Chapter 5 Short-term Ferry Terminal Plan

5-1 Basic Ideas for Ferry Terminal Development for Short-term Plan

The basic items to be considered for preparation of Ferry Terminal Development for Short-term Plan are as follows.

(1) On-land Facilities of Ferry Terminal

1. On-land terminal area for passenger terminal and parking lots should be sufficient not only for short term plan but also for future expansion based on the Master Plan up to the year of 2010. However, according to the Master Plan, one berth is enough to meet the demand of cargoes and passengers in 2010 on the four study routes. In that case, the sizes of passenger terminal and parking lot will be determined generally by the capacity of ferry-boat, that is, by the number of loading vehicles and the number of boarding passengers. Therefore, if the maximum ferry-boat to be introduced in 2010 is the same size as that in 1998, expansion of the on-land terminal area in 2010 is not required.

2. A passenger terminal is planned to be at the shortest location to the mooring facilities as much as possible to minimize passengers' walking distance and time needed to board ferry-boat.

3. It is recommended that because of the left side traffic rule for vehicles in Indonesia, a loading parking area be installed on the left side of the road leading from the entrance of a terminal to a berth to ensure a smooth flow of vehicles entering the parking lot and leaving for the berth.

4. 3-5m wide green-belts are planned to surround ferry terminals and parks are provided around parking lots as much as possible if some space remains after the layout of main facilities has been determined.

(2) Breakwaters and Mooring Basin

5. Based on the natural condition survey for the Feasibility Study, breakwaters are required at Mokmer, Saubeba and Muntok. Generally, for structural type of breakwaters, rubble mound type should be applied; this type

has been applied in many ports of Indonesia. However, the sea bed soil condition in Muntok is not conducive for installation of this type of breakwater and thus the curtain wall type is applied.

6. In all ferry terminals except Bajoe and Mokmer, mooring facilities are installed at the sea area with sufficient water depth for objective ferry-boat without dredging. Maximum size of ferry-boat to be operated in Bajoe-Kolaka route is 1000GRT and requires at least -4m water depth for sailing and berthing. The distance between the new berth and the new passenger terminal should be minimized for passengers' convenience. It is inevitable that new mooring facilities will be installed in a sea area shallower than -4m and dredging will be required to provide a sufficient water depth for mooring/turning basin of the new berth. Sea bottom configuration at Mokmer requires dredging of sea bed(sand and coral reef)over a 500m^2 area(its volume is 20,000m^3)to provide a sufficient water depth.

(3) Mooring Facilities

7. According to the Master Plan, on Ferry Route-3 connecting five islands, Flores, Adonara, Lomblen, Pantar and Alor, 500GRT ferry boats are planned to be introduced, although 300GRT ferry boats are operated in the short term plan connecting the three islands, Flores, Adonara and Lomblen. In this case, mooring facilities should be designed for 500GRT ferry boat.

5-2 Ferry Terminal Facilities to be Installed for Short-term Plan

8. The passenger terminal building will consist of passenger waiting rooms for departure, an administration office and others(canteens, public toilets, a ticketing booth, a praying room etc.). A praying room should be planned to be at appropriate location adjacent to the waiting room.

9. Parking lots should generally have a sufficient area both for vehicles ready for rolling on(loading parking lot)and for vehicles waiting for arriving passengers(waiting parking lot). However, if the time interval between arrival and departure of ferry-boat at a terminal is long and the loading parking lot and waiting parking lot are not used simultaneously, it is sufficient to install

only the larger of the two parking lots and to utilize it for another purpose depending on the time of day.

10. In the four study routes, a dolphin type will be applied for mooring facilities, consisting of breasting dolphins and mooring dolphins except Terong terminal. Movable bridge type vehicle ramp is provided for the smooth loading/unloading of vehicles to ferry-boat.

11. Generally, access way to connect on-land terminal facilities and offshore mooring facilities is of rock causeway or reinforced concrete trestle; one or both of them are applied depending on the sea bed condition. From the point of view of safety, access for passengers between berth and ferry-boat should be separated from vehicular access by using a direct approach to the passenger deck of ferry-boat or at least by the use of fenced-off lanes on the bridge under well controlled embarking/disembarking of passengers.

12. In all ferry terminals of the four Feasibility Study routes, electricity including lighting for port area will be provided by generators installed in ferry terminals. Ground water will be supplied to passenger terminals and ferry boats. Fuel will be supplied by the fuel trucks of PERTAMINA.

13. To charge the fare according to the volume of cargo it is necessary to install a truck scale. In most ferry terminals in Indonesia, however, a truck scale has not always been installed except at some larger ferry terminals. It seems adequate to determine the installation of a truck scale by the number of trucks loaded on ferry-boat, from the points of view of economy and smooth operation. At least in the short-term plan, it seems enough to install truck scales only in Bajoe-Kolaka Route and Palembang-Muntok Route.

5-3 Layout of Each Ferry Terminal

5-3-1 Mokmer(Biak) - Sabueba(Yapen) Route

14. At Mokmer terminal a breakwater should be constructed in the west part of the coast to protect the basin from westerly waves.

15. The berthing area will be dredged to have a sufficient water depth to accommodate a 300GRT ferry boat.

16. The gravity type breakwater and an groin which should be installed in the east part of the coast are applied to protect sea bottom materials outside the breakwater/groin coming into the inner part.

17. Considering that the sea bed of the basin after dredging will be coral rock, water depth of the basin is planned to be 3m below LWS.

18. According to the demand forecast, one round trip by a 300GRT ferry boat between Mokmer and Saubeba is enough to meet the demand for Short-Term Plan. In this case, there will be two alternatives A(departing from Mokmer in the morning) and B(departing from Saubeba in the morning). To determine which alternative should be applied, a more accurate forecast of the daily cargoes/passengers movement between the two islands is required. Therefore parking areas are prepared in both terminals to meet either of the two alternatives mentioned above.

19. At Saubeba terminal two breakwaters should be constructed as shown in Fig.5-2 because of the wave condition.

20. Based on such factors as the safe maneuvering of a ferryboat, the lower construction cost of dolphins and the effective protection of mooring area from the westerly and easterly waves, the layout of the mooring facilities is planned as shown in Fig.5-2.

21. Considering i)the accessibility to Serui and Yobi and also to the mooring facilities, ii)land area required for the future development of the ferry terminal, the location of on-land facilities is planned as shown in Fig. 5-2. The layout of on-land facilities including roads is almost the same as that of Mokmer.

5-3-2 Larantuka(Flores) - Terong(Adnara) - Lewoleba(Lomblen) Route

22. As mentioned in 5-1, mooring facilities should be designed to be able to accommodate a 500GRT ferry boat although on-land facilities are designed for 300GRT ferry boat to be introduced in Short-Term Plan.

23. On-land terminal facilities are planned to be between the existing road and the coast.

24. The site and the access channel for mooring facilities are planned to have no influence on the activities of neighboring sea ports.

5-3-3 Bajoe-Kolaka Route

25. The existing ramp for loading/unloading of vehicles to/from ferry boat here is fixed type, thus an improvement in the ramp to movable type has been requested by drivers for smooth loading and unloading of vehicles, especially of large ones. Therefore new mooring facilities with a movable type vehicle ramp are planned.

26. The existing berth will continue to be used for ferry operation even during the construction work of the new berth. After completion, the existing berth can be used as the resting/waiting berth for ferry boat. The interval between the existing berth and the new berth should be wide enough for a ferry boat to approach the existing berth safely.

27. All of the on-land terminal facilities in Bajoe should be constructed on the reclaimed area of the shoal next to the existing mooring facilities.

28. The existing Bajoe ferry terminal is very narrow and does not contain a exclusive parking lot. The new terminal is constructed on the newly reclaimed land with a terminal building, a loading parking lot and a waiting parking lot installed.

5-3-4 Palembang-Muntok Route

29. The existing mooring facilities are designed for 150GRT with pontoon-type. In the Short-Term Plan, a 500GRT ferry boat will be introduced, which requires the construction of new large-scale mooring facilities with a movable bridge type vehicle ramp. The facilities are installed upstream of the existing berth so as not to disturb the small ferries now operated in this route approaching the existing berth during the construction of the new mooring facilities.

30. A passenger terminal and a waiting parking lot at Palembang terminal are planned to be constructed on a swamp between the existing administration office and the bank of Musi River. The existing waiting parking lot is wide enough to be converted to a new loading parking lot.

31. The Muntok terminal site is open to the southeast and is not protected against southeast waves. This implies the need of breakwaters. Curtain wall type breakwater is planned to be installed because of the soil condition at offshore sea bottom.

5-4 Preliminary Design

5-4-1 Mokmer(Biak Is.) - Saubeba(Yapen Is.) Route

32. Waves in Yapen Strait become high from September to December. To keep the punctuality of ferry service for the whole year, therefore, the construction of a breakwater is recommended at Mokmer and Saubeba terminal sites.

33. The dredging of coral reef inside of the breakwater is required to obtain the mooring basin of Mokmer terminal site.

34. The terminal plans of Mokmer and Saubeba are shown in Fig.5-9(1) and Fig.5-15(1) respectively and the scale of main facilities of each terminal are as shown below;

	Mokmer	Saubeba
On Land Facilities		
- Land Area	5,500 m^2	5,500 m^2
- Reclamation Volume	9,400 m^3	2,700 m^3
- Passenger Terminal Building	800 m^2	800 m^2
- Loading Parking Lot	650 m^2	650 m^2
- Waiting Parking Lot	950 m^2	950 m^2
	Off Shore Facilities	
- Mooring Facility		
Planned Ferry Boat	300 GRT	300 GRT
Design Water Depth	- 3.0 m	- 2.7 m
Type of Main Structure	Steel Pile Dolphin	Steel Pile olphin
Landing System	Movable Bridge	Movable Bridge
- Breakwater		
Overall Length	(E) 65 m (W) 105 m	(E) 180 m (W)195 m
Water Depth at Tip	5.0 m	- 5.0 m
Type of Structure	Rubble Mound	Rubble Mound
- Mooring Basin		
Dredging Volume	21,600 m^3	-

5-4-2 Terong(Adnara Is.) - Lewoleba(Lomblen Is.) Route

35. The sub-soil condition of Terong terminal site is very hard and a steel pile type structure is not suitable. Therefore, a concrete caisson type structure of a kind of gravity type structure is recommended as the mooring facilities of Terong terminal. On the other hand, ordinary steel pile type structure is recommended for Lewoleba terminal based on the different sub-soil conditions.

36. The terminal plans of Terong and Lewoleba are shown in Fig.5-17(1) and Fig.5-20(1) respectively and the scale of main facilities of each terminal are as shown below:

	Terong	Lewoleba
On Land Facilities		
- Land Area	5,000 m^2	5,000 m^2
- Reclamation Volume	4,500 m^3	5,200 m^3
- Passenger Terminal Building	800 m^2	800 m^2
- Loading Parking Lot	650 m^2	650 m^2
- Waiting Parking Lot	950 m^2	950 m^2
Off Shore Facilities		
- Mooring Facility		
Objective Ferry Boat	500 GRT	500 GRT
Design Water Depth	- 3.1 m	- 3.1 m
Type of Main Structure	Caisson Type Dolphin	Steel Pile Dolphin
Landing System	Movable Bridge	Movable Bridge

5-4-3 Bajoe - Kolaka Route

37. The existing mooring facilities of both terminals will require a high cost and long construction periods to improve them to be able to accommodate new large planned ferry boats of 1,000 GRT. Therefore, the construction of new mooring facilities is recommended and the existing mooring facilities will be used for ferry operation during the construction period, and after that they will be used for the resting and/or waiting berth for ferry boats.

38. The existing land facilities of Bajoe terminal are situated very far from the mooring facility, and the existing land facilities of Kolaka terminal are insufficient because of limited land space. Therefore, new land facilities are recommended to be built on the new land to be reclaimed off shore at Bajoe and on shore at Kolaka.

39. The water depth around the Bajoe terminal site is very shallow. Therefore, the mooring berth, turning basin and waterway of Bajoe ferry port should be obtained by dredging.

40. The terminal plans of Bajoe and Kolaka are shown in Fig.5-21(1) and Fig.5-15(1) respectively and the scale of main facilities of each terminal are as shown below:

	Bajoe	Kolaka
On Land Facilities		
- Land Area	15,200 m^2	16,500 m^2
- Reclamation Volume	43,200 m^3	16,000 m^3
- Passenger Terminal Building	2,500 m^2	2,500 m^2
- Loading Parking Lot	2,600 m^2	2,600 m^2
- Waiting Parking Lot	3,000 m^2	3,000 m^2
Off Shore Facilities		
- Mooring Facility		
Planned Ferry Boat 1,000 GRT	1,000 GRT	
Design Water Dept	- 4.0 m	- 4.0 m
Type of Main Structure	Steel Pile Dolphin	Steel Pile Dolphin
Landing System	Movable Bridge	Movable Bridge
- Waterway and Turning Basin		
Dredging	66,000 m^3	-

5-4-4 Talembang - Muntok(Banka Is.) Route

41. The existing facilities of Palembang terminal do not have enough capacity to accommodate the new large planned ferry boats. Therefore, new mooring

facilities and on-land facilities are recommended to be built on the existing terminal area. Muntok terminal is a new terminal. Therefore, the new mooring facilities and on-land facilities are required to be built. In addition to the mooring facilities, this port requires the construction of a breakwater to protect the mooring berth from south-easterly waves during June to August. The structural type of the breakwater was determined as a curtain wall type based on the poor sub-soil condition at the site.

42. The terminal plan of Palembang and Muntok terminals are shown in Fig.5-23(1) and Fig.5-24(1) respectively, and the scale of main facilities of each terminal are as shown below:

	Palembang	Muntok
On Land Facilities		
- Land Area	10,500 m^2	8,300 m^2
- Reclamation Volume	4,700 m^3	4,700 m^3
- Passenger Terminal Building	1,400 m^2	1,400 m^2
- Loading Parking Lot	950 m^2	950 m^2
- Waiting Parking Lot	1,500 m^2	1,500 m^2
Off Shore Facilities		
- Mooring Facility		
Planned Ferry Boat	500 GRT	500 GRT
Design Water Depth	- 3.1 m	- 3.1 m
Type of Main Structure	Steel Pile Dolphin	Steel Pile Dolphin
Landing System	Movable Bridge	Movable Bridge
- Breakwater		
Over All Length	-	97 m
Water Depth at Tip	-	- 12 m
Type of Structure	-	Curtain wall type

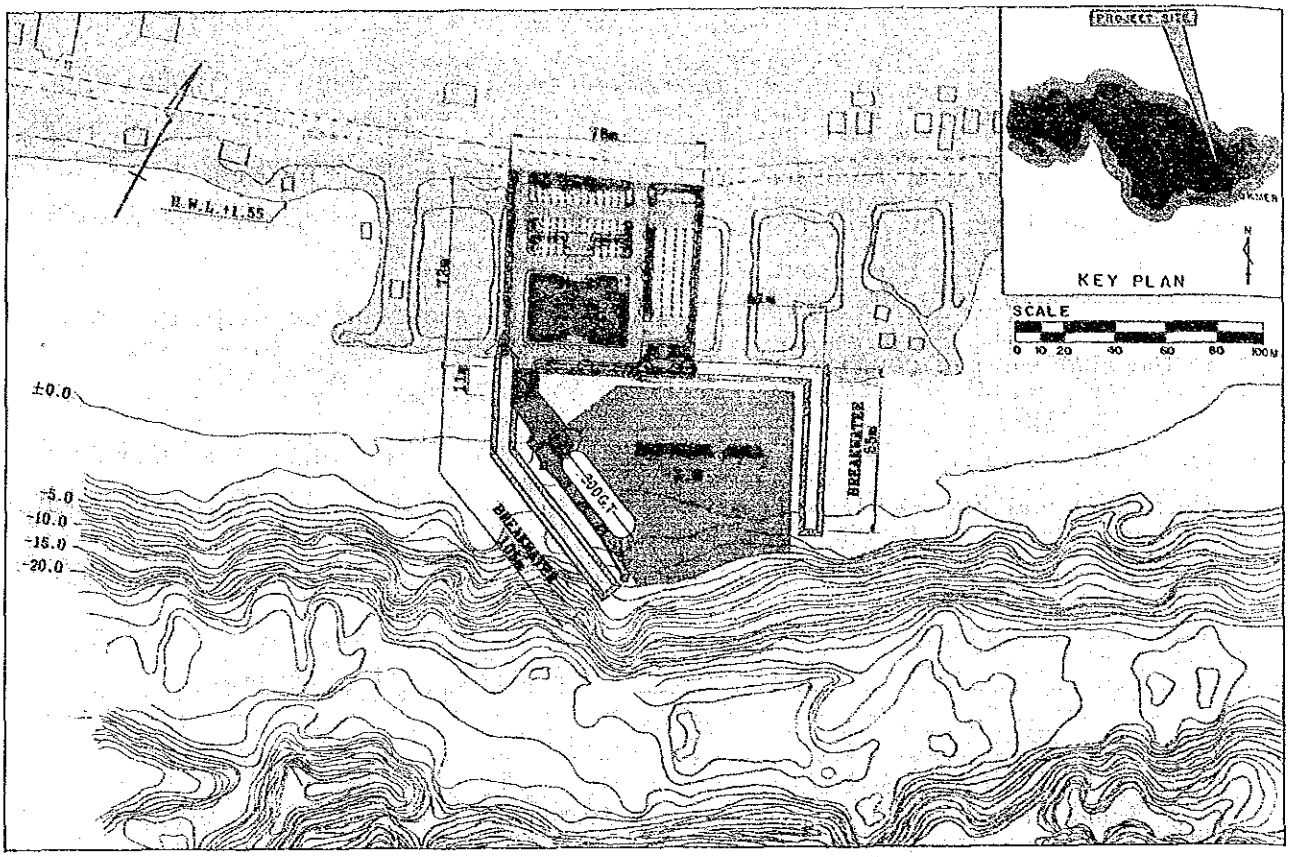

Fig. 5-1 Layout of Mokmer Ferry Terminal

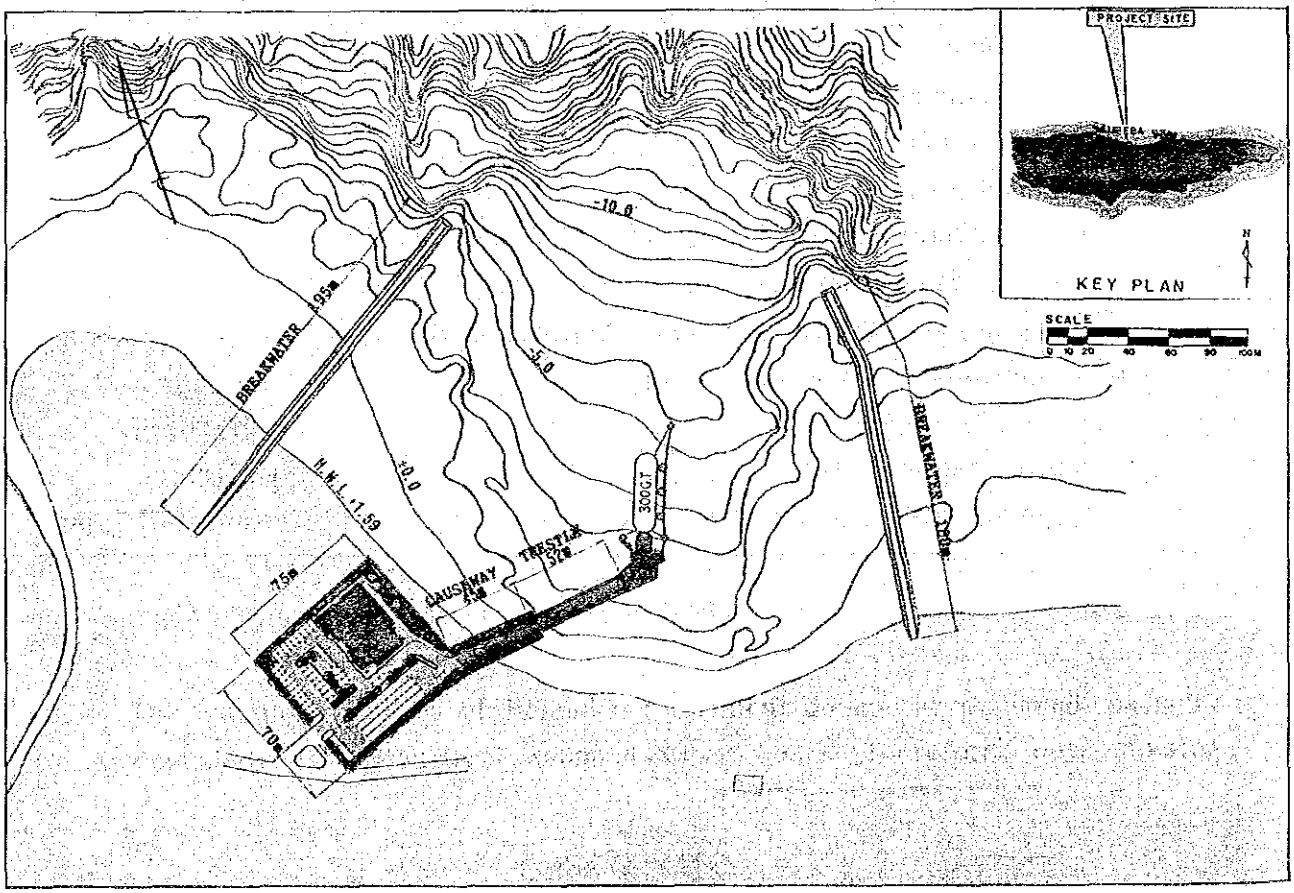

Fig. 5-2 Layout of Saubeba Ferry Terminal

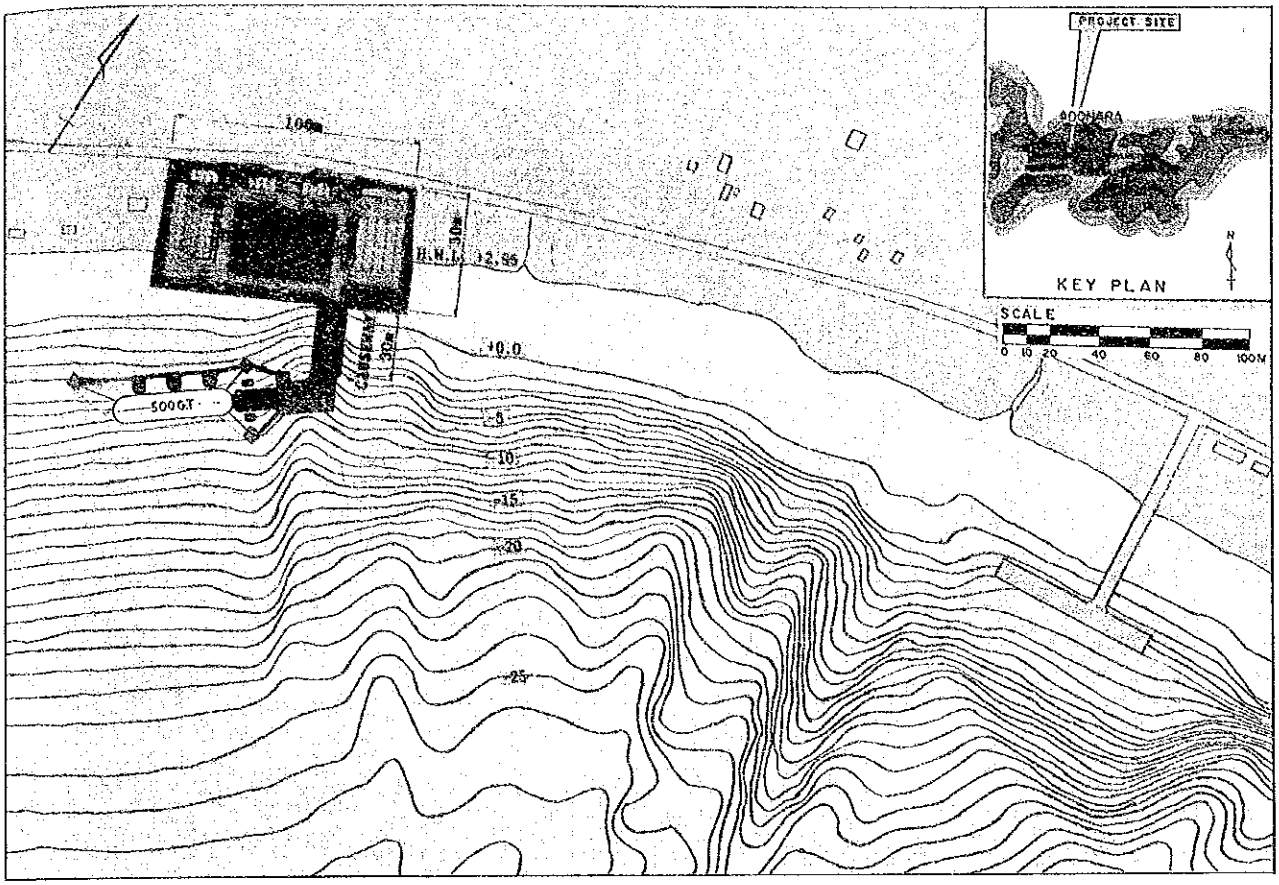

Fig. 5-3 Layout of Terong Ferry Terminal

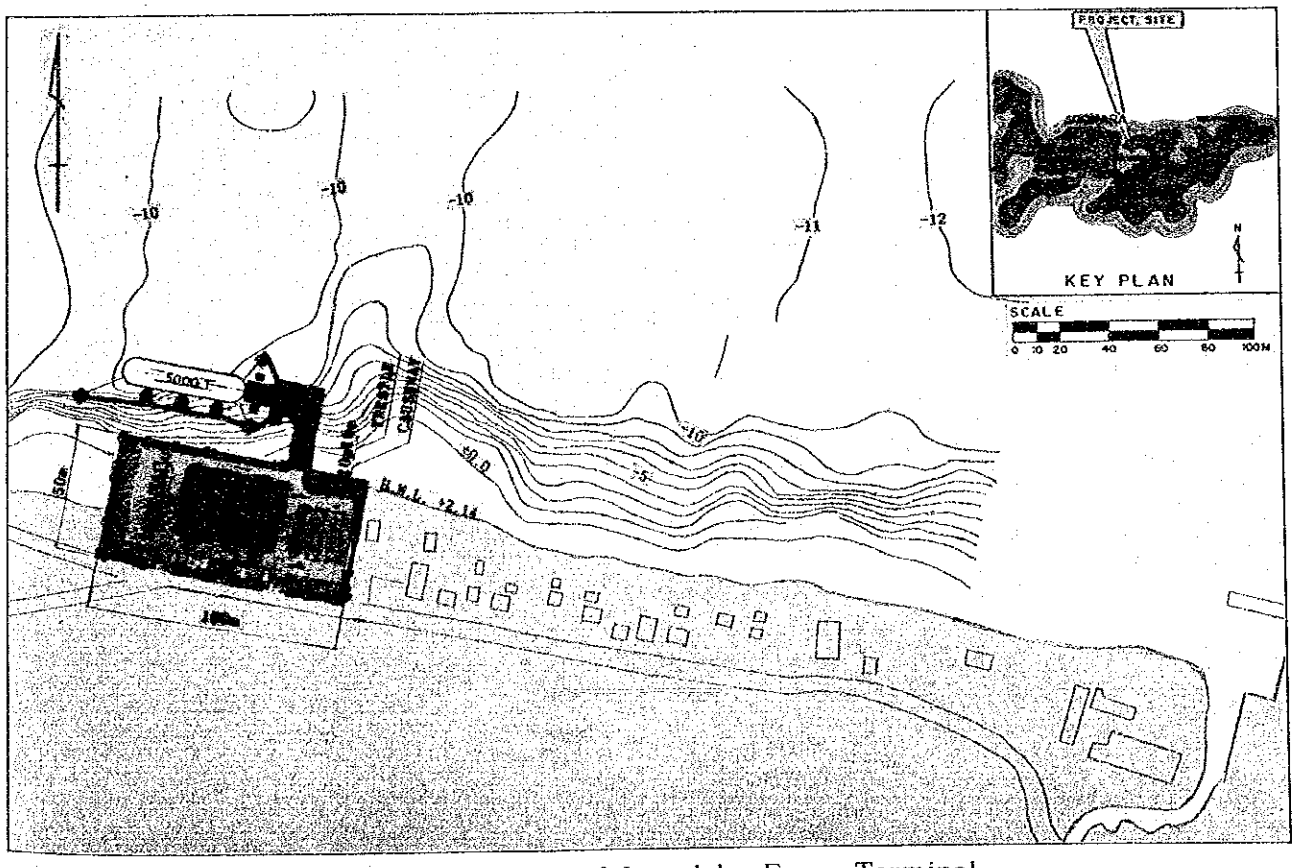

Fig. 5-4 Layout of Lewoleba Ferry Terminal

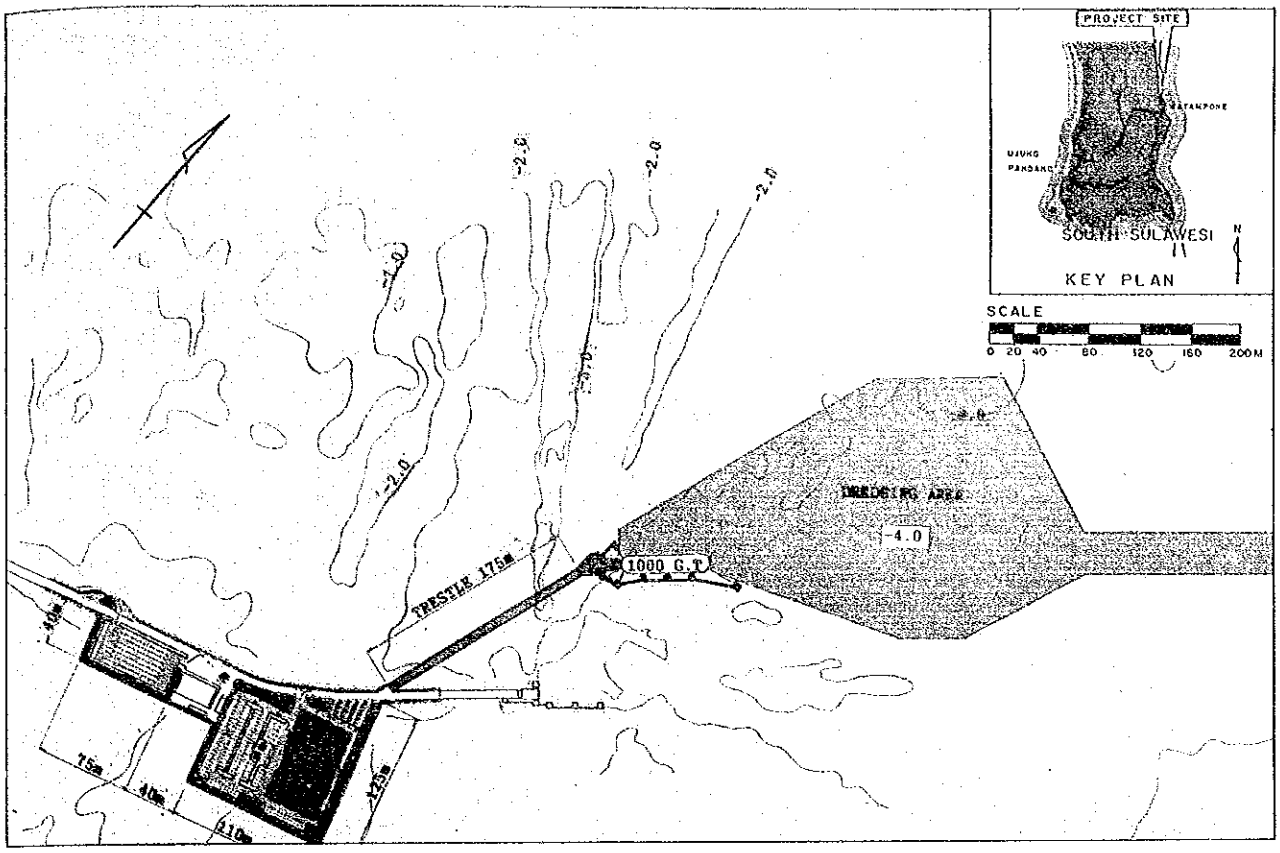

Fig. 5-5 Layout of Bajoe Ferry Terminal

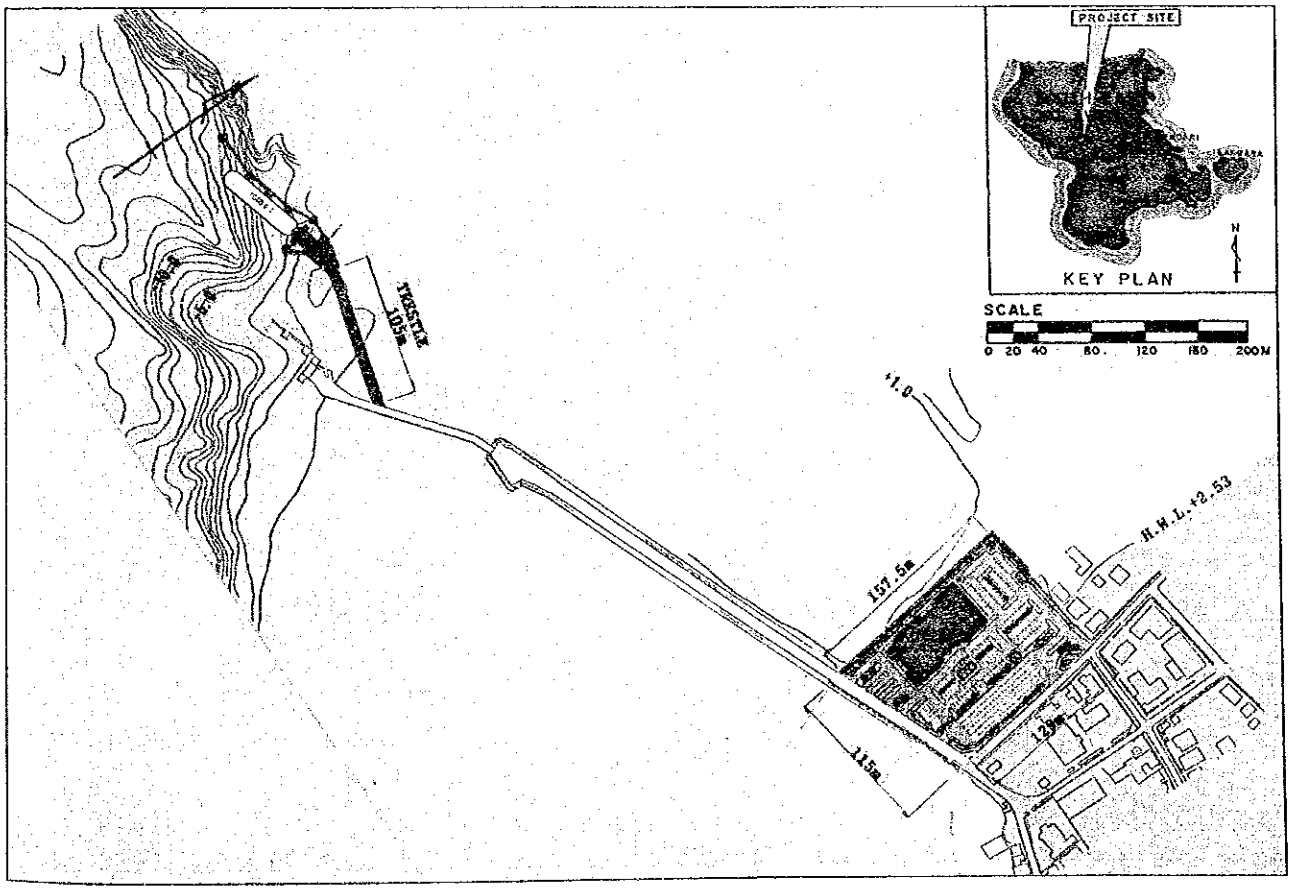

Fig. 5-6 Lauout of Kolaka Ferry Teminal

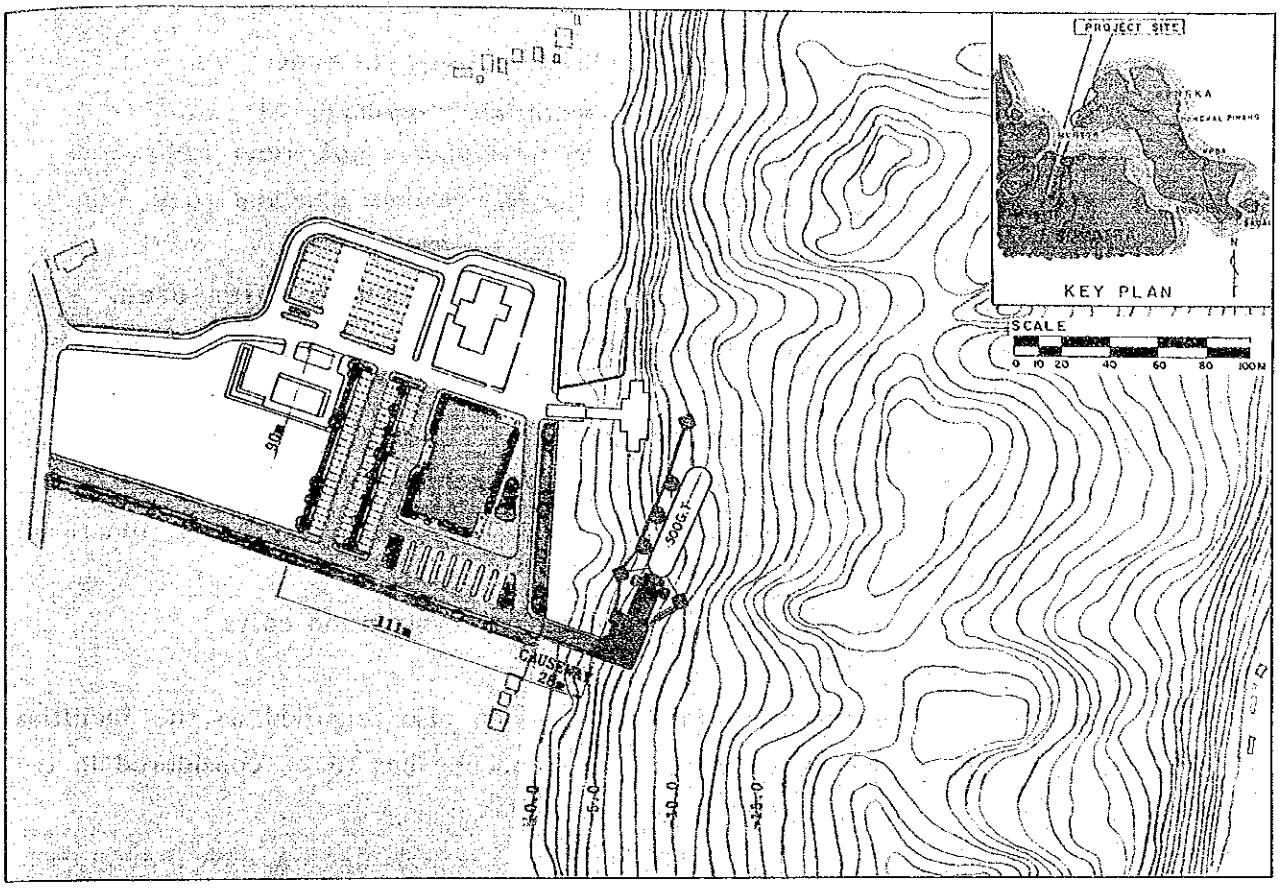

Fig. 5-7 Layout of Palembang Ferry Terminal

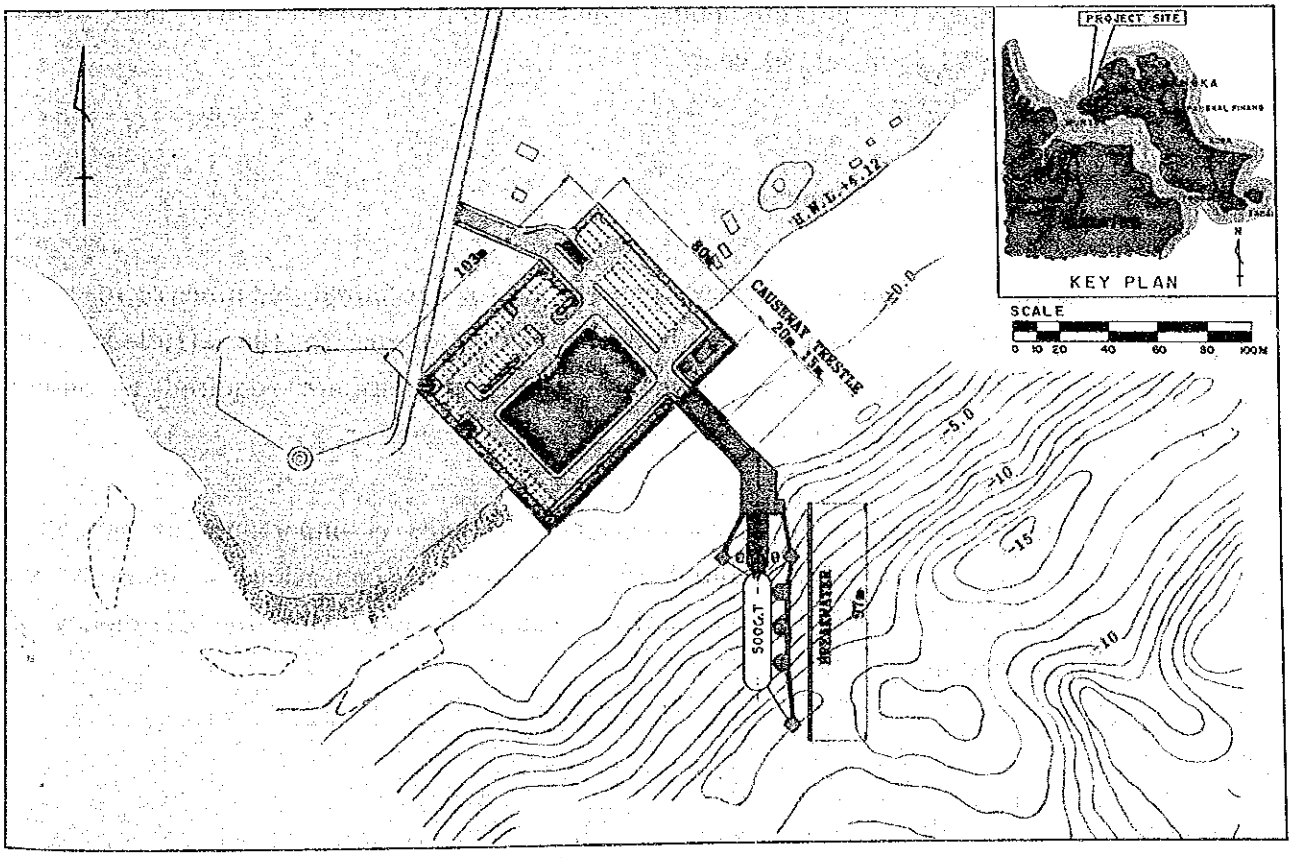

Fig. 5-8 Layout of Muntok Ferry Terminal

Chapter 6 Port Management and Operation Program

6-1 Principle for Decision of Port Tariff

1. When establishing the tariff, the cost principle is often used. The following stages are considered in setting target levels.

(1) To collect ordinary operating expenses excluding maintenance costs.
(2) To collect ordinary operating expenses(including maintenance costs).
(3) In addition to the above, to collect construction costs of functional facilities.
(4) In addition to the above, to collect all construction costs.

2. Because the ferry service facilities can be also regarded as the facilities with specified users, partially financial independence has to be considered in the future.

3. For the financial analysis in this study, the port tariff is assumed to increase by 15% every five years. This value is equal to two thirds the increase of GDP per capita and is considered to be sufficiently feasible. Furthermore, the ordinary operating costs(including maintenance costs)of the ferry port office will be recovered in about 30 years.

6-2 Recommendations

4. Personnel training is very important for terminal administration and operation. Terminal staffs often have to pay attention to the efficiency and safety of terminal operations. Regular training sessions are required to ensure that each section functions smoothly.

5. Interchange of personnel among ferry terminals is important for spreading new ideas and information related to ferry service operations. Ideas which interchanged staff members have may be useful in improving the efficiency of terminal operations.

6. Maintenance of terminal facilities should be implemented more carefully. In general, the present budgets allocated for maintenance is too small. In particular, more funds should be allocated for maintaining reinforced concrete pier and machine such as the movable bridge.

7. Statistics related to traffic activities such as passengers, vehicles, cargo volume and ferryboat operation at a ferry terminal should be recorded and kept for a long period of time. To grasp not only present conditions but also past conditions is very important for the government, especially government planners. These data are very useful in drafting improvement plans or new plans.

Chapter 7 Cost Estimation and Construction Schedule

7-1 Cost Estimation

1. The construction cost of the project was estimated by using the prices of 1992 with the exchange rate of 16.12 Rp./ Yen(1 USD = 125 Yen = 2015 Rp.).

2. The total construction cost of the planned route for the feasibility study comprises the following items of cost:

- Direct construction cost
- Consulting cost of the engineering services including the surveys, soil investigation and detailed design, and construction supervisory services
- Physical contingency for the construction works
- Value added tax for the contract

3. The direct construction cost of all the facilities are estimated for the respective terminal and divided into local currency portion and foreign currency portion depending on the components of materials and works.

4. The local currency portion is estimated for the cost of the locally available materials, equipment and fabrication near the site, and also tax.

5. The foreign currency portion is estimated as the cost of the imported materials such as piles, fenders, hydraulic system and use of the imported equipment such as pile driving hammers, dredging equipment, floating barges,etc.

6. The cost of the engineering services is estimated taking into account the following scope of services with the assumption that the consultants will be appointed to provide the required engineering services to the proposed four(4) routes as one package.

- The topographic and hydrographic surveys and soil investigations required at 8 terminal sites,
- The detailed design of all the facilities at 8 terminals,
- The construction supervisory services at 8 terminals for a two year period.

7. A physical contingency is required for the construction works and is estimated as follows;

- Local currency portion : 10% of construction cost
- Foreign currency portion : 5% of construction cost

8. The taxes required for the works are considered to be included in the basic cost of the works and the unit cost of the materials. The value added tax for the contract is assumed for the project cost to be 10% of the total construction cost. This tax is added to the local currency portion.

9. The following facilities will be renewed during the project facility service period;

- Fender system installed on the breasting dolphins
- Hydraulic system for the movable bridge operation
- Overlay pavement for the parking lots and road
- Electric generator for power supply

10. Yearly construction costs of each route are shown in Table 7-1(1) to Table 7-1(4) and the total project costs of each route are summarized in Table 7-2.

7-2 Construction Schedule

The implementation period of the construction of each route is estimated to be three(3) years. In the first year of the project the surveys, soil investigations, detailed design of all the facilities and preparation of the tender documents will be completed in six months, and thereafter the tender period and conclusion of the contract will take a further six months.

The construction works of each route will be started at the same time by one packaged contract after one year of above engineering study and tender procedure, and will be completed in 24 months.

Table 7-1(1) Terminal Construction Cost of Route Mokmer-Saueba

Terminal Construction Cost of Route Mokmer-Saueba (Unit: Million Rp)

Year		1 st Year			2 nd Year			3rd Year			Total		
Currency	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total
Name of terminal												
Route												
2 Mokmer				650	904	1,554	975	1,356	2,331	1,625	2,260	3,885
Saubeba				651	629	1,280	1,518	1,469	2,987	2,169	2,098	4,267
Direct Construction Cost				1,301	1,533	2,834	2,493	2,825	5,318	3,794	4,358	8,152
Consulting Cost	233	132	365	217	151	368	244	151	395	693	434	1,127
Physical Contingency				130	77	207	249	141	391	379	218	597
Sub Total of Works	233	132	365	1,648	1,761	3,409	2,987	3,117	6,103	4,866	5,010	9,876
Tax (VAT 10 %)	37	-	37	341	-	341	610	-	610	988	-	988
Total Construction Cost of the Route	270	132	402	1,989	1,761	3,750	3,597	3,117	6,714	5,854	5,010	10,864

Table 7-1(2) Terminal Construction Cost of Route Lewoleba-Terong

Terminal Construction Cost of Route Lewoleba-Terong (Unit: Million Rp)

Year		1 st Year			2 nd Year			3rd Year			Total		
Currency	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total
Name of terminal												
Route												
3 Lewoleba	-	-	-	1,240	1,522	2,762	827	1,014	1,841	2,067	2,536	4,603
Terong	-	-	-	2,125	1,690	3,815	1,417	1,126	2,543	3,542	2,816	6,358
Direct Construction Cost				3,365	3,211	6,577	2,244	2,141	4,384	5,609	5,352	10,961
Consulting Cost	313	177	490	292	203	495	328	203	531	933	584	1,517
Physical Contingency	-	-	-	337	161	497	224	107	331	561	268	829
Sub Total of Works	313	177	490	3,994	3,575	7,569	2,796	2,451	5,247	7,103	6,204	13,307
Tax (VAT 10 %)	49	-	49	757	-	757	525	-	525	1,331	-	1,331
Total Construction Cost of the Route	362	177	539	4,751	3,575	8,326	3,321	2,451	5,771	8,434	6,204	14,637

Table 7-1(3) Terminal Construction Cost of Each Route Bajoe-Kolaka

Terminal Construction Cost of Each Route (Bajoe-Kolaka) (Unite:Million Rp)

Year	1 st Year			2 nd Year			3rd Year			Total		
Currency	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total
Name of terminal												
Route												
8 Bajoe				2,981	4,058	7,039	1,988	2,705	4,693	4,969	6,763	11,732
Kolaka				1,543	1,781	3,324	2,315	2,672	4,987	3,858	4,453	8,311
Direct Construction Cost				4,525	5,839	10,364	4,302	5,377	9,679	8,827	11,216	20,043
Consulting Cost	573	324	897	533	372	905	599	372	971	1,705	1,068	2,773
Physical Contingency				452	292	744	430	269	699	883	561	1,444
Sub Total of Works	573	324	897	5,510	6,503	12,013	5,332	6,018	11,349	11,415	12,845	24,260
Tax (VAT 10 %)	90	-	90	1,201	-	1,201	1,135	-	1,135	2,426	-	2,426
Total Construction Cost of the Route	663	324	987	6,711	6,503	13,214	6,467	6,018	12,484	13,841	12,845	26,685

Table 7-1(4) Terminal Construction Cost of Route Palembang-Muntok

Terminal Construction Cost of Route Palembang-Muntok (Unit:Million Rp)

Year	1 st Year			2 nd Year			3rd Year			Total		
Currency	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total
Name of terminal												
Route												
9 Palembang				703	858	1,561	2,110	2,573	4,683	2,813	3,431	6,244
Muntok				2,962	3,993	6,954	740	998	1,739	3,702	4,991	8,693
Direct Construction Cost				3,665	4,851	8,515	2,850	3,571	6,422	6,515	8,422	14,937
Consulting Cost	432	244	676	402	280	682	451	280	731	1,285	804	2,089
Physical Contingency				366	243	609	285	179	464	652	421	1,073
Sub Total of Works	432	244	676	4,433	5,373	9,806	3,586	4,030	7,616	8,452	9,647	18,099
Tax (VAT 10 %)	68	-	68	981	-	981	762	-	762	1,810	-	1,810
Total Construction Cost of the Route	500	244	744	5,414	5,373	10,787	4,348	4,030	8,378	10,261	9,647	19,908

Table 7-2 Total Project Cost Estimation

Total Project Cost Estimation for Phase 1

Route No.	Name of Terminal (Province /Island)	Facility	Terminal Construction Cost (Rp)	Items of Detailed Cost	Total cost for Feasibility Study (Rp)	Designed Ferry ship (GT)	Ship Cost including tax and contingecy for Phase 1,(Rp)	Total Project Cost (Rp)
2	Mokumer	New	3,885,000,000	1)	8,152,000,000	300		
	(Irian Jaya/Biak)			2)	1,127,000,000		2,100,000,000	12,964,000,000
	Saubeba	New	4,267,000,000	3)	597,000,000	300	for one ferry ship	
	(Irian /Yapan)			4)	988,000,000			
				5)	10,864,000,000			
3	Terong	New	6,358,000,000	1)	10,961,000,000	300		
	(NTT/Adonara)			2)	1,517,000,000		2,100,000,000	16,738,000,000
	Lewoleba	New	4,603,000,000	3)	829,000,000	300	for 1 ferry ship	
	(NTT/ Lomblen)			4)	1,331,000,000		for phase 1	
				5)	14,638,000,000			
8	Bajoe	New	11,732,000,000	1)	20,043,000,000	1000		
	(SE. Sulawesi)			2)	2,773,000,000		7,000,000,000	33,686,000,000
	Kolaka	New	8,311,000,000	3)	1,444,000,000	1000	for 1 ferry ships	
	(SE.Sulawesi)			4)	2,426,000,000		for phase 1	
				5)	26,686,000,000			
9	Palembang	New	6,244,000,000	1)	14,937,000,000	500		
	(S. Sumatra/Sumatra)			2)	2,089,000,000		3,500,000,000	23,409,000,000
	Muntok	New	8,693,000,000	3)	1,073,000,000	500	for 1 ferry ships	
	(S.Sumatra/Bangka)			4)	1,810,000,000		for phase 1	
				5)	19,909,000,000			
	ToTal		54,093,000,000		72,097,000,000		14,700,000,000	86,797,000,000

Note;
a),Terminal Construction Cost are consisted of the construction works of each terminal only
b) .The total cost for the feasibility study is included the consulting services cost, physical contingency, Value Added Tax for the Construction works.
c),The ship procurement cost is addedd to the total cost for the study for the total project cost
d),In the colume of Total Cost for feasibility study the number of 1),2),3),4),5) are as follows
1), The total construction cost of two terminals
2), The consulting cost of the engineering services
3), The physical contingency of the construction works
4), The Value Added Tax for the Contract
5), Total Cost fot the Feasibility Study of the Route

Chapter 8 Environmental Assessment

1. The five ferry terminal sites to be newly constructed have been selected considering the following items related to the effects of the development of the project on the environment in surrounding areas.

1) On-land terminal facilities are planned on sites not requiring the change of residences, graves and other public facilities. (However, in Mokmer two houses are required to be moved.) Where breakwaters were required to protect berthing basin, the site was determined so as not to have influence on neighboring coasts.

2) The site and the layout of mooring facilities are planned to have no influence on the activities of neighboring sea port and of fishery around the site.

2. Assessment on the effect of the projects on the surrounding environment is conducted on three categories of environmental impacts as follows.

1) The construction work of ferry terminal(Category 1)

2) The existence of ferry terminal(Category 2)

3) The operation of ferry service(Category 3)

3. Judging from the contents described in Chapters 4 and 5 of Part 3 and the above-mentioned evaluations, environmental factors to be assessed can be listed as follows:

1) Effect on water quality in the sea area by Category 1 and 2 (Item 1)

2) Effect on topography by Category 2(Item 2)
(accumulation and erosion of sand on coast)

3) Effect on animals/plants by Category 1 and Category 2
(coral reef)(Item 3)

4) Effect on landscape by Category 2(Item 4)

5) Effect on socio-economics by Category 3
(regional traffic)(Item 5)

6) Others(Item 6)

8-3 Effects of the construction works of the ferry terminals

4. The environmental effects caused during the construction by the adopted

methods of each site should be checked on 1) dredging operation and selection of the dumping areas, 2) construction of causeway, breakwater and land reclamation on the existing beach.

5. Dredging work is planned in Mokmer and Bajoe. The sea bed materials consist of the upper layer of sand and the lower layer of coral. The dredged materials are used for the land reclamation of fishing pond and the filling of breakwater and groin. The dredged materials in Bajoe will be dumped at the north corner of the existing causeway foundation. The dumping area will be protected by the retaining wall not to discharge the overflow materials and cause the water pollution in the sea.

6. The dredging works will be carried out by using clamshell type bucket. The environmental effect of water pollution will be minimized. However the appropriate monitoring system may be required during the dredging and causeway construction and reclamation works.

7. The breakwaters or causeways at the three terminals(Mokmer, Saubeba and Muntok) are constructed by the end-on system from the land gradually so as not to cause water pollution.

8. It will be necessary to introduce appropriate systems to monitor the water quality in the related sea area when executing dredging and reclaiming works and to modify work procedures, if necessary.

8-3 Effect of the existence of ferry terminal

9. It is necessary to check whether the water basin protected by breakwater will be so-called closed water area in Mokmer and Saubeba. However considering the condition of water basin area, the width and the water depth of port entrance and tidal range, water pollution by the construction of the breakwaters will not occur.

10. Judging from the present littoral drift, the layout and the structure of breakwater and groin, the construction of these structures will have no influence on the neighboring coasts and the coasts should remain stable.

11. The area of the breakwater constructed on the coral reef in Saubeba is about 700m^2. The coral of about 100m width is developed to the east until the next inlet(the distance to it is about 1.5km)and from the east side of the inlet the coral is developed again. The area of reclaimed coral reef is small compared with the area of existing coral reef. No precious species of coral are found around the breakwaters to be constructed.

12. Ferry terminal(passenger terminal and parking lot)in Bajoe is planned to be constructed on the shoal 2.7km off the coast. Coral in the shoal to be reclaimed has been dead by the surrounding sea water quality.

13. The terminal facilities in each terminal site is small and the appearance of new ferry terminal will not have a large impact on the current landscape. The new terminal sites are planned at distant location far from the center of island and it should offer a new lively landscape. The new on-land ferry terminal has been planned in Kolaka to solve the current crowdedness of the existing terminal caused by the absence of a parking lot and the narrow passenger terminal. It should create a comfortable environment for passengers of ferry and residents near the terminal providing enough space/service in passenger terminal and parking lot and comfortable environment.

14. There are four fishing ponds on the reclaimed land, two of which require reclamation. There are two houses that are obliged to move because of the new terminal construction. The proponent of the project should come to terms

regarding the reclamation of the ponds and the movement of houses with the owners.

8-4 Effect of the Operation of Ferry Service

15. The effect of the operation of ferry service on the activity of port and fishery has been mentioned in 8-1.

16. Disembarking vehicles and taxi/minibus for passengers simultaneously depart from the terminals after arriving of ferry for various destinations through public roads. Among the four study routes, Bajoe-Kolaka Route operates maximum size ferry(1000GRT). The maximum size of the current ferries in this route does not change in 2010 and the new impact in 1998 and 2010 should be small. Ferries introduced in the other three routes are small in size and trip number a day is also small and the effect on neighboring public road is estimated to be small.

Chapter 9 Economic Analysis

9-1 General

1. The main purpose of the economic analysis is to show the effect of the implementation of the four Projects, i.e. Route 2-1 (Mokmer - Saubeba), Route 3-1 (Larantuka - Terong - Lewoleba), Route 8 (Bajoe - Kolaka), and Route 9-1 (Palembang - Muntok) selected as the feasibility study routes, and to assess the economic viability of the Projects from the national economic viewpoint.

9-2 Effects of Project Implementation

2. The economic benefits derived from implementation of the development/improvement of ferry terminals and ferry operation plans including the introduction of the proposed new ferry boats (Project) are presented as below:

1) Direct Benefits

3.
a) Saving of travel time cost,
b) Saving of vehicle operating cost (as a result of the difference of travel distances by land),
c) Reduction of opportunity loss,
d) Increase of punctuality/regularity,
e) Increase of safety/comfortablity, and
f) Creation of short-term job opportunity by construction work.

2) Indirect Benefits

4.
a) Promotion of development of regional economic/industrial activity,
b) Promotion of development of social/cultural communications among regions,
c) Promotion of educational opportunities for people in the region,
d) Promotion of development of tourism sectors in the region,
e) Promotion of creation of long-term job opportunities in the region, and
f) Promotion of improvement of regional imbalance.

3) Quantified Benefits

5. In this economic analysis, the ferry users benefits of travel time cost saving (for passengers) and vehicle operating cost saving are treated as the quantified economic benefits.

9-3 Assumptions on Economic Analysis

(1) "With Project" and "Without Project"

6. The economic analysis is conducted comparing the project costs and the project benefits between the "With Project" situation and the "Without Project" situation.

7. "With Project" means implementation of the investments for the development of the proposed ferry terminals and new ferry boats.

8. "Without Project" stands for the condition without such investments for the development of the proposed terminals and ferry boats. In this case, in order to meet the projected traffic demand, substitutional traffic means are assumed. That is, a detour route by land or substitutional boats such as the existing type boats or the land craft motor (LCM) type boats are assumed to be utilized.

(2) Other Assumptions

9. As well as the above, the following assumptions are also made:

- Implementation Schedule : Year 1995 - 1997
- Project Life : 30 years after implementation of the development
- Prices : Constant 1992 prices
- Residual Value : None
- Discount Rate : 10%

9-4 Cost Items

10. The cost items for "With Project" and "Without Project" cases are as follows:

(1) Cost Items for "With Project" Case

11. 1) Investment costs for the proposed terminal facilities
2) Operation and maintenance costs for the proposed terminal facilities
3) Procurement costs for the proposed new ferry boats
4) Operation and maintenance costs for the proposed new ferry boats
5) Operation and maintenance costs for the existing ferry boats

(2) Cost Items for "Without Project" Case

12. 1) Operation and maintenance costs for the existing terminal facilities (for Routes 8 and 9-1)
2) Procurement costs for the existing type ferry boats and/or substituted LCM type boats
3) Operation and maintenance costs for the existing type ferry boats
4) Operation and maintenance costs for the substituted LCM type boats
5) Maintenance cost for approach channel (for Route 9-1)

9-5 Benefits

(1) Unit Passenger Time Cost

13. As a base data for estimating passengers travel time cost, unit passenger time costs were estimated for each route on the basis of the per capita GRDP (Gross Regional Domestic Product) of the related provinces to each route. (See Table 9-1.)

Table 9-1 Unit Time Values per Passenger for Each Route

Route	Unit Time Value (Rp./hour)
Route 2-1	396
Route 3-1	120
Route 8	225
Route 9-1	371

(2) Unit Vehicle Operating Cost

14. As a base data for estimating vehicle operating cost, unit vehicle operating costs were estimated by vehicle type and speed condition as shown in Table 9-2.

Table 9-2 Unit Vehicle Operating Cost

(Unit: Rp./km)

	Speed Condition (Km/hour)	
Vehicle Type	35 Km/hour	50 Km/hour
Truck (3 ton)	341	293
Truck (8 ton)	425	378
Sedan	340	291
Bus (Large Bus)	433	383

9-6 Assumptions on "With Project" and "Without Project" for Each Route

15. The assumptions on "With Project" and "Without Project" for each route are as follows:

(1) Route 2-1 (Mokmer (Biak) - Saubeba (Yapen) Route)

a) With Project

16. For the "With Project" case, the proposed new ferry boats (C type initially and C' type later) will be introduced.

b) Without Project

17. For the "Without Project" case, LCM type boats are assumed to be introduced. Due to the difficulties of berthing at the north seashore of Yapen island for LCM type boat, the port for LCM in Yapen island is assumed to be at Serui, i.e. the operation route of LCM is assumed to be Mokmer - Serui. Consequently, the base points for measuring travel distances and travel time are also assumed to be Mokmer - Serui.

18. Thus in the "With Project" case, the travel section by land between Saubeba - Serui is assumed to be added for comparison to the "Without Project" case.

19. Refer to Fig.9-1.

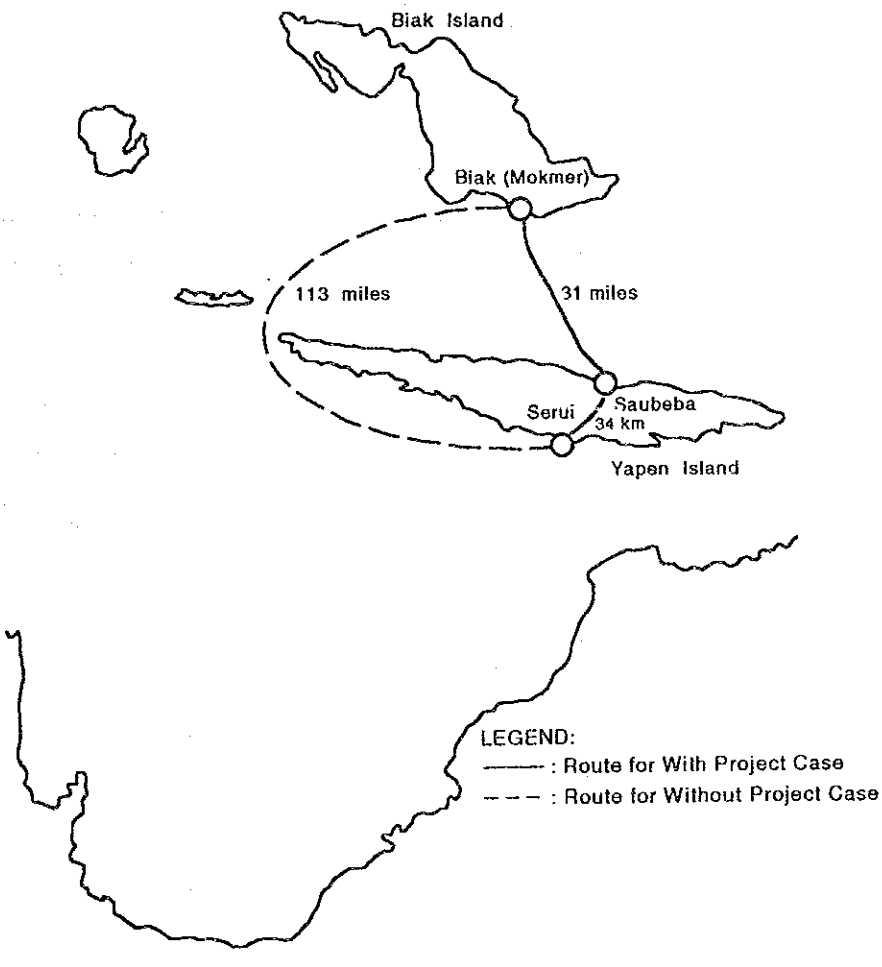

Fig. 9-1 Conceptual Route Map of Route 2-1 (Mokmer - Saubeba) for Economic Analysis

(2) Route 3-1 (Larantuka (Flores) - Terong (Adonara) - Lewoleba(Lomblen) Route)

a) With Project

20. For the "With Project" case, the proposed new ferry boats (C type) will be introduced.

b) Without Project

21. For the "Without Project" case, LCM type boats are assumed to be introduced. For Route 3-1, in the "With Project" case and the "Without Project" case, the operation route is the same.

22. Consequently, the travel distances are the same for "With Project" and "Without Project" cases, and the difference is only the travel time due to different types of boat.

23. Since the travel distances of Route 3-1 are rather short compared to the other Routes (2-1,8 and 9-1), the difference of travel time between "With Project" and "Without Project" cases are relatively not so much as a result.

24. Refer to Fig. 9-2.

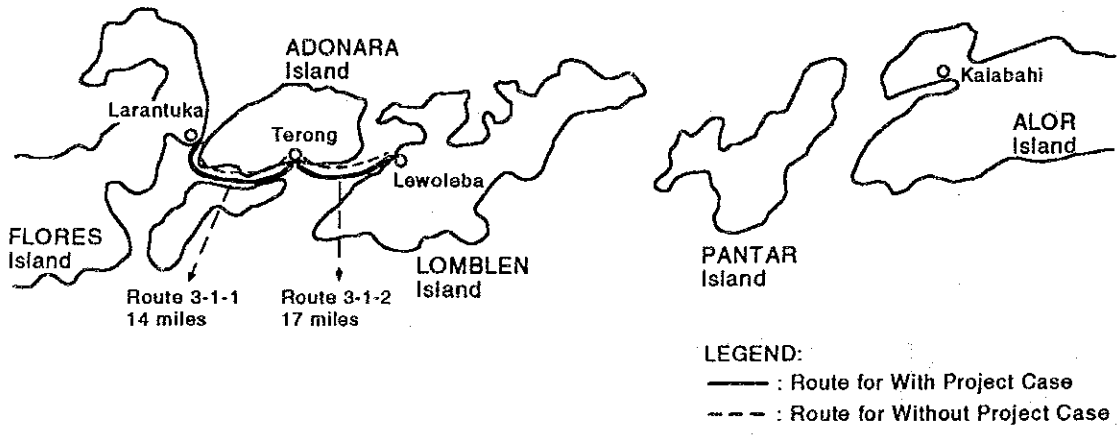

Fig. 9-2 Conceptual Route Map of Route 3-1 (Larantuka - Terong - Lewoleba) for Economic Analysis

(3) Route 8 (Bajoe - Kolaka Route)

a) With Project

25. For the "With Project" case, it is assumed that the existing ferry boats will be taken out of service in accordance with their age limit, and in turn, the new proposed new ferry boats (A type) will be introduced.

b) Without Project

26. For the "Without Project" case, it is assumed that the existing ferry boats will be replaced by boats with the same capacity as of the replaced boats at the time of their age limit. Accordingly, the traffic capacity in the case of "Without Project" will continue at the level equivalent to the total traffic capacity of the existing ferry boats.

27. As a result, in the case of "Without Project", a shortage of traffic capacity will be generated. Accordingly, there will be traffic demand which overflows the traffic capacity.

28. In this economic analysis, it is assumed that in the case of "Without Project" the traffic demand overflowed will be diverted to a detour route between Bajoe - Kolaka along Bone Bay with an estimated road length of approximately 550 kilometers. Although information of the road service condition of the section between Bajoe - Kolaka is still uncertain, this road section is assumed in the economic analysis to be served wholly by 1998.

29. Refer to Fig.9-3.

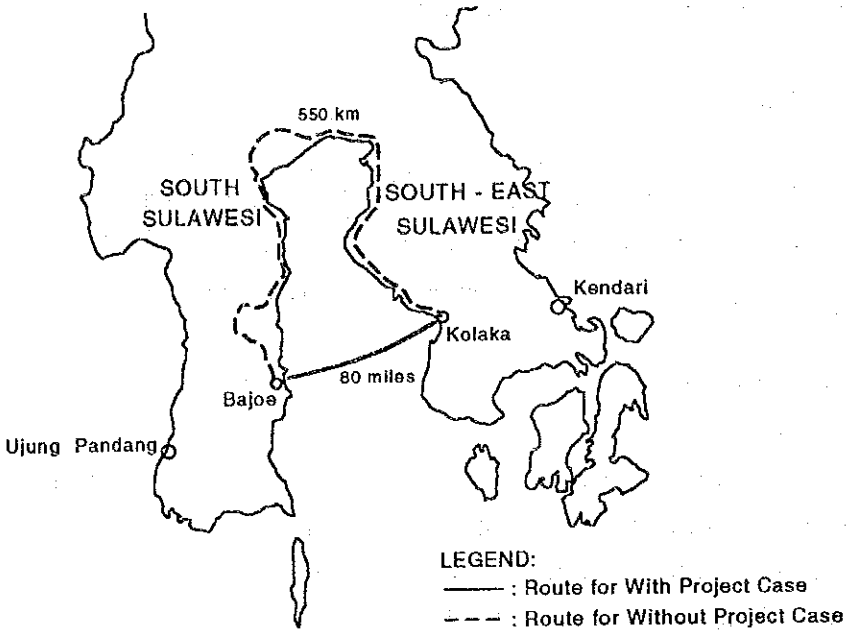

Fig. 9-3 Conceptual Route Map of Route 8
(Bajoe - Kolaka) for Economic Analysis

(4) Route 9-1 (Palembang - Muntok Route)

a) With Project

30. For the "With Project" case, it is assumed that the existing ferry boats will be taken out of service in accordance with their age limit, and in turn, the proposed new ferry boats (B type) will be introduced.

The location of the ferry terminal in Bangka island is proposed to be at Muntok.

b) Without Project

31. For the "Without Project" case, it is assumed that the existing ferry boats will be taken out of service in accordance to their age limit, and ferry boats with the same capacity as of "Bagka Raya" class will be introduced. When the number of ferry boats being operated reaches the limit of the capacity of the existing terminal, boats of the LCM type are assumed to be utilized.

32. The location of the ferry terminal in Bangka island is assumed to remain at Kayu Arang in the "Without Project" case.

33. Therefore, the base points for measuring travel distances and travel time are assumed to be Palembang - Pangkal Pinang.

34. Refer to Fig.9-4.

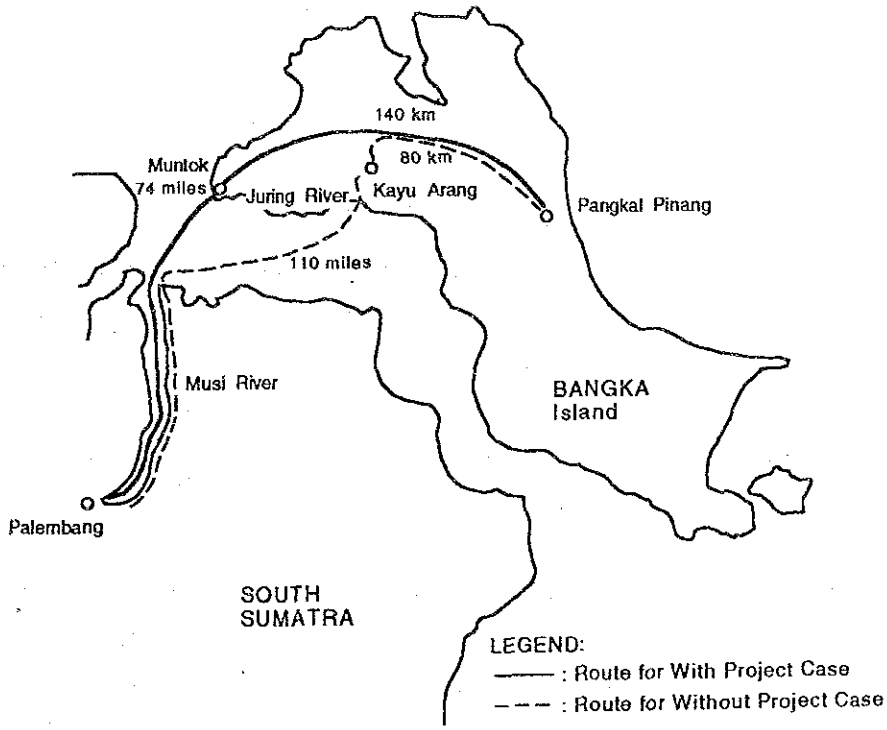

Fig. 9-4 Conceptual Route Map of Route 9-1 (Palembang - Muntok) for Economic Analysis

9-7 Economic Analysis Results

35. The following table shows a summary of economic analysis results (EIRR) for each route:

Table 9-3 Summary of Economic Analysis Results (EIRR)

Route	EIRR (%)
Route 2-1 (Mokmer - Saubeba)	12.3%
Route 3-1 (Larantuka - Terong - Lewoleba)	2.6%
Route 8 (Bajoe - Kolaka)	16.0%
Route 9-1 (Palembang - Muntok)	10.9%

36. These results indicate that implementations of the development of Route 2-1, 8 and 9-1 are economically feasible.

37. The economic analysis result of Route 3-1 in terms of quantified benefits is unfavorable. However, taking the following enormous unquantified effects specifically expected for the related regions into consideration, development of Route 3-1 is also worthy of implementation:

38. (Unquantified effects specifically expected for the related regions of Route 3-1)

- Incentive effects for regional development by promotion of inflow of vehicles especially such as construction equipment and agricultural equipment/machines for Adonara and Lomblen islands.

- Improvement effect of the unfavorable transportation condition of passengers bringing large volumes of cargo by hand.

- Improvement effects of increase of safety of sea transportation between Terong - Lewoleba which is effected by strong current.

- Incentive effects for tourism sector development of Adonara and Lomblen islands by shortening of access time. Especially incentive effects for attraction of foreign tourists to these areas.

- Incentive effects for medical and educational opportunity increased for people in Adonara and Lomblen islands.

- Incentive effects for development of a trunk traffic corridor throughout the whole Flores islands area.

- Incentive effects for long-term increase of welfare of the people living in the related area.

- As a result, realization of "basic human need" and "improvement of regional imbalance" will be expected in the long run.

9-8 Sensitivity Analysis

39. Assuming that the benefit and cost stream might alter ±10% for each route, the effect of the EIRR was tested and the results are summarized in Table 9-4:

Table 9-4 EIRR by Altered Benefit and Cost

Route	Base	Benefit-10%	Cost+10%	Benefit-10% Cost +10%
Route 2-1	12.3%	10.7%	10.8%	9.3%
Route 3-1	2.6%	1.4%	1.5%	0.4%
Route 8	16.0%	14.0%	14.2%	12.3%
Route 9-1	10.9%	7.7%	8.0%	4.9%

Chapter 10 Financial Analysis

10-1 Purpose of the Financial Analysis

1. The purpose of the financial analysis is generally to examine the viability of the project and the financial soundness of the port management body during the project life. (The project means the short-term development plan in this chapter.)

2. The financial analysis has a premise that the management body is financially independent. When the management body is in the above situation, the financial analysis can be regard as significant.

3. The contents of the financial analysis are mainly the considerations of profitability and the financing plan. For fundamental facilities in which public element is high, the financial analysis places more importance on the financing plan rather than the profitability of the project.

10-2 General Presuppositions of the Financial Analysis

(1) Port Charges and Revenues

4. The port tariff rate is assumed to increase by 15% every five years.

5. This increase of tariff will make the revenues sufficient for ordinary operating expenses until the end of project life(about 30 years).

(2) Fund Raising

6. 75% of the construction costs will be raised by soft foreign loans in this financial analysis. A soft loan for this project is assumed to be as follows:

Loan period : 30 years, including a grace period of 10 years
Interest rate : 2.6% per annum
(loans from foreign government)
Repayment : fixed amount repayment of principal

7. 25% of the construction costs for the project is assumed to be raised by government funds. The government funds are assumed to be free of repayment and interest.

8. In addition to the above funds necessary for the initial construction, the government continuously needs funds for reinvestment, repayment of soft loans, interest on soft loans and a part of operating expenses during project life.

10-3 Evaluation

9. At the present stage, the Indonesian government does not consider ferry port facilities managed by MOC to be profitable. Therefore, the method of evaluation is intended to show the subsidy amounts for this project.

10. The subsidy amounts are determined by balancing the cash-inflow with cash-outflow in the projected financial statements for each route.

11. When the figure of "operation" turns to a negative number, the port management body gains the revenues sufficient for ordinary operating expenses.

Table 10-1 Subsidy in Mokmer-Saubeba Route

(Unit: Million Rp.)

Year	Invest Reinvest	Repayment	Interest	Operation	Total
1995	101	0	0	0	101
1996	938	0	8	0	945
1997	1,679	0	81	0	1,759
1998	0	0	212	107	319
1999	0	0	212	106	318
2000	0	0	212	105	317
2001	0	0	212	104	316
2002	0	0	212	103	314
2003	0	0	212	96	308
2004	0	0	212	95	307
2005	0	15	212	93	320
2006	0	156	211	115	482
2007	1,231	407	207	113	1,959
2008	0	407	197	105	709
2009	0	407	186	103	696
2010	0	407	176	100	683
2011	0	407	165	98	670
2012	0	407	154	95	657
2013	0	407	144	83	634
2014	0	407	133	79	620
2015	0	407	123	76	606
2016	0	407	112	71	591
2017	1,231	407	102	75	1,815
2018	0	407	91	56	554
2019	0	407	80	50	538
2020	0	407	70	44	521
2021	0	407	59	37	504
2022	1,140	407	49	30	1,626
2023	0	407	38	-2	443
2024	0	407	27	-11	424
2025	0	392	17	-21	388
2026	0	252	7	-32	227
2027	0	0	0	-43	-43
Total	6,318	8,150	4,132	2,027	20,627

Table 10-2 Subsidy in Larantuka-Terong-Lewoleba Route

(Unit: Million Rp.)

Year	Invest Reinvest	Repayment	Interest	Operation	Total
1995	135	0	0	0	135
1996	2,082	0	11	0	2,092
1997	1,443	0	173	0	1,616
1998	0	0	285	126	411
1999	0	0	285	109	394
2000	0	0	285	108	394
2001	0	0	285	107	393
2002	0	0	285	106	392
2003	0	0	285	98	384
2004	0	0	285	97	382
2005	0	20	285	98	401
2006	0	332	285	94	712
2007	1,013	549	276	93	1,931
2008	0	549	262	94	905
2009	0	549	248	92	889
2010	0	549	233	90	873
2011	0	549	219	88	856
2012	0	549	205	86	839
2013	0	549	191	71	810
2014	0	549	176	67	793
2015	0	549	162	64	775
2016	0	549	148	60	757
2017	1,013	549	134	56	1,752
2018	0	549	119	35	703
2019	0	549	105	31	684
2020	0	549	91	30	670
2021	0	549	76	30	655
2022	1,462	549	62	30	2,103
2023	0	549	48	10	607
2024	0	549	34	10	592
2025	0	529	19	10	558
2026	0	216	6	10	232
2027	0	0	0	10	10
Total	7,148	10,977	5,565	2,009	25,699

Table 10-3 Subsidy in Bajoe-kolaka Route

(Unit: Million Rp.)

Year	Invest Reinvest	Repayment	Interest	Operation	Total
1995	247	0	0	0	247
1996	3,304	0	19	0	3,323
1997	3,121	0	277	0	3,398
1998	0	0	520	212	733
1999	0	0	520	205	725
2000	0	0	520	196	717
2001	0	0	520	188	708
2002	0	0	520	179	699
2003	0	0	520	151	672
2004	0	0	520	139	660
2005	0	37	520	127	684
2006	0	533	519	114	1,166
2007	2,160	1,001	506	101	3,767
2008	0	1,001	480	51	1,532
2009	0	1,001	454	34	1,488
2010	0	1,001	427	15	1,443
2011	0	1,001	401	-5	1,397
2012	0	1,001	375	-11	1,366
2013	0	1,001	349	-72	1,278
2014	0	1,001	323	-72	1,252
2015	0	1,001	297	-72	1,226
2016	0	1,001	271	-72	1,200
2017	2,160	1,001	245	-72	3,335
2018	0	1,001	219	-142	1,078
2019	0	1,001	193	-142	1,052
2020	0	1,001	167	-142	1,026
2021	0	1,001	141	-142	1,000
2022	4,030	1,001	115	-142	5,004
2023	0	1,001	89	-223	867
2024	0	1,001	63	-223	841
2025	0	964	37	-223	778
2026	0	468	12	-223	257
2027	0	0	0	-223	-223
Total	15,023	20,014	10,147	-488	44,695

Table 10-4 Subsidy in Palembang-Muntok Route

(Unit: Million Rp.)

Year	Invest Reinvest	Repayment	Interest	Operation	Total
1995	186	0	0	0	186
1996	2,697	0	15	0	2,711
1997	2,095	0	225	0	2,319
1998	0	0	388	145	533
1999	0	0	388	143	531
2000	0	0	388	141	529
2001	0	0	388	139	527
2002	0	0	388	137	525
2003	0	0	388	123	511
2004	0	0	388	120	508
2005	0	28	388	118	534
2006	0	432	388	130	950
2007	1,076	747	376	127	2,326
2008	0	747	357	108	1,211
2009	0	747	337	104	1,188
2010	0	747	318	101	1,165
2011	0	747	299	97	1,142
2012	0	747	279	93	1,119
2013	0	747	260	67	1,074
2014	0	747	240	74	1,061
2015	0	747	221	69	1,036
2016	0	747	202	63	1,012
2017	1,076	747	182	58	2,062
2018	0	747	163	21	930
2019	0	747	143	29	919
2020	0	747	124	22	892
2021	0	747	104	14	865
2022	2,868	747	85	6	3,724
2023	0	747	66	-42	770
2024	0	747	46	-49	744
2025	0	719	27	-56	689
2026	0	314	8	-63	259
2027	0	0	0	-71	-71
Total	10,016	14,932	7,570	1,965	34,483

10-4 Sensitivity Analysis

12. Sensitivity analysis is conducted to examine the impact of unexpected future changes. The following three cases are envisaged.

Case 1 : The revenue decreases by 10%

Case 2 : The construction cost increases by 10%

Case 3 : The revenue decreases by 10% and the construction cost increases by 10%

13. The necessary total government subsidies are calculated as shown in Table 10-5.

Table 10-5(1) Total Subsidy on Sensitivity Analysis

(Unit: Million Rp.)

	Mokmer-Saubeba Route				Larantuka-Terong-Lewoleba Route			
	Base	Case 1	Case 2	Case 3	Base	Case 1	Case 2	Case 3
1995	101	101	111	111	135	135	148	148
1996	945	945	1,040	1,040	2,092	2,092	2,301	2,301
1997	1,759	1,759	1,935	1,935	1,616	1,616	1,777	1,777
1998	319	321	345	348	411	414	446	448
1999	318	321	344	347	394	399	429	433
2000	317	320	343	346	394	398	428	433
2001	316	319	342	346	393	397	427	432
2002	314	318	341	345	392	396	426	431
2003	308	312	335	339	384	389	418	424
2004	307	311	334	338	382	388	417	423
2005	320	324	349	353	401	407	444	444
2006	482	486	524	528	712	717	785	785
2007	1,959	1,963	2,149	2,153	1,931	1,937	2,127	2,127
2008	709	714	775	780	905	912	999	999
2009	696	701	761	766	889	896	982	982
2010	683	689	747	753	873	880	964	964
2011	670	676	733	739	856	864	947	947
2012	657	663	719	725	839	847	929	929
2013	634	641	695	702	810	820	900	900
2014	620	628	680	687	793	802	881	881
2015	606	614	664	672	775	785	862	862
2016	591	599	649	657	757	768	843	843
2017	1,815	1,824	1,995	2,004	1,752	1,763	1,939	1,939
2018	554	565	609	621	703	716	789	789
2019	538	549	592	604	684	698	769	769
2020	521	533	574	587	670	683	753	753
2021	504	517	556	569	655	669	738	738
2022	1,626	1,639	1,791	1,805	2,103	2,117	2,330	2,330
2023	443	462	494	512	607	622	688	688
2024	424	443	473	492	592	608	672	672
2025	388	409	435	455	558	573	634	634
2026	227	248	258	280	232	247	276	276
2027	-43	-20	-37	-15	10	25	32	32
Total	20,627	20,894	22,657	22,924	25,699	25,981	28,503	28,534

Table 10-5(2) Total Susidy on Sensitivy Analysis

(Unit: Million Rp.)

	Bajoe-Kolaka Route				Palembang-Muntok Route			
	Base	Case 1	Case 2	Case 3	Base	Case 1	Case 2	Case 3
1995	247	247	271	271	186	186	205	205
1996	3,323	3,323	3,655	3,655	2,711	2,711	2,982	2,982
1997	3,398	3,398	3,738	3,738	2,319	2,319	2,551	2,551
1998	733	747	801	816	533	540	582	589
1999	725	741	793	809	531	538	580	588
2000	717	733	785	801	529	537	578	586
2001	708	726	777	794	527	535	576	584
2002	699	718	768	786	525	533	574	582
2003	672	694	740	763	511	520	560	569
2004	660	684	728	752	508	518	558	567
2005	684	710	756	782	534	543	586	595
2006	1,166	1,193	1,288	1,314	950	960	1,042	1,052
2007	3,767	3,795	4,150	4,178	2,326	2,336	2,556	2,567
2008	1,532	1,566	1,696	1,731	1,211	1,224	1,332	1,345
2009	1,488	1,524	1,650	1,686	1,188	1,201	1,307	1,320
2010	1,443	1,481	1,602	1,640	1,165	1,178	1,282	1,295
2011	1,397	1,437	1,554	1,594	1,142	1,156	1,257	1,271
2012	1,366	1,406	1,520	1,560	1,119	1,133	1,232	1,246
2013	1,278	1,325	1,430	1,477	1,074	1,090	1,185	1,201
2014	1,252	1,299	1,401	1,448	1,061	1,078	1,170	1,187
2015	1,226	1,273	1,372	1,419	1,036	1,054	1,144	1,161
2016	1,200	1,247	1,344	1,391	1,012	1,030	1,117	1,135
2017	3,335	3,382	3,692	3,739	2,062	2,081	2,273	2,292
2018	1,078	1,132	1,216	1,270	930	952	1,031	1,054
2019	1,052	1,106	1,188	1,242	919	943	1,019	1,042
2020	1,026	1,080	1,159	1,213	892	916	990	1,014
2021	1,000	1,054	1,130	1,184	865	890	961	985
2022	5,004	5,058	5,535	5,589	3,724	3,749	4,106	4,131
2023	867	929	992	1,054	770	800	862	892
2024	841	903	963	1,026	744	775	833	865
2025	778	840	894	956	689	721	774	806
2026	257	319	321	384	259	291	302	334
2027	-223	-161	-207	-145	-71	-38	-60	-27
Total	44,695	45,909	49,702	50,916	34,483	35,002	38,049	38,567

10-5 Conclusions

14. Judging from the above analysis, the project can be regarded as financially feasible if the government funds are raised in the above manner and if the port charges are increased by 15% every five years from the existing tariff.

15. Judging from the increase of GDP per capita and the financial independence at the first stage, the increase in the port tariff is considered reasonable. But, the Indonesian government can check the increase in port tariff by raising more funds.

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