimise leachate and odour.
- Develop management strategy and contingency plans to minimise risk of oil spill/ chemical spill/other.

(ii) Mitigation of Effects on Social Environment

- Prevent strain on social services (health, education).
- Minimise noise from the port area.
- Minimise dust from the port and roads.
- Minimise effects of increased road traffic.
- Minimise effects of shipping traffic increases.
- Mitigate effects on pagoda(s).
- Mitigate changes to landscape quality.

Positive economic benefit to the area is an important factor.

(iii) Protection of Tourist Industry

- Protection of water quality and social services is directly linked to tourist perceptions.
- Enhancement of social services. Feedback to tourism.
- Port development will provide better access to areas of Bai Chay Bay not accessible to tourists at present.
- Landscape enhancement for Cai Lan Port area.
- Management of overall economic development in tandem with port development is needed.

MANAGEMENT SYSTEMS

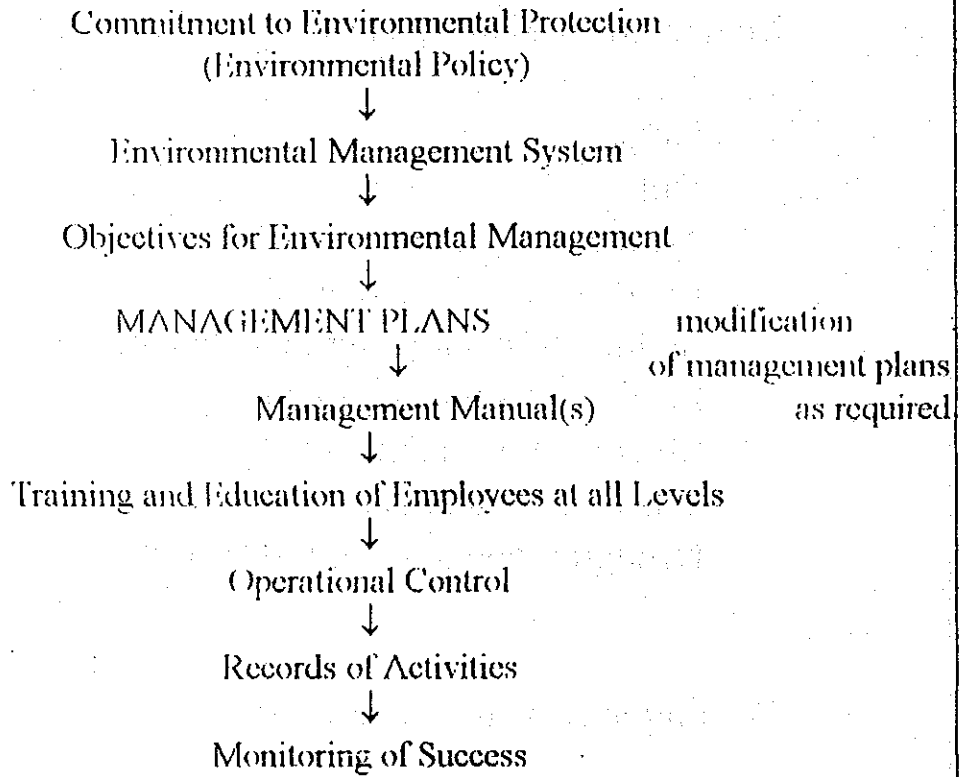
- Integrated management system required.

- Management plans need to cover in detail:
 - Noise.
 - Dust.
 - Traffic.
 - Landscape enhancement.
 - Sediment management (reclamation).
 - Earthworks management.
 - Stormwater management.
 - Waste management.
 - Dredging and sediment disposal.

- Contingency plans are needed for:
 - Port site contingencies.
 - Oil spill contingency.

- Cua Luc Strait management plan is needed to address the shipping traffic increase in these waters.

MANAGEMENT SYSTEM EXAMPLE



MONITORING

Key factors:

- Noise.
- Dust.
- Water quality
 - Context of water quality monitoring.
 - Selection of appropriate criteria / guidelines.
 - Monitoring by Cai Lan Port.
 - Integration with other industries.
 - Tentative interim guidelines - or USEPA?

OHP 24

Suggested Interim Effluent Discharge Criteria

Parameter	Interim Tentative Standard	Vietnamese Standard for Class I Water and Comparative Effluent Discharge Standards from other Asian Nations.
Suspended solids	50 mg l ⁻¹	VN 50 mg l ⁻¹ . Sri Lanka (inland and coastal waters); Philippines, coastal water for primary contact 5.0 mg l ⁻¹ . Japanese standard of 200 (average 24 hour value 120).
Turbidity	50 NTU	No VN criterion. 50 NTU Iran. No Japanese criterion.
pH	5.8-8.6	VN criterion 5-8. 5.8 - 8.6 Japan. Others 6-9.
Oil and grease	1 mg l ⁻¹	VN 1 mg l ⁻¹ . 5 mg l ⁻¹ Japan.
COD	50 mg l ⁻¹	VN 160 mg l ⁻¹ . 50 mg l ⁻¹ Iran. Japanese standard 160 mg l ⁻¹ (24 hr average 120).
BOD	30-50 mg l ⁻¹	VN 80 mg l ⁻¹ . Sri Lanka inland and coastal water. Japanese standard of 160 mg l ⁻¹ (24-hr average 120) may be too high.
E. coli	1000 cells/100 ml	VN 1000 cells/100 ml. Japan 300,000 MPN /100ml.

SUMMARY

Environmental effects of port development on the physical and biological environment can be successfully managed to allow the port construction project to proceed. But protection methods and management systems are needed.

2. Effects on the human environment will include:

- Improved economic opportunities.
- Increased pressure on public amenities.
- Increase in noise, dust and traffic near the port.
- Possible relocation of a small pagoda.

To minimise these effects, requires:

- Forward planning by local authorities.
- Consultation with residents.

1. To protect the physical and biological environment:

- Proper environment sediment controls must be in place during construction and operation.
- Other pollutants must be properly controlled.
- Monitoring of marine environment must take place throughout the project and once operation starts.
- Other mitigation measures must be designed to minimise or remedy effects.

This requires that management systems be designed and actioned before construction begins.

3. Effects on Tourism

Provided development of port and associated economic developments is planned and managed using sound environmental practices, effects on tourism are not expected. Tourism and other economic developments can be managed to provide mutual benefits.

FUTURE DEVELOPMENT OF HA LONG CITY

Key effects:

- Effects on local residents.
- Air quality.
- Bai Chay Bay water quality.
- Loss of mangrove ecosystem areas.
- Loss of rural nature of environment.
- Improved access to broader Bai Chay area for tourists.
- Probable improved facilities for residents and tourists.
- Economic benefits likely to spin off to tourism opportunities.
- Changes to Cua Luc Strait area - picturesque nature.

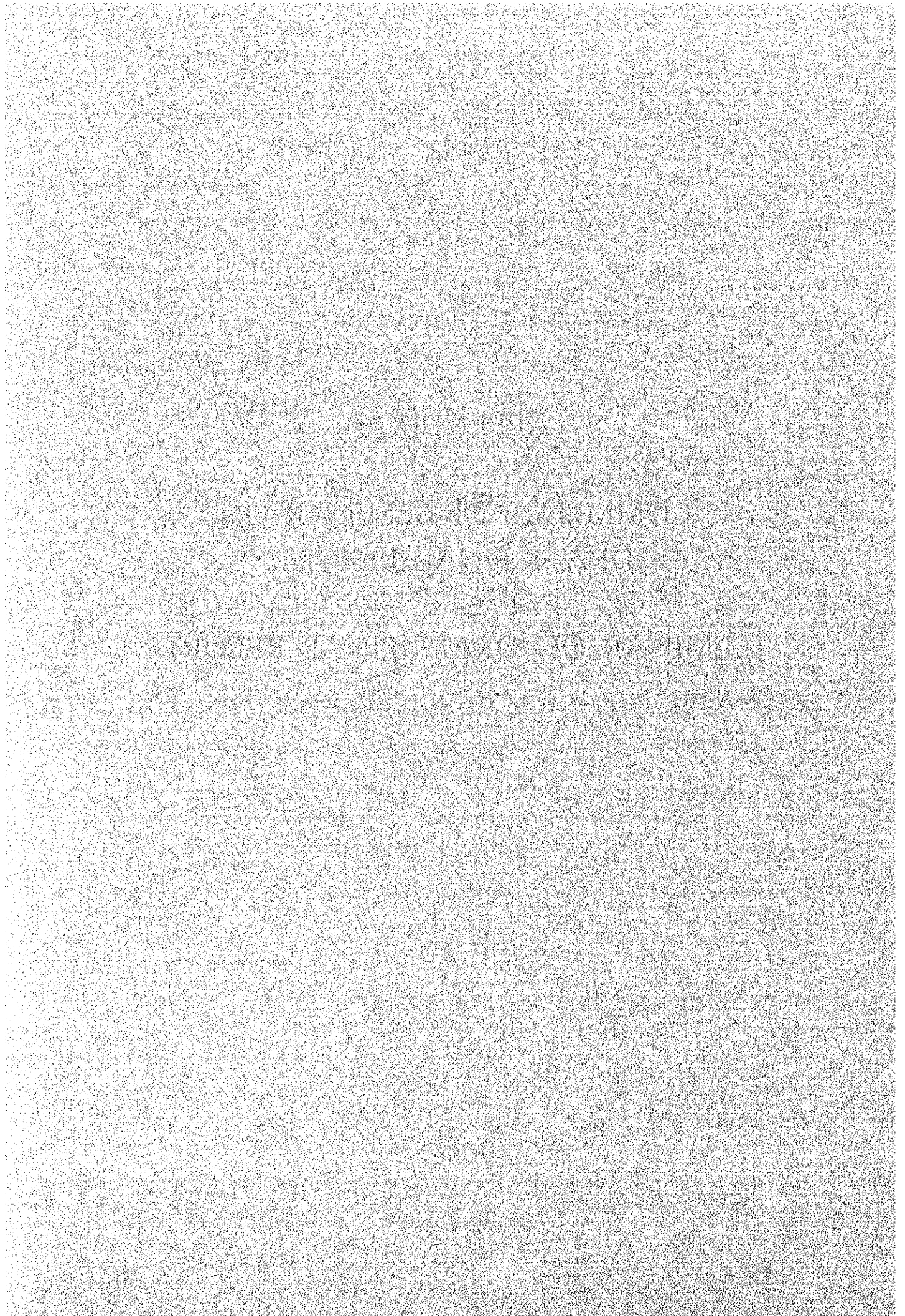
Management systems are a key issue:

- Management plans are needed.
- Environmental standards specific to the Ha Long Bay and Bai Chay Bay environments are needed.
- Overall organisational framework for monitoring and compliance with standards is needed.
- Practical system of permits and controls to ensure development proceeds in orderly, managed way is needed.

APPENDIX 6

COMMENTS OF SEMINAR ON DRAFT FINAL REPORT

SEMINAR ON DRAFT FINAL REPORT



COMMENT
ON THE CAILAN PORT FEASIBILITY STUDY

By Mr. Tran Doan Tho
Director of Planning and Investment Department

1. The F/S : carefully formulated with complete data and figures showing a highly qualified, serious study team who have good counterparts.
2. Cargo throughput is acceptable and compatible with other plans
Container good proportion can be higher (about 5 %).
3. Alternatives of ship sizes, plane chand channels have been thoroughly considered and compared. Reasonable solution.
4. Capital : More expensive than current regional prices approximately 15-20%. Further consideration is needed.
5. Speed : Slow, can be divided to various contracts.

Construction may begin in late 1996 to early 1997.

6. Note : Joint efforts to study hinterland traffic such as roads, railroads in combination with port plan.

Conclusion :

- A good F/S Early submission for State approval.
- Proposal for Japanese ODA loan for early construction.
- A shorter brief reports to be prepared by Consultants and TEDI in Vietnamese to be sent to State offices.
- Proposal for JICA's assistance to a project on environment in that area in coordination with MOSTE (in the 1995 fiscal year)

COMMENT
ON CAILAN PORT FEASIBILITY STUDY

Mr. Nguyen Vuong Ta
Director of the Transport Department
The Development Strategy Institute
SPC

Following the Feasibility Study on Master Plan for Transportation in North Vietnam and the project on improvement of Hai Phong port, this time under the guidance of JICA, the Cailan Port study team has prepared the final report for the F/S (Now., 1994). This is great and valuable assistance from the Japanese Government as well as of JICA and the Japanese consultants have helped tremendously to develop Vietnam's economy and transportation sector.

I also highly appreciate the contribution of Vietnamese counterpart TESI and TEDI.

On the F/S of Cailan Port, I have some preliminary comments.

1. The socio-economic development of North Vietnam is closely linked to the development of the whole country and other countries in the region. Thus gates for international exchanges are needed.

There are limitations to the development of Hai Phong port. There must be a deep-sea port in the area. Cai Lan port has been chosen by the Ministry of Transport for study and in reality, a berth is being constructed though it has not been completed yet. The Cai Lan project meets the urgent demand for a comprehensive study and plan to 2000. In general it is a very good F/S and will serve as a basis for initial formulation and making of policies relating to development of the region in terms of economy, urban area and landscape and environment protection.

2. Macro and micro forecasts for development to 2000 and 2010 are appropriate. The macro methodology based on GDP growth in three periods 1993-2000, 2001-2005 and 2006-2010 shows growth of 8%, 12% and 13% respectively. These are close to Vietnam's forecast. However after the period of economic recovery from 1991-1994, the industrial development of the region is expected to increase even higher, 13-14%, leading to a m (%) growth of GDP from now to 2000. Thus the forecast curve (chart Pg. 1-26) between macro and micro will be closer.

3. The F/S identifies Cai Lan port as a regional development port. This is correct. At the same time, it needs to be emphasized that it is an industrial port. There is a large ecosystem and environment which must be taken into consideration when preparing plans for Ha long City, Bai Chay Bay and Ha Long tourist areas.

We agree with the project's proposal for further study on environment. After the port is constructed, urban areas and population will expand, industry will develop. These will cause negative effects to the environment, ecosystem and landscape. The stringent regulations, policies and sound management are required to ensure the development of a civilized, prosperous and clean urban area.

4. The project deals with other ports in the Cai Lan area such as the Hong Gai coal port which will be removed in future for a tourist port, and the oil port B-12. Port B-12 and the system of storage and pipes have been under operation to import 1 million tons of oil per year. In future, the North will continue to import oil from other countries or from the South, amounting to about 2 to 3 million tons per year. That is why, while making plan for Cailan port development, it is necessary to consider the effect on this oil port as well as the whole area of Ha Long.

5. Port Development phases:

From now to 2000, it is appropriate to have plan for the construction of 7 berths with a through-put capacity of 2.7 million tons. Hinterland facilities and infrastructure must also be developed at the same time. The issue of water supply is a problem. It is better to solve this issue at an early stage rather than wait until 2001-2010 as proposed by the project (Summary, pg. 8)

In short The Cailan port F/S clarifies and confirms the early investment on construction of a large port in the region while Hai Phong port capacity is maximized. The F/S must be finalized on schedule so that the Ministry of Transport will have sufficient time to study and submit to the Government for approval. I hope that with assistance from JICA, the project will be realized soon.

COMMENTS MADE BY THE CHAIRMAN OF
QUANG NINH PEOPLE'S COMMITTEE

Mr. Nguyen Tat Dung

Quang Ninh People's Committee has had several working sessions with JICA and TEDI and we have received pre-FS and FS documents of Cai Lan port in Ha Long City, Quang Ninh province. At this seminar, I'd like to contribute the following comments:

1. We highly value JICA's detailed and scientific study which concludes in today's presentation of the draft final report here. I'd like to add that it coincides with the viewpoint of the Vietnamese government and long-term development strategists and planners, Cai Lan port plays an important role not only in North Vietnam, but also for the whole country as well as the economic region known to foreign experts as the area around the Tonkin Gulf including Hainan island, Quang Dong, Quang Xi of China and coastal towns in North Vietnam. Even policy makers for economic development in Yunnan (China), Myanmar and Northeast of Thailand, Laos highly appreciate the development potential of Cai Lan port for the very simple reason that rail transport from Cai Lan to Yunnan of China is much more developed and cheaper than transport from ports in China such as Shang Hai to Yunnan.

The Vietnamese government has decided to ratify the F/S for construction of deep-sea Thi Vai-Vung Tau port project. We believe this Cai Lan deep-sea port project jointly studied by JICA and TEDI will soon be ratified by the government.

2. JICA's concern which is also our concern is the impact of the port and development of the port on the environment. This is a particularly important matter because the port is close to Ha Long Bay, a famous scenic spot which will soon be recognized as a national cultural Heritage of Mankind.

Some foreign and local organizations have been helping us study environmental protection of Ha Long Bay. One of these organizations, TRIMAR of Sweden, has joined Vietnam's MOSTE to make a comprehensive evaluation of this issue. We propose that the Ministry of Transport and MOSTE allow JICA and TRAIMAR to consult with each other in the process of evaluation of such projects.

We propose that the Ministry of Transport join the Ministry of Water Resources and MOSTE to consider the construction of a reclamation project in North Cua Luc (Constructed by Military

Zone 3) and to evaluate the impact of this project on sediment and waters of the Port.

3. We agree with JICA's view on development planning and demand forecast. However, we think that with the growing volume of imports and exports at present in Vietnam as well as the growing demand of countries having economic ties with Vietnam, this demand forecast is still at a low level. There may be unprecedented changes. Apart from Cai Lan, Quảng Ninh province has conditions to develop coastal ports to accommodate ships of 20,000-30,000 DWT. Natural conditions regarding navigation channels, wharves, yards... make it possible for port calls by ships of 20,000-30,000 DWT.

Over the past period, many investors have been waiting for the announcement of the Port boundary to study construction of production and business establishments. We propose that pending further steps to be taken, the Ministry of Transport join Quang Ninh People's Committee in zoning the port area, identifying roads, railways and technical facilities needed by the port so that we can manage planning and allocate land for projects outside the port. The construction of the port will help boost development of local economy whereas an early construction of the production establishments close to the port will help speed up construction of the port.

4. On design and construction plan: It is because of the wish of many investors that Cai Lan port will be constructed and put into early operation, we propose that the design and construction of the port as JICA team has scheduled be stepped up. We propose that berths will be constructed and put into construction one after another. According to plan of VINAMARINE, in the middle of Dec., one ship of 10,000 tons will call at berth No.1 which was built with self-generated funds of VINAMARINE. We propose that the Ministry of Transport complete this berth as part of the port under JICA and TEDI project.

5. We propose SPC, Ministry of Construction, Ministry of Transport, central ministries and sectors to build associated facilities alongside the construction of Cailand port including the construction and improvement of Road 18 A, construction of Binh bridge, rehabilitation of railway section from Yen Vien to Cai Lan, and construction of Bai Chay bridge ensuring that ship traffic is not hampered by Bai Chay ferry traffic. It is also necessary to construct and plan high-tech economic zones, EPZ near at port vicinity, promptly build construction materials factories (cement plants are the most important) ship building and repair yard, factories which have been approved by the State for investment such as wheat mill, steel billet and fertilizer plants. We also propose early planning and construction of hinterland facilities and residential areas near the port.

We would like to express our thanks to ministries, sectors, JICA and TEDI for carrying out comprehensive study during the formulation of the F/S. The early construction of Cai Lan port will help accelerate the development of Vietnam's economy. We will facilitate the construction of the port to the best of our ability.

Once again, I would like to thank ministries and sectors, JICA consultants and TEDI, thank you all.

SOME COMMENTS ON THE PRELIMINARY
ENVIRONMENTAL IMPACT ASSESSMENT REPORT
FOR CAI LAN PORT CONSTRUCTION PROJECT

The preliminary Environmental Impact Assessment Report for Cai Lan port construction project consists of 200 pages and 3 Appendices including a number of illustrated figures and tables. The contents of the report are mainly contained in 5 parts as follows:

- Part I : The project Description
- Part II : Social Environment and Effects
- Part III : Physical and Biological Environment and Effects
- Part iv : Mitigation, Monitoring and Management
- Part v : Conclusions and Future issues.

In each part, the authors outlined the existing environmental status and key environmental issues as well as forecasted the environmental impacts in future for the period of port construction and operation. Thanks to the selection of the rational data and scientifically analyzing methods, the report has cleared environmental impacts of development activities on natural resources, eco-system and socio-economics, etc.

The authors also proposed possible mitigation measures for every specific environmental impact of concern during the period of port construction and operation, that in the future the project proponent should consider for implementation.

However, we would like to draw the Authors' attention to two special issues, that need to be seriously considered and cleared in detail at the same time together with the investment stage for port construction, as follows:

- Investment for treating accidents caused by collision such as fire and oil spill. A recent oil spill at CAT LAI port in HO CHI MINH City caused serious consequences to the environment and no measures were timely taken to overcome it.
- Investment for implementing the environmental monitoring and management programs.

In a word, the report on the Environmental Impact Assessment for Cai Lan port construction project is well written and comprehensive. It is a product of the serious and lab and high qualifications of the authors. The report is one of the exemplary feasibility study

projects to implement the law on Environmental protection.

We would like to take this opportunity to express our gratitude to the Japan International Cooperation Agency, Ministry of Transport and Communications, S.R. Vietnam and the authors for it.

Hanoi, December 8, 1994

Commented by

Ms. CHU THI SANG

HEAD, ENVIRONMENTAL TECHNOLOGY DEPARTMENT
MINISTRY OF SCIENCE, TECHNOLOGY AND ENVIRONMENT

Mr. T. SOGABE

Japanese study team for

The Feasibility Study on

CAI LAN construction

project.

The Overseas Coastal Area Development

Institute of Japan

Fax: 81-3-3580-3657

Dear Sir

We received Your message dated January 18, 1995. Thank you very much for your hard work in finishing the Final Report.

We'd like to inform you that almost all comments from the Vietnamese side were related to you at the seminar and during preparation of The Draft Final Report (including my opinions before leaving for Ho Chi Minh City).

Ho wever, we'd like to add the following comments:

- Study economic and financial analysis according to the change of the cost but also earlier operation of the first two or three berths;

- Rational phasing of the investment corresponding to ship-size and cargo volume

For example:

For the first phase volume of dredging will be smaller than calculated due to quantity of ship-calls.

- The millflour factory s located behind existing berth;

If You consider above mentions, we think FIRR will be increased and our project will be more feasible if the above comments are incorporated into the reroll.

That's all TEDI's additions. Comments from MOTAC are being translated and will be sent to you soon.

Sincerely Yours

Mr. TRAN VAN DUNG

MINISTRY OF TRANSPORT

SOCIALIST REPUBLIC OF VIETNAM
INDEPENDENCE - FREEDOM - HAPPINESS.

TO: *JICA Study Team*

*Feasibility study for
CaiLan port construction project.*

**COMMENTS
ON FEASIBILITY STUDY FOR CAI LAN PORT**

First of all We, the Ministry of Transport -SRV, would like to express our sincere thanks to the Government of Japan represented by Japan International Cooperation Agency (JICA) for its assistance in formulating the feasibility study for Cai Lan port Construction Project, an important deep water port to our country.

We would like also to thank all the members of the Japanese study team who have, in a short period of time, successfully completed the above - said study.

From the seminar on the Draft Final report of the feasibility study held on 10 DEC 1994 we have the following comments:

I-General

The draft final report of the feasibility study has been successfully completed. This is a scientific and thoroughly prepared report containing sufficient data and information, a tribute to the good cooperation between Japanese Consultants and Vietnamese counterparts. It has incorporated results of previous studies and also made many reasonable recommendations and conclusions which will become the basis for the follow-up design and construction steps.

We fully agree with some of the conclusions made in the report:

1. Type of port

This is a commercial port of the region which could also cater for industrial activities

2. Forecast of cargo volume

Since the study methodology is clear and suitable to Vietnam conditions at the present stage, results of the forecast for the year 2000 (2.7 tons/year) are relatively appropriate to the

Master plan. However, in comparison with the forecast of the year 2010 (16 million tons/year), development requirements have not been fully taken into consideration. Therefore a throughput of 20 million tons/year needs to be also considered as another alternative.

3. Vessel size

The surveys of natural conditions have been sufficiently carried out yielding the important conclusion that the access Channel is capable of accommodating ships of 40,000 tons without encountering bed rock layer.

4. General layout of the port

Alternatives as to general layout of the port, berth structure ship size, channel and ship draft have been thoroughly considered and compared and appropriate solutions have been worked out.

5. Environmental issue

Based on experience, the consultants have drawn an important conclusion in that it is possible to simultaneously develop both the port and tourism, without bringing a negative effect to either on the contrary, simultaneous development will help promote both causes. However, attention should be given to full environment protection measures.

II-Issues that need to be furthered considered

1. Cargoes and storage yards/warehouses

- In the year 2010, the throughput of 16 million tons/year is considered as a low scenario it is necessary to take another scenario into consideration with the throughput of 20 million tons/year.

- As for the cargoes the container cargo should account for a higher proportion.

- The area of land for warehouses and yard needs to be recalculated, and especially consideration should be given to the area of Container Freight Station for long-term development. (at least 400 m from the water front)

2. Investment capital and construction progress

- Further judgement in calculating the investment capital should be made because the total estimated cost is a bit higher than that of the region (some 10%).

- The proposed construction schedule is late as compared with the expectation of the Vietnam Government. As Originally Planned the construction of the port will start by the end of the 1996 or beginning of 1997.

III-Proposals

1. Transport system

Its is necessary to mention in more detail, the transport system in the hinterland (roads, railways and waterways) and to make appropriable recommendations for its development because it directly effects the removal of cargoes from the port.

2. Environment

It is necessary to make a proposal to JICA for financing as soon as possible an environmental impact assessment study of the whole Ha Long area so that the Ministry of Transport and Ministry of Science, Technology and Environment are able to arrange the execution of the study and help meet requirements of appropriate regional and local planning.

3. Documentation

A summary report is required to be produced with the cooperation from TEDI and submitted to concerned Government agencies as soon as possible.

Once again we would like to thank the Japanese Government and the study team.

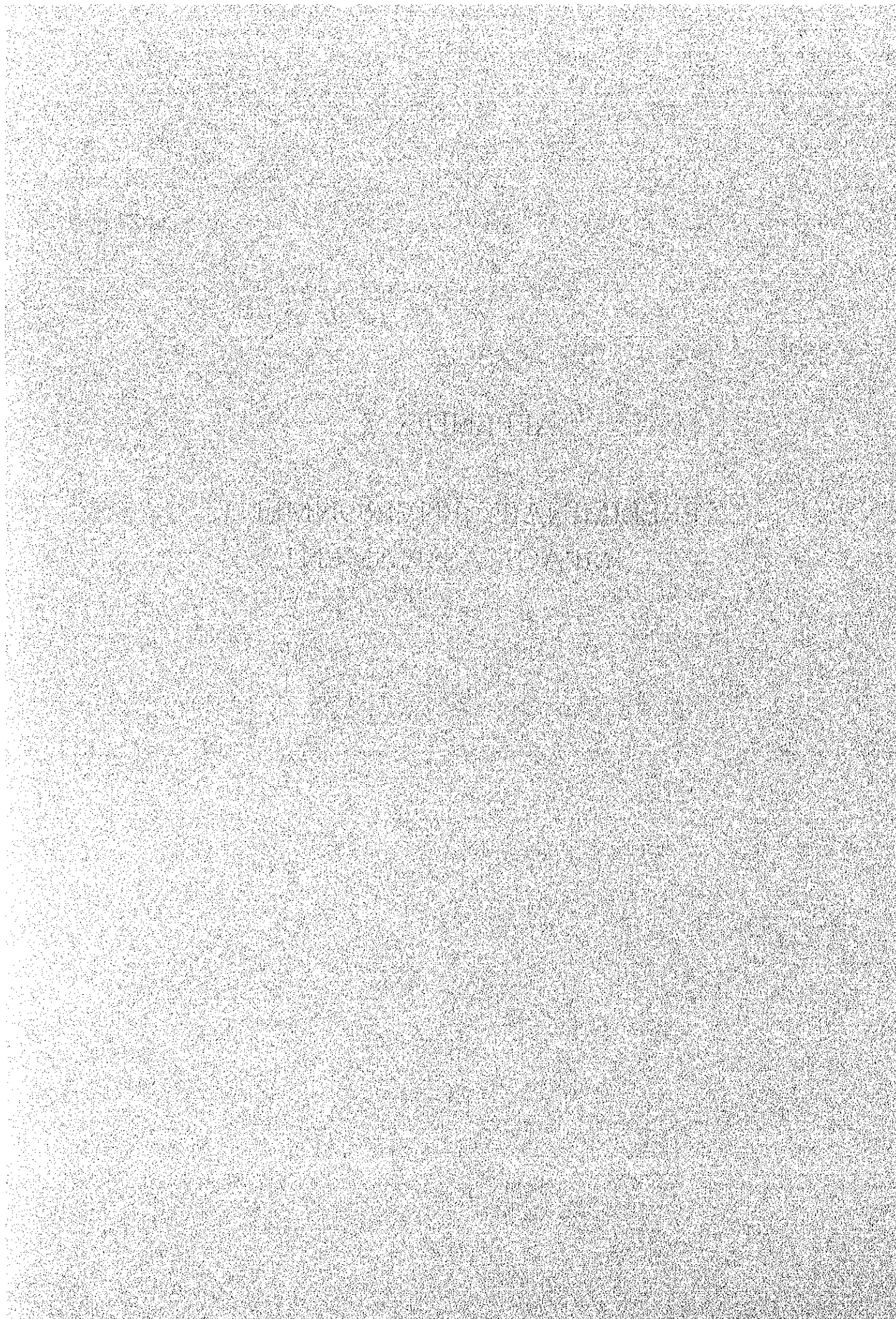
Dr. LE NGOC HOAN

Vice Minister

25 - 1 - 1995

APPENDIX 7

**PRELIMINARY ENVIRONMENT
IMPACT ASSESSMENT**



**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
MINISTRY OF TRANSPORT AND COMMUNICATION**

PRELIMINARY

ENVIRONMENTAL IMPACT ASSESSMENT

TO ACCOMPANY THE FINAL DRAFT REPORT FOR

**THE FEASIBILITY STUDY FOR CAI LAN PORT
CONSTRUCTION PROJECT**

The Overseas Coastal Development Institute of Japan (OCDI)

NIPPON KOEI CO., LTD (NK)

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY

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PREFACE

This Environmental Impact Assessment for the Cai Lan Port Construction Project is set out in five parts as follows:

PART I THE PROJECT

CHAPTER 1 INTRODUCTION

CHAPTER 2 DEVELOPMENT WORKS INVOLVED IN THE CAI LAN PORT PROJECT

PART II SOCIAL ENVIRONMENT AND EFFECTS

CHAPTER 3 EXISTING SOCIAL ENVIRONMENT

CHAPTER 4 EFFECTS OF CAI LAN PORT DEVELOPMENT ON THE SOCIAL ENVIRONMENT

PART III PHYSICAL AND BIOLOGICAL ENVIRONMENT AND EFFECTS

CHAPTER 5 THE PHYSICAL AND BIOLOGICAL ENVIRONMENT

CHAPTER 6 THE MANGROVE ECOSYSTEM

CHAPTER 7 EFFECTS OF CAI LAN PORT DEVELOPMENT ON THE PHYSICAL AND BIOLOGICAL CHARACTERISTICS OF BAI CHAY BAY

PART IV MITIGATION, MONITORING AND MANAGEMENT

CHAPTER 8 MITIGATION, MONITORING AND MANAGEMENT

PART V CONCLUSIONS AND FUTURE ISSUES

CHAPTER 9 SUMMARY OF ENVIRONMENTAL EFFECTS

CHAPTER 10 FUTURE DEVELOPMENT OF HA LONG BAY AND ITS POTENTIAL ENVIRONMENTAL EFFECTS

The first part of the document discusses the importance of maintaining accurate records of all transactions and activities related to the business.

It is essential to ensure that all financial data is properly documented and stored in a secure location. This includes keeping receipts, invoices, and bank statements.

Regular audits should be conducted to verify the accuracy of the records and to identify any discrepancies or errors. This helps in maintaining the integrity of the financial information.

Proper record-keeping also facilitates the preparation of financial statements and tax returns. It provides a clear and concise overview of the business's financial performance over time.

In conclusion, maintaining accurate and up-to-date records is a fundamental aspect of sound business management. It ensures transparency and accountability in all financial dealings.

The second part of the document outlines the various methods and tools used for data collection and analysis. This includes surveys, interviews, and statistical software.

Surveys are a common method for gathering information from a large number of respondents. They can be conducted online or in person, and provide valuable insights into customer preferences and market trends.

Interviews, on the other hand, allow for a more in-depth exploration of specific topics. They provide an opportunity for the researcher to ask follow-up questions and clarify any ambiguities.

Statistical software is used to analyze the data collected from these methods. It helps in identifying patterns, trends, and correlations, and in testing hypotheses. This data-driven approach is essential for making informed business decisions.

TABLE OF CONTENTS

	page
PART I THE PROJECT	
CHAPTER 1 INTRODUCTION.....	1-1
1.1 Background	1-1
1.2 Aim of Environmental Impact Assessment	1-3
1.3 Location of Cai Lan Port	1-3
1.4 Key Environmental Issues.....	1-4
1.4.1 Introduction	1-4
1.4.2 Protection of Water Quality.....	1-4
1.4.3 The Mangrove Ecosystem.....	1-4
1.4.4 The Tourist Industry.....	1-5
1.4.5 Socio-Economic Effects.....	1-6
1.4.6 Growth of Industry Associated with Cai Lan Port.....	1-6
1.5 Requirement for EIA under the Law on Environment Protection (1994).....	1-7
1.5.1 Introduction	1-7
1.5.2 Provisional Environmental Guidelines.....	1-7
1.6 Sources of Information used in Preparation of this EIA.....	1-8
1.7 Approach and Content of the EIA Document.....	1-9
 CHAPTER 2 DEVELOPMENT WORKS INVOLVED IN THE CAI LAN PORT PROJECT	 2-1
2.1 Introduction	2-1
2.2 Development Plan.....	2-1
2.3 Construction Activities.....	2-4
2.3.1 Land Reclamation and Berth Construction.....	2-4
2.3.2 Dredging.....	2-4
2.3.3 Yard Construction.....	2-5
2.3.4 Transport Route Development.....	2-5
2.3.5 Land-based Facilities	2-7
2.3.6 Machinery and Manpower.....	2-7

PART II SOCIAL ENVIRONMENT AND EFFECTS

CHAPTER 3	EXISTING SOCIAL ENVIRONMENT.....	3-1
3.1	Introduction and Overview.....	3-1
3.2	Quang Ninh Province.....	3-2
	3.2.1 Location and Population.....	3-2
	3.2.2 Natural Resources.....	3-2
	3.2.3 Industrial Production.....	3-3
3.3	Bai Chay Bay.....	3-5
	3.3.1 Population Distribution around Bai Chay Bay.....	3-5
	3.3.2 Population of Cai Lan and Other Nearby Centres.....	3-6
	3.3.3 Economic Activities of Ha Long City.....	3-9
	3.3.4 Land Use Characteristics of Bai Chay Peninsula and Environs.....	3-13
	3.3.5 Economic Activities of Bai Chay Bay's Northern Shoreline.....	3-14
3.4	Existing Infrastructure.....	3-16
	3.4.1 Roads.....	3-16
	3.4.2 Railway.....	3-16
	3.4.3 Air Transport.....	3-17
	3.4.4 Water Sources.....	3-17
	3.4.5 Waste Disposal.....	3-17
	3.4.6 Health.....	3-18
	3.4.7 Education.....	3-18
	3.4.8 Electricity Supply.....	3-18
	3.4.9 Communication.....	3-18
	3.4.10 Culturally Significant Places.....	3-18
3.5	Traffic.....	3-20
	3.5.1 Road Traffic.....	3-20
	3.5.2 Shipping Traffic.....	3-21
3.6	Amenity Values.....	3-25
	3.6.1 Introduction.....	3-25
	3.6.2 Landscape Values.....	3-25
	3.6.3 Air Quality.....	3-27
	3.6.4 Noise and Vibration.....	3-27
	3.6.5 Access to Coastline and Resources.....	3-28
	3.6.6 Land Tenure.....	3-28

CHAPTER 4 EFFECTS OF CAI LAN PORT DEVELOPMENT ON THE SOCIAL

	ENVIRONMENT.....	4-1
4.1	Introduction	4-1
4.2	Population and Employment.....	4-2
4.3	Infrastructure.....	4-3
4.4	Cultural Features.....	4-3
4.5	Land Use.....	4-4
4.6	Traffic	4-5
	4.6.1 Road and Rail.....	4-5
	4.6.2 Shipping.....	4-6
4.7	Amenity Values.....	4-8
	4.7.1 Introduction.....	4-8
	4.7.2 Noise.....	4-8
	4.7.3 Vibration.....	4-9
	4.7.4 Air Quality and Dust.....	4-10
	4.7.5 Landscape.....	4-11
	4.7.6 Access to Coastal Resources.....	4-12
4.8	Tourism	4-13
	4.8.1 Introduction.....	4-13
	4.8.2 Positive Effects.....	4-13
	4.8.3 Effects of Increased Shipping.....	4-13
	4.8.4 Cai Lan Port Area	4-14
	4.8.5 Bai Chay Bay Water Quality.....	4-15
	4.8.6 Summary of Effects on Tourism.....	4-15
4.9	Summary of Effects on the Social Environment.....	4-15

PART III PHYSICAL AND BIOLOGICAL ENVIRONMENT AND EFFECTS

CHAPTER 5	EXISTING STATUS OF THE PHYSICAL AND BIOLOGICAL ENVIRONMENT.....	5-1
5.1	Introduction	5-1
5.2	Physical Characteristics.....	5-1
	5.2.1 Introduction.....	5-1
	5.2.2 Temperature	5-2
	5.2.3 Rainfall.....	5-2
	5.2.4 Winds.....	5-2
	5.2.5 Typhoons.....	5-3

5.3	Hydrology.....	5-3
	5.3.1 Introduction.....	5-3
	5.3.2 Surface Hydrology of Cai Lan Port Area.....	5-3
	5.3.3 Tides.....	5-3
	5.3.4 Tidal Currents.....	5-4
	5.3.5 Waves.....	5-7
	5.3.6 Storm Surges.....	5-8
	5.3.7 Sediment Load in Rivers.....	5-8
5.4	Geology.....	5-9
	5.4.1 Introduction.....	5-9
	5.4.2 Geological Succession.....	5-9
	5.4.3 Dredgeability.....	5-10
	5.4.4 Seismic Disturbance.....	5-10
5.5	Vegetation of Cai Lan Port Area.....	5-14
	5.5.1 Introduction.....	5-14
	5.5.2 Coastal Vegetation.....	5-14
	5.5.3 Terrestrial Vegetation.....	5-14
5.6	The Marine and Intertidal Environment.....	5-18
	5.6.1 Introduction.....	5-18
	5.6.2 Existing Status of the Environment due to Land Use Practices.....	5-19
	5.6.3 Status of the Coastal and Marine Environment.....	5-20
	5.6.4 Water Quality.....	5-21
	5.6.5 Sediment Quality.....	5-38
 CHAPTER 6 THE MANGROVE ECOSYSTEM.....		 6-1
6.1	Introduction.....	6-1
6.2	Survey Methods.....	6-1
	6.2.1 Survey Approach.....	6-1
	6.2.2 Field Methods.....	6-2
6.3	The Eco-Geographic Setting of Bai Chay Bay.....	6-7
6.4	The Abiotic Mangrove Environment.....	6-8
	6.4.1 Introduction.....	6-8
	6.4.2 Chemical Analyses of Mangrove Soils.....	6-8
	6.4.3 Chemical Analyses of Mangrove Waterways and Bai Chay Bay Water.....	6-9

6.4.4	Underground Waters	6-10
6.5	Mangrove Vegetation.....	6-11
6.5.1	Introduction	6-11
6.5.2	The Mangrove Zones of Vietnam.....	6-12
6.5.3	The Present Status of Mangrove Forest in Vietnam.....	6-12
6.5.4	The Bai Chay Bay Mangroves in relation to Other Zone 1 Mangroves	6-13
6.5.5	Characteristics of the Mangroves of Zones 2, 3 and 4.....	6-14
6.5.6	Summary of the Mangrove Vegetation of Vietnam.....	6-15
6.5.7	Ecological and Economic Classification of Mangrove Vegetation in Bai Chay Bay	6-15
6.6	Mangrove Dependent Biota	6-17
6.6.1	Introduction	6-17
6.6.2	Shellfish.....	6-18
6.6.3	Crustaceae.....	6-19
6.6.4	Other Mud-dwelling Macro-invertebrates	6-22
6.6.5	Finfish	6-24
6.6.6	Other Vertebrates.....	6-24
6.6.7	Mangrove Food Chains and Trophic Dynamics	6-27
6.6.8	Mangrove Ecosystems and Environmental Vulnerability.....	6-27
6.7	Economic Considerations.....	6-28
6.7.1	Introduction	6-28
6.7.2	Case Study 1. The economic value of <i>Avicennia</i> <i>marina</i> firewood in a hamlet near Le Loi, Bai Chay Bay.....	6-29
6.7.3	Case Study 2: The estimated economic values of the two molluscan resources in two areas of Ha Nam Ninh Province, Vietnam (after Duc 1993).....	6-31
6.7.4	Deductions from the Data.....	6-32

CHAPTER 7	EFFECTS ON CAI LAN PORT DEVELOPMENT ON THE PHYSICAL AND BIOLOGICAL CHARACTERISTICS OF BAI CHAY BAY.....	7-1
7.1	Introduction	7-1
7.2	Direct Effects of Port Construction.....	7-1
	7.2.1 Effects on the Terrestrial Environment in the Immediate Vicinity of Cai Lan	7-1
	7.2.2 Effects of Construction on the Mangroves of Cai Lan Port.....	7-2
	7.2.3 Effects of Dredging on Marine In-Fauna.....	7-2
7.3	Potential Effects on Water Quality and the Mangroves of Bai Chay Bay.....	7-3
	7.3.1 Summary of Existing Status	7-3
	7.3.2 Possible Sources of Sediment.....	7-3
	7.3.3 Other Sources of Contamination.....	7-6
7.4	Potential Effects of Dredging and Disposal in Ha Long Bay	7-7
7.5	Summary of Effects on the Physical and Biological Environment.....	7-9

PART IV MITIGATION, MONITORING AND MANAGEMENT

CHAPTER 8	MITIGATION, MANAGEMENT AND MONITORING	8-1
8.1	Introduction	8-1
8.2	Proposed Mitigation Measures to Protect the Social Environment.....	8-2
	8.2.1 Prevention of Strain on Social Services.....	8-2
	8.2.2 Minimisation of Noise Effects.....	8-2
	8.2.3 Minimisation of the Effects of Dust.....	8-3
	8.2.4 Minimisation of Road Traffic Risk.....	8-4
	8.2.5 Minimisation of Shipping Traffic Risks.....	8-4
	8.2.6 Mitigation of Effects on Sites of Cultural Importance.....	8-5
	8.2.7 Mitigation of the Effects of Changes to the Landscape.....	8-6
	8.2.8 Mitigation of Overall Effects on Residents below Route 18.....	8-6
8.3	Proposed Mitigation Measures to Protect the Physical and Biological Environment.....	8-7
	8.3.1 Minimisation of Sediment in the Seawater During Reclamation	8-7

8.3.2	Minimisation of Sediments from Earthworks.....	8-8
8.3.3	Minimisation of Constituents in Site Stormwater Runoff.....	8-9
8.3.4	Treatment of Sewage and Solid Waste.....	8-9
8.3.5	Mitigation Strategy for Oil and Chemical Spills.....	8-10
8.3.6	Mitigation of the Effects of Dredging.....	8-11
8.4	Management Strategy	8-11
8.5	Monitoring.....	8-13
8.5.1	Noise.....	8-13
8.5.2	Dust.....	8-14
8.5.3	Water Quality.....	8-14
8.6	Summary	8-18

PART V CONCLUSIONS AND FUTURE ISSUES

CHAPTER 9 SUMMARY OF ENVIRONMENTAL EFFECTS..... 9-1

9.1	Introduction	9-1
9.2	Broader Issues.....	9-5
9.2.1	Bai Chay Bay Estuarine Environment.....	9-5
9.2.2	Ha Long Bay Marine Environment.....	9-6
9.2.3	The Tourist Industry.....	9-6
9.3	Benefits of Planning and Management.....	9-7

CHAPTER 10 FUTURE DEVELOPMENT OF HA LONG CITY AND ITS POTENTIAL ENVIRONMENTAL EFFECTS..... 10-1

10.1	Outline of Future Development.....	10-1
10.2	Potential Environmental Issues and Mitigation Approach	10-2
10.3	Possible Management Methods	10-5
10.4	Summary	10-6

CHAPTER 11 REFERENCES..... 11-1

APPENDICES

APPENDIX 1 Terms of Reference for Preliminary Environmental Impact Assessment Proposed Cai Lan Port Construction Project.

1.	Introduction.....	A1-1
1.1	Purpose of Terms of Reference.....	A1-1
1.2	Project to be Assessed.....	A1-1
1.3	Objectives of EIA.....	A1-1
2.	Background Information.....	A1-2
2.1	Location of Cai Lan Port.....	A1-2
2.2	Proposed Port Development.....	A1-2
2.3	Scale of Development.....	A1-3
2.4	Previous Investigation.....	A1-3
3.	Study Area.....	A1-3
4.	Scope of Work.....	A1-4
5.	Tasks to be Carried out in EIA.....	A1-5
5.1	Description of the Proposed Project.....	A1-5
5.2	Description of the Existing Environment.....	A1-5
5.3	Legislative and Regulatory Considerations.....	A1-6
5.4	Determination of the Potential Effects of the Proposed Port.....	A1-7
5.5	Remediation and Mitigation Measures.....	A1-7
5.6	Monitoring Plan.....	A1-7
6.	EIA Document.....	A1-7