CHAPTER 1

OUTLINE OF MOZAMBIQUE AND NEIGHBORING COUNTRIES

Chapter 1 Outline of Mozambique and Neighboring Countries

1.1 General

The profile of the country is shown in Table 1.1-1.

Table 1.1-1 Profile of Mozambique

Country Name	Republic of Mozambique
Independence Day	June 25, 1975
Capital City	Maputo
Population of Capital	930,000 (1991)
Area	802,000 km^2
Population of the Country	18,000,000 (1996)
Population Density	11.6 person / km^2
Population Growth Rate	4.9 % (Average of 1991 to 1995)
Ethnic Consistence	43 Ethnic Groups
Official Language	Portuguese
Religion	Traditional Religion : 60 % Catholicism : 30 % Islam : 10 %
Political System	Republic
The Head of State	Joaquim Alberto Chissano
Parliament	One Parliament System
Major Political Party	FRELIMO, RENAMO
GDP	1,370,000,000 US$ (1993)
GDP per Capita	76 US$
Major Industry	Agriculture, Fishery, Mining
Major Products	Sugar, Corn, Cotton, Prawn, Hemp
Export	170,000,000 US$ (1995)
Import	784,000,000US$ (1995)
Revenue	447,200,000,000 MT (1991)
Expenditure	958,300,000,000 MT (1991)
Currency	Metical
Exchange Rate	11,300 MT/US$ (1997.4)
Foreign Currency Reserves	218,000,000 US$ (1991)
Amount of International Debt	8,021,000,000 US$ (1991)

The Republic of Mozambique is located on the east coast of Southern Africa. The Arabian sea power held the control all over the eastern coast of Africa from 10th to 15th century. Then, the Portuguese fleets pushed out the Arabians and took over the Mozambican territory. Since then, the territory was under the rule of Portugal for nearly 500 years. The movement of nationalism spread through the third world in 1960's, led to a democratic coup was caused in 1974, and

Mozambique became independent in 1975.

Mozambique is an agricultural country with fertile land. Nuts, sugar and raw cotton are known as the traditional exporting crops, and currently, prawns are becoming the major export product. Although the major trading partners are European countries, the trading volume with South Africa has recently been increasing. Since 1977, diplomatic relations between Mozambique and Japan have been established. The export volume to Japan amounted to approximately 15 million US$ in 1992 and the import goods from Japan were totaled 24 million US$ in the same year. The major export commodities to Japan are prawns and the imported goods from Japan are machines and spare parts.

1.2 Geography and Climate

1.2.1 Geographical Features

The total area of the country is about 802,000 km². The length (north-south direction) of the country is approximately 2,000 km. The width (east-west direction) of the country ranges approximately 50 km at minimum to 1,200 km at maximum. The northern part shares the borders with Tanzania, Malawi and Zambia. To the west, it borders Zimbabwe, South Africa and Swaziland. The eastern side is facing Mozambique Channel, separating the country from Madagascar Island.

The coastal line is 2,800 km long with an abundance of bays and inlets. The plains and hilly districts cover 60 % of the land of the country. Also high lands of 500 m to 1,000 m in altitude constitute 30 % and the mountainous regions cover only 10 % of the country. The Western and Northern territories had been upheaved as high lands. Western border reaches Mt. Binga and Northern border reaches Mt. Namuli. Five large rivers including the Zambezi River run through the country to the Indian Ocean. One part of Lake Malawi and Cabora Bassa Lake are located in the Northern territory of the country.

1.2.2 Climatic Conditions

The climate of Mozambique is tropical savanna. The country can be divided into four climatic regions ; the tropical monsoon climate in the northern area, the tropical coastal climate in the central area, the subtropical climate in the southern area and the tropical savanna climate in the inland area. Generally, each area has the dry and wet seasons in the year.

1.3 Socioeconomic Situation

1.3.1 Population

The variation in population of Mozambique and neighboring countries using the Beira Corridor from 1991 to 1995 is shown in Table 1.3.1-1.

The population of Mozambique was 17.4 million in 1995 and the average rate of population growth from 1991 to 1995 was 4.9 % per annum. The total population size in 1996 was 18.0 million and the active population aged between 15 and 64 years old was 75.8 %, and the population in 2000 is estimated at 20.0 million.

The population of Zimbabwe, Malawi and Zambia was 11.5 million, 10.0 million and 9.4 million, respectively in 1995. The average rate of population growth of Zimbabwe, Malawi and Zambia from 1991 to 1995 was 3.0 %, 3.9 % and 3.5 % per annum, respectively.

The total population of the 4 nations was estimated about 48.3 million in 1995 and the average rate of population growth from 1991 to 1995 was 3.9 % per annum.

Table 1.3.1-1 Population of Mozambique and Neighboring Countries

(unit : millions)

Country	1991	1992	1993	1994	1995	annual
Mozambique	14.4	14.8	15.6	16.6	17.4	4.9%
Zimbabwe	10.2	10.5	10.8	11.2	11.5	3.0%
Malawi	8.6	8.8	9.3	9.6	10.0	3.9%
Zambia	8.2	8.5	8.8	9.1	9.4	3.5%
Total	41.4	42.6	44.5	46.5	48.3	3.9%

Source : The Economist Intelligence Unit, Country Report, 4th quarter, 1996

1.3.2 Gross Domestic Product

The change in real Gross Domestic Product (GDP) growth rate from 1991 till 1995 of Mozambique and neighboring countries using the Beira Corridor is shown in Table 1.3.2-1.

In Mozambique, the average GDP growth rate was 6.24 % for 5 years and GDP in 1993 was 1.37 billion US$, then GDP per capita was 90 US$.

In Zimbabwe, the average GDP growth rate was 0.5 % for 5 years and GDP in 1993 was 4.99 billion US$ and GDP per capita was 520 US$. The GDP of Zimbabwe is 3.64 times as much as Mozambique's.

The average GDP growth rates in Malawi and Zambia were 1.56 % and 0.6 % for 5 years, respectively. The GDP in 1993 was 1.81 billion US$ and 1.37 billion US$, respectively. GDP per capita was 200 US$ and 380 US$, respectively.

Table 1.3.2-1 Real Gross Domestic Product Growth Rate of Mozambique and Neighboring Countries

(unit : %)

Country	1991	1992	1993	1994	1995	note-1	note-2
Mozambique	4.9	-0.8	19.3	4.8	3.0	90	1.37
Zimbabwe	3.2	-5.8	0.9	7.4	-3.2	520	4.99
Malawi	7.8	-7.9	10.8	-12.4	9.5	200	1.81
Zambia	-0.2	-5.2	9.7	-5.1	3.8	380	1.37

Note-1 : Per Capita GDP (US$) in 1993, Note-2 : GDP(billion US$) in 1993
Source : The Economist Intelligence Unit, Country Report, 4th quarter, 1996

1.3.3 Trade

(1) Exports

The changes of exports and imports from 1991 to 1995 of Mozambique and neighboring countries using Beira Corridor are shown in Tables 1.3.3-1 and 1.3.3-4.

The main goods of exports and imports of these countries are shown in Tables 1.3.3-2 and 1.3.3-5.

The major destinations of exports and the main origins of imports of these countries are shown in Tables 1.3.3-3 and 1.3.3-6.

Exports from Mozambique accounted for 170 million US$ in 1995. Its main goods were prawns (81.3 million US$), cotton (18.9 million US$), fruit (14.0 million US$) and wood (9.4 million US$) in 1995. The main destinations of exports from Mozambique in 1995 were Spain (16.1%), South Africa (13.3%), USA (11.6%) and Portugal (11.2%).

Then, exports from Zimbabwe accounted for 2,120 million US$ in 1995. Its main goods were tobacco (425 million US$), gold (252 million US$), ferro-alloys (125 million US$) and nickel (82 million US$) in 1994. The main destinations of Zimbabwe's exports in 1995 were South Africa (13.5%), UK (10.1%), Germany (7.9%) and Japan (7.7%). Therefore, the scale of exports from Zimbabwe was 12.5 times as much as that of Mozambique.

Exports from Malawi accounted for 431 million US$ in 1995. Its main goods were tobacco (250 million US$), tea (27 million US$), sugar (26 million US$) and coffee (15 million US$) in 1994. The main destinations of its exports in 1995 were South Africa (14.6%), Germany (13.0%) , Japan(10%) and USA (9.1%). The scale of exports of Malawi was 2.5 times as much as that of Mozambique.

Exports from Zambia accounted for 1,095 million US$ in 1994. Its main goods were copper (751 million US$) and cobalt (34 million US$) in 1994. The main destinations of its exports in 1995 were Japan (17.9%), Saudi Arabia (12.9%), Thailand (12.8%) and India (5.3%). The scale of exports from Zambia in 1994 was 7.4 times as much as that of Mozambique.

Table 1.3.3-1 Exports of Mozambique and Neighboring Countries

(unit : US$ millions)

Country	1991	1992	1993	1994	1995
Mozambique	162	139	132	147	170
Zimbabwe	1,694	1,528	1,609	1,961	2,120
Malawi	476	400	318	363	431
Zambia	1,082	752	1,182	1,095	-
Total	3,414	2,819	3,241	3,566	-

Source : The Economist Intelligence Unit, Country Report, 4th quarter in 1996

Table 1.3.3-2 Principal Exports of Mozambique and Neighboring Countries

(unit : US$ millions)

Country		NO1	NO2	NO3	NO4
Mozambique	Commodity	Prawns	Cotton	Fruit	Wood
in 1995	Amounts	81.3	18.9	14.0	9.4
Zimbabwe	Commodity	Tobacco	Gold	Ferro-alloys	Nickel
in 1994	Amounts	425	252	125	82
Malawi	Commodity	Tobacco	Tea	Sugar	Coffee
in 1994	Amounts	250	27	26	15
Zambia	Commodity	Copper	Cobalt	Zinc	-
in 1994	Amounts	751	34	0	

Source : Ministry of Planning and Finance, Statistics of Trade, 1995
: The Economist Intelligence Unit, Country Report, 4th quarter, 1996

Table 1.3.3-3 Main Destinations of Exports of Mozambique and Neighboring Countries

(unit : %)

Country		NO1	NO2	NO3	NO4
Mozambique	destination	Spain	South Africa	USA	Portugal
in 1995	%	16.1	13.3	11.6	11.2
Zimbabwe	destination	South Africa	UK	Germany	Japan
in 1995	%	13.5	10.1	7.9	7.7
Malawi	destination	South Africa	Germany	Japan	USA
in 1995	%	14.6	13.0	10.0	9.1
Zambia	destination	Japan	Saudi Arabia	Thailand	India
in 1995	%	17.9	12.9	12.8	5.3

Source : Ministry of Planning and Finance, Statistics of Trade, 1995
: The Economist Intelligence Unit, Country Report, 4th quarter, 1996

(2) Imports

Imports to Mozambique accounted for 784 million US$ in 1995. Its main goods were farm products (131.7 million US$), vehicle (131.0 million US$), machine (159.5 million US$) and coal (95.9 million US$) in 1995. The main origins of imports to Mozambique in 1995 were South Africa (44.2%), Zimbabwe (6.7%), Saudi Arabia (5.9%) and Portugal (4.4%).

Imports to Zimbabwe accounted for 1,980 million US$ in 1995. Its main goods were machinery (927 million US$), chemicals (366 million US$), manufactured goods (365 million US$) and petroleum products(22 million US$) in 1994. The main origins of imports in 1995 were South Africa (40.9%), United Kingdom (7.0%), Japan (6.1%) and United States of America (6.1%). The scale of imports to Zimbabwe was 2.5 times as much as that of Mozambique.

Imports of Malawi accounted for 348 million US$ in 1995. The main imported goods in 1990 were industrial products (208 million US$), plant and equipment (76 million US$), transport equipment (73 million US$) and other commodities (66 million US$). The main origins of imports in 1995 were South Africa (36.2%), Zimbabwe (16.2%), Germany (4.2%) and Japan (8.6%). The scale of imports to Malawi was 0.44 times as much as that of Mozambique.

Imports to Zambia accounted for 1,087 million US$ in 1994. The main goods in 1994 were crude oil (118 million US$), fertilizers (31 million US$) and electricity (2 million US$). The main origins of imports in 1995 were South Africa (27.7%), UK (11.3%), Zimbabwe (9.2%) and Japan (8.6%). The scale of imports to Zambia in 1994 was 1.07 times as much as that of Mozambique.

The volume of trade of Mozambique, which takes up only 14.8 %, is by far smaller than that of the neighboring 3 inland countries without any seaport.

Table 1.3.3-4 Imports of Mozambique and Neighboring Countries

(unit : US$ millions)

Country	1991	1992	1993	1994	1995	
Mozambique	899	855	955	1,019	784	CIF
Zimbabwe	1,646	1,782	1,487	1,804	1,980	FOB
Malawi	416	415	340	421	348	FOB
Zambia	952	837	960	1,087	-	FOB
Total	3,913	3,889	3,742	4,331	-	

Source : The Economist Intelligence Unit, Country Report, 4th quarter, 1996

Table 1.3.3-5 Principal Imports of Mozambique and Neighboring Countries

(unit : US$ millions)

Country		NO1	NO2	NO3	NO4
Mozambique	Commodity	Farm Products	Vehicle	Machine	Coal
in 1995	Amounts	131.7	131.0	159.5	95.9
Zimbabwe	Commodity	Machinery	Chemicals	Manufactures	Petroleum products
in 1994	Amounts	927.0	366.0	365.0	22.0
Malawi	Commodity	Industrial	Plant	Transport	Commodities
in 1990	Amounts	208.0	76.0	73.0	66.0
Zambia	Commodity	Crude oil	Fertilizers	Electricity	
in 1994	Amounts	118.0	31.0	2.0	

Source : Ministry of Planning and Finance, Statistics of Trade, 1995
: The Economist Intelligence Unit, Country Report, 4th quarter, 1996

Table 1.3.3-6 MainOrigins of Imports of Mozambique and Neighboring Countries

(unit : %)

Country		NO1	NO2	NO3	NO4
Mozambique	origin	South Africa	Zimbabwe	Saudi Arabia	Portugal
in 1995	%	44.2	6.7	5.9	4.4
Zimbabwe	origin	South Africa	UK	Japan	USA
in 1995	%	40.9	7.0	6.1	6.1
Malawi	origin	South Africa	Zimbabwe	Germany	UK
in 1995	%	36.2	16.2	4.2	3.6
Zambia	origin	South Africa	UK	Zimbabwe	Japan
in 1995	%	27.7	11.3	9.2	8.6

Source : Ministry of Planning and Finance, Statistics of Trade, 1995
: The Economist Intelligence Unit, Country Report, 4th quarter, 1996

1.4 Transport Sector

1.4.1 Sea Transport Sector

The ports of Beira, Maputo and Nacala are the principal ports in Mozambique, which are included in the maritime ports' system under the Southern African Development Community (SADC) now comprising 16 regional ports as shown in Figure 1.4.1-1. The ports of Beira, Maputo and Nacala are included in the Eastern Seaboard facing the Indian Ocean.

The Eastern (Indian Ocean) Seaboard:

Tanzania;	Dar es Salaam
Mozambique;	Beira, Maputo and Nacala
Mauritius;	Port Louis
South Africa;	Durban, East London, Port Elizabeth and Richards Bay

The Western (Atlantic Ocean) Seaboard:

South Africa;	Cape Town and Saldanha Bay
Namibia;	Walvis Bay
Angola;	Luanda, Lobito and Namibe

The Inland Port:

Zambia;	Mpulungu

As shown in Table 1.4.1-1, the above 15 regional ports of Southern Africa except the inland port handled a total cargo of 155.74 million metric tons in 1995, with an overall increase of 9.1 % over the 1994 corresponding figure of 142.71 million metric tons. Details of the port traffic of each port such as the number of ship arrivals and cargo volume of import and export for cargo types are indicated for the Eastern Seaboard and the Western Seaboard in Tables 1.4.1-2 and 1.4.1-3, respectively. Some 121.6 million metric tons (or 78.1 %) of the total cargo were handled by the ports on the Eastern Seaboard. Further more, of the total traffic handled, the ports of South Africa accounted for 139.41 million metric tons of cargo or 89.5 % in 1995. The share of the Mozambican ports of Beira, Maputo and Nacala in the total traffic handled accounted for 3.3 % i.e. 5.164 million metric tons.

As regards the handling of international transit traffic of the coastal countries where the ports are located, the ports of Beira, Maputo, Dar es Salaam and Durban are the principal transit ports for imports and exports from/to the landlocked countries.

The total transit traffic from the landlocked countries was 5.88 million metric tons in 1995 as shown in Table 1.4.1-4. Details on the cargo volume of imports and exports of the landlocked countries through the principal transit ports are described in Table 1.4.1-5. Beira Port accounted for 34.0 % of the total transit traffic in SADC countries and 79.2 % of the total traffic handled at Beira Port is a transit traffic to the hinterland landlocked countries. The transit traffic share of the other principal transit ports of Maputo, Dar es Salaam and Durban are 24.8 %, 18.9 % and 13.7 %, respectively.

Cargo handling capacities and utilization of the principal ports in 1995 are given in Tables 1.4.1-6 and 1.4.1-7 respectively for dry cargo handling facilities and container handling facilities. With regard to occupancy of cargo facilities of each port, the actual dry cargo volume and containers handled at the Mozambiqcan port comprising Beira, Maputo and Nacala was below 50 % of the rated handling capacity, which indicates that these ports have high potential to accept more traffic than the current level and enough capability to cater for the future increase of the port traffic.

Table 1.4.1-1 Summary of Port Traffic Performance of Southern African Countries

Year: 1995

Country	Port	Ships' Call		Cargo Volume	
		Number	%	Tonnage	%
Tanzania	Dar es Salaam	962	6.6	4,236,000	2.7
Mozambique	Beira	349	2.4	2,488,000	1.6
	Maputo	443	3.0	2,251,000	1.4
	Nacala	201	1.4	415,000	0.3
Mauritius	Port Louis	789	5.4	3,421,000	2.2
South Africa	Durban	4,193	28.6	26,503,000	17.0
	East London	265	1.8	1,203,000	0.8
	Port Elizabeth	715	4.9	4,952,000	3.2
	Richard Bay	1,629	11.1	76,112,000	48.9
	Cape Town	2,103	14.4	7,736,000	5.0
	Saldanha Bay	274	1.9	22,961,000	14.7
Namibia	Walvis Bay	759	5.2	1,819,000	1.2
Angola	Luanda	981	6.7	1,095,000	0.7
	Lobito	758	5.2	450,000	0.3
	Namibe	217	1.5	67,000	0.0
Total		14,638	100.0	155,709,000	100.0

Source: SATCC Annual Report

Table 1.4.1-2 Traffic Performance of Eastern Seaboard Port

Year: 1995

Port	Dar es Salaam	Nacala	Beira	Maputo	Port Louis	Richards Bay	Durban	East London	Port Elizabeth	Total
1. Ship arrivals (No.)										
Deepsea	682	147	311	383	741	1,549	3,960	80	520	8,373
Coasters	280	54	38	60	48	80	233	185	195	1,173
Total	962	201	349	443	789	1,629	4,193	265	715	9,546
Av.Gross Reg. Tonnage										
Deepsea	---	---	---	---	---	96,047	39,734	46,250	69,945	
Coasters	---	---	---	---	---	10,315	19,780	17,900	11,799	
Average (Overall)	---	---	---	---	---	91,837	38,625	26,458	54,087	
2. Cargo Handled (x1,000t)										
Dry General Cargo:										
Imports	771	295	878	509	247	188	2,780	326	195	6,189
Exports	337	76	430	1,400	11	3,566	5,394	72	845	12,131
Total	1,108	371	1,308	1,909	258	3,754	8,174	398	1,040	18,320
Container Cargo:										
Imports	615	---	---	---	593	9	7,362	487	1,565	10,631
Exports	386	---	---	---	303	116	4,868	101	803	6,577
Total	1,001	---	---	---	896	125	12,230	588	2,368	17,208
Bulk Liquids:										
Imports	1,999	41	1,127	238	737	---	---	---	---	4,142
Exports	128			29	200	---	---	---	---	357
Total	2,127	41	1,127	267	937	---	---	---	---	4,499
Bulk Cargo:										
Imports	---	---	---	---	850	2,971	3,165	2		6,988
Exports	---	---	---	---	468	69,262	2,934	215	1,544	74,423
Total	---	---	---	---	1,318	72,233	6,099	217	1,544	81,411
Sub-Total										
Imports	3,385	336	2,005	747	2,427	3,168	13,307	815	1,760	27,950
Exports	851	76	430	1,429	982	72,944	13,196	388	3,192	93,488
Total	4,236	412	2,435	2,176	3,409	76,112	26,503	1,203	4,952	121,438
Cabotage	---	---	53	85	12	---	---	---	---	153
All Cargo	4,236	415	2,488	2,261	3,421	76,112	26,503	1,203	4,952	121,591

Source: SATCC Annual Report

Table 1.4.1-3 Traffic Performance of Western Seaboard Port

Year: 1995

Port	Cape Town	Saldanha Bay	Walvis Bay	Namibe	Lobito	Luanda	Total
1. Ship arrivals (No.)							
Deepsea	1,938	274	769	40	633	447	4,091
Coasters	165	---	---	177	125	534	1,001
Total	2,103	274	759	217	758	981	5,092
Av.Gross Reg. Tonnage							
Deepsea	47,093	188,325	---	---	---	---	
Coasters	22,958	---	---	---	---	---	
Average (Overall)	45,199	188,325	---	---	---	---	
2. Cargo Handled (x1,000t)							
Dry General Cargo:							
Imports	1,536	---	564	31	207	922	3,260
Exports	1,732	146	691	12	---	96	2,677
Total	3,268	146	1,255	43	207	1,018	5,937
Container Cargo:							
Imports	2,264	---	---	---	---	---	2,264
Exports	1,955	---	---	---	---	---	1,955
Total	4,219	---	---	---	---	---	4,219
Bulk Liquids:							
Imports	---	---	564	---	---	---	564
Exports	---	---	---	---	---	---	---
Total	---	---	564	---	---	---	564
Bulk Cargo:							
Imports	165	---	---	---	---	---	165
Exports	104	22,815	---	---	---	---	22,919
Total	269	22,815	---	---	---	---	23,084
Sub-Total							
Imports	3,965	---	1,128	31	207	922	6,253
Exports	3,791	22,961	691	12	---	96	27,551
Total	7,756	22,961	1,819	43	207	1,018	33,804
Cabotage							
All Cargo	7,756	22,961	1,819	67	450	1,095	34,148

Source: SATCC Annual Report

Table 1.4.1-4 Summary of Transit Port Traffic Share of Eastern Seaboard Port

Year: 1995

Country	Port	Total Traffic (ton)	Transit Traffic (ton)	(%)
Tanzania	Dar es Salaam	4,235,000	1,599,000	37.76
Mozambique	Beira	2,487,000	1,969,000	79.17
	Maputo	2,261,000	1,442,000	63.78
	Nacala	415,000	277,000	66.75
South Africa	Richard Bay	76,112,000	47,000	0.06
	Durban	26,503,000	800,000	3.02
	East London	1,952,000	1,000	0.02
	Cape Town	7,756,000	146,000	1.88

Source: SATCC Annual Report

Table 1.4.1-5 Port Traffic of Principal Transit Port of Southern African Countries

Year: 1995

Cargo in 1,000 metric ton

Port	Angola	Botswana	Lesotho	Malawi	Mozambique	Namibia	South Africa	Swaziland	Tanzania	Zambia	Zimbabwe	Others	Total
Dar es Salaam													
Imports	---	---	---	9	---	---	---	---	2,196	753	---	427	3,385
Exports	---	---	---	2	---	---	---	---	440	330	---	78	850
Total	---	---	---	11	---	---	---	---	2,636	1,083	---	505	4,235
Nacala													
Imports	---	---	---	242	96	---	---	---	---	---	---	---	338
Exports	---	---	---	35	42	---	---	---	---	---	---	---	77
Total	---	---	---	277	138	---	---	---	---	---	---	---	415
Beira													
Imports	---	---	---	123	454	---	---	---	---	26	1,454	1	2,058
Exports	---	---	---	57	64	---	---	---	---	25	283	---	429
Total	---	---	---	180	518	---	---	---	---	51	1,737	1	2,487
Maputo													
Imports	---	---	---	---	724	---	---	16	---	---	90	3	833
Exports	---	---	---	---	95	---	484	178	---	---	671	---	1,428
Total	---	---	---	---	819	---	484	194	---	---	761	3	2,261
Richards Bay													
Imports	---	---	---	---	---	---	3,168	---	---	---	---	---	3,168
Exports	---	---	---	---	---	---	72,897	47	---	---	---	---	72,944
Total	---	---	---	---	---	---	76,065	47	---	---	---	---	76,112
Durban													
Imports	---	95	60	17	5	1	12,896	45	---	8	173	8	13,308
Exports	---	17	14	88	24	---	12,808	104	---	6	134	1	13,196
Total	---	112	74	105	29	1	25,704	149	---	12	307	9	26,504
East London													
Imports	---	---	---	---	---	---	815	---	---	---	---	---	815
Exports	10	---	---	15	15	---	343	---	---	---	5	---	388
Total	10	---	---	15	15	---	1,158	---	---	---	5	---	1,203
Cape Town													
Imports	5	---	---	---	31	1	3,927	---	---	---	---	1	3,965
Exports	71	---	---	---	32	4	3,678	---	---	---	---	6	3,791
Total	76	---	---	---	63	5	7,605	---	---	---	---	7	7,756

Source: SATTC Annual Report

Table 1.4.1-6 Dry Cargo Handling Capacity of Southern African Port

Year: 1995

Port	Rated Handling Capacity (ton)	Actual Dry Cargo Handled (ton)	Utilization (%)
Dar es Salaam	4,200,000	2,109,000	50.2
Nacala	1,300,000	371,000	28.5
Beira	2,950,000	1,308,000	44.3
Maputo (incl. Matola)	6,250,000	1,909,000	30.5
Port Louis	3,500,000	2,472,000	70.6
Richards Bay	78,200,000	76,112,000	97.3
Durban	38,270,000	20,404,000	53.3
East London	4,768,000	986,000	20.7
Port Elizabeth	10,128,000	3,408,000	33.6
Cape Town	10,349,000	7,487,000	72.3
Saldanha bay	30,900,000	22,961,000	74.3
Walvis Bay	---	---	---
Namibe	---	43,000	---
Lobito	1,800,000	207,000	11.5
Luanda	---	1,018,000	---
Total/Average	192,615,000	139,714,000	72.5

Source: SATTC Annual Report

Table 1.4.1-7 Container Cargo Handling Capacity of Southern African Port

Year: 1995

Port	Rated Handling Capacity (TEU)	Actual Containers Handled (TEU)	Utilization (%)
Dar es Salaam	126,000	99,000	78.6
Nacala	30,000	12,000	40.0
Beira	60,000	27,000	45.0
Maputo (incl. Matola)	28,000	13,000	46.4
Port Louis	100,000	93,000	93.0
Ricards Bay	---	10,000	0
Durban	1,000,000	869,000	86.9
East London	28,000	32,000	114.3
Port Elizabeth	390,000	156,000	40.0
Cape Town	483,000	308,000	63.8
Saldanha Bay	---	---	---
Walvis Bay	---	23,000	---
Namibe	---	2,000	---
Lobito	---	---	---
Luanda	---	65,000	---
Total/Average	2,245,000	1,609,000	71.7

Source: SATTC Annual Report

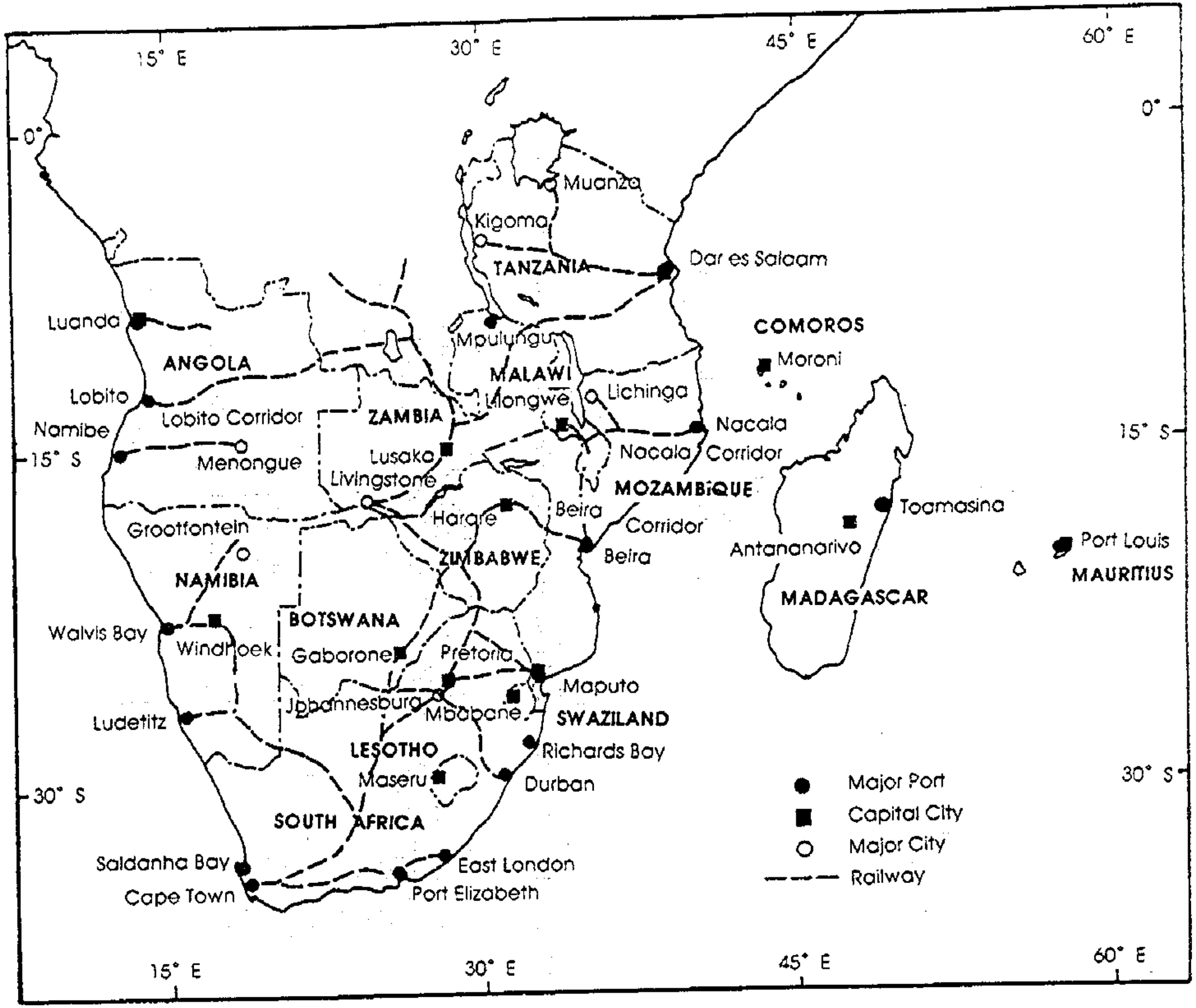


Figure 1.4.1-1 Principal Ports and Cities in Southern African Countries

1.4.2 Railway Transport

The international ports facing the Indian Ocean in Southern Africa are listed as Beira, Maputo, Nacala, Dar es Salaam and Durban, which link the inland countries through their corridors. The railway distances from the main cities of the hinterland countries to the above mentioned ports are shown in Table 1.4.2-1. The hinterland of Beira includes the central provinces of Mozambique, Southern Malawi and Northern and Northeastern Zimbabwe. Zambia is also the hinterland of Beira, although it also constitutes the hinterland of the ports of Dar es Salaam, Maputo and Lobito as shown in Figure 1.4.1-1. Central and Northern Malawi are users of both Nacala and Beira ports. From the view of the railway distance, Beira Port has an advantage to serve Harare (Zimbabwe), Lusaka (Zambia), Blantyre (Malawi) and their adjacent area.

The railway network in Mozambique is shown in Figure 1.4.2-1, its total extension accounted for 3,124 km in 1995, and of which distances are tabulated in Table 1.4.2-2. The situations of the individual lines by a corridor basis are as follows. Table 1.4.2-3 gives the railway performance of each corridor in 1994 and 1995.

(1) Goba Line (Maputo-Swaziland)

International traffic on this line accounted for 275,000 tons in 1995, showing an increase of 68 % over the previous year. The main traffic comprised molasses, pulp and citrus exports from Swaziland. This significant increase was mainly due to the rise in sugar exports from Swaziland, as a result of the inauguration of the sugar terminal at Maputo Port in 1995.

(2) Ressano Garcia Line (Maputo-South Africa)

The cargo traffic in 1995 was 658,500 tons. This shows a decline of 3 % from the 675,500 tons in 1994. The traffic movement on this line is mainly from South Africa and largely comprises citrus, coal and coke.

(3) Limpopo Line (Maputo-Zimbabwe)

International cargo traffic moved along this line was 741,700 tons in 1995, showing an increase of 94 % from 1994. This was mainly due to the significant increase in the movement of ferrochrome and coke. There was also an increase of Zimbabwe sugar exports and wheat imports.

(4) Machipanda Line (Beira-Zimbabwe)

The cargo traffic on this line increased by 11 % from 958,100 tons in 1994 to 1,062,00 tons in 1995. The main commodities are tobacco, granite, maize, fertilizer and copper. Manganese from Zaire as well as coke from Zimbabwe are exported by using this route and this is likely to result in a further increase in traffic moved along this line.

(5) Nacala Line (Nacala-Malawi)

International traffic on this line, all of which comes from and goes to Malawi, has continued to increase although the last 77 km of the line have not yet been fully rehabilitated. The main commodities moved through this line are tobacco, fuel, wheat and palm oil.

Table 1.4.2-1 Railway Distance from Transit Port to Principal Hinterland City

		Port (Distance in km)				
Country	City	Beira	Maputo	Nacala	Dar es Salaam	Durban
Malawi	Blantyre	649	---	807	1,800*	3,658
Zimbabwe	Harare	600	1,270	---	3,465	2,065
Zambia	Lusaka	1,050*	2,020	1705*	2,045	2,751

* Partly Road Transport Source: Ports and Railways of Mozambique

Table 1.4.2-2 Railway Network Distance in Mozambique

Year: 1995

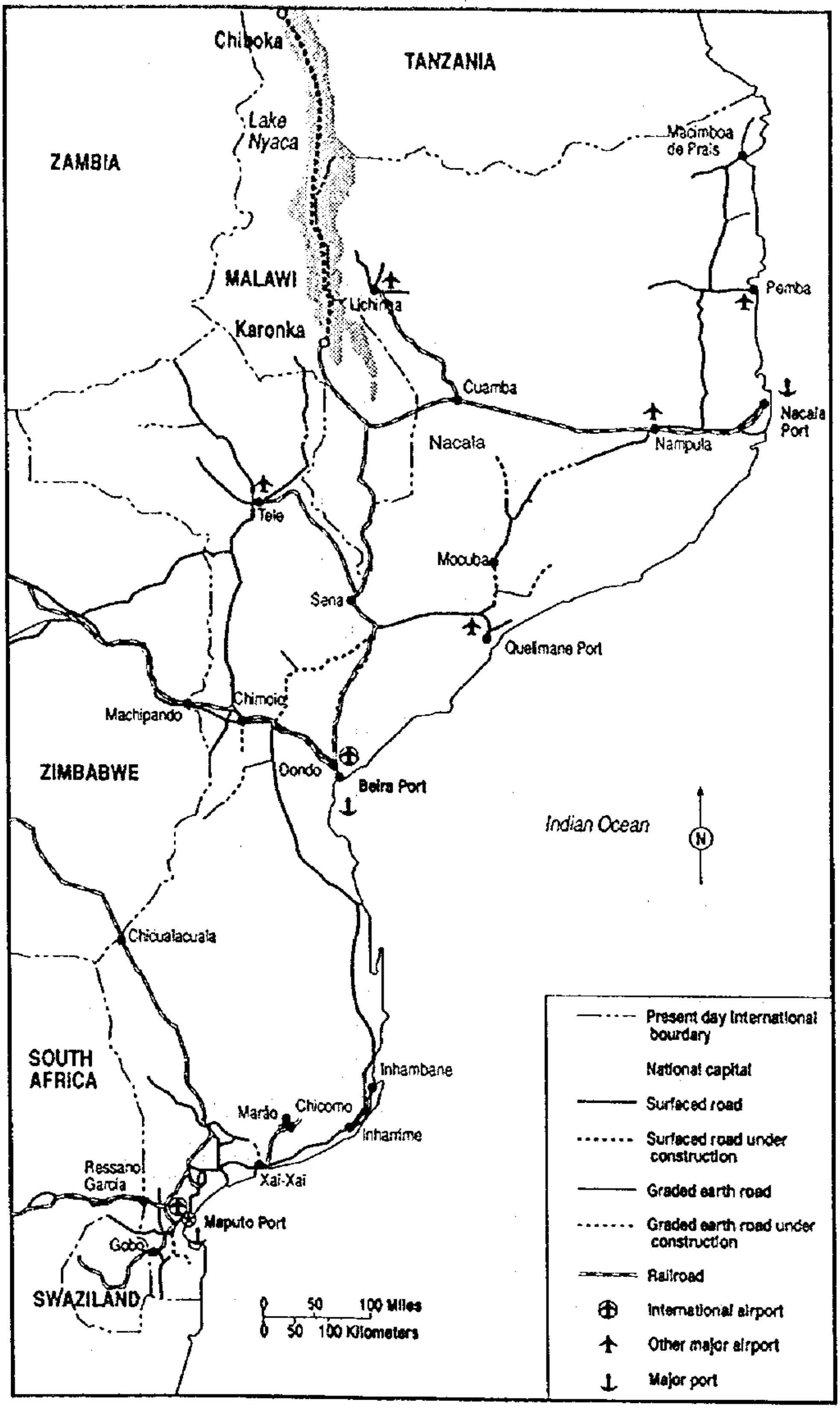
Railway Network	Distance (km)
CFM-S	
Maputo-Machava	10
Maputo-Goba	64
Machava-Ressano	78
Maputo-Chicualacuala	534
Moamba-Chinavane	93
Umpala-Salamanga	61
Xai-Xai-Chicomo	90
Manjacaze-Mauele	50
Inhambane-Inharrime	90
CFM-C	
Beira-Machipanda	317
Dondo-V.Nova Fronteira	336
Dona Ana-Moatize	254
Inhambane-Marromeu	88
CFM-N	
Nacala-Cuamba	533
Cuamba-Lichinga	262
Cuamba-Entre Lagos	77
Rio Monapo-Lumbo	42
CFM-Z	
Quelimane-Mocuba	145
Total	3,124

Source : Ports and Railways of Mozambique

Table 1.4.2-3 Railway Performance on Corridor Basis

Route	1994 (ton)	1995 (ton)	(%)
Goba Line Route			
Swaziland	163,500	275,000	68.2
Other	0	0	0.0
Total	163,500	275,000	68.2
Ressano Garcia Route			
South Africa	675,500	658,500	-2.5
Swaziland	0	0	0.0
Total	675,500	658,500	-2.5
Limpopo Route			
Zimbabwe	381,900	741,700	94.2
Other	0	0	0.0
Total	381,900	741,700	94.2
Beira Route			
Zimbabwe	899,500	940,100	4.5
Malawi	1,100	2,900	163.6
Zambia	4,100	10,600	158.5
Mozambique	53,400	109,300	104.7
Total	958,100	1,062,900	10.9
Nacala Route			
Malawi	95,900	141,300	47.3
Mozambique	59,700	73,800	23.6
Total	155,600	215,100	38.2

Source: Ports and Railways of Mozambique



(Source: the Ministry of Transport and Communications)

Figure 1.4.2-1 Transportation Network in Mozambique

1.4.3 Road Transport

Trunk routes of the road transportation network in Mozambique are shown in Figure 1.4.2-1. Table 1.4.3-1 gives an extension of the road network by province, type and condition in 1995. The total extension of the road network is 32,000 km, however, 76 % of which is unpaved. The extension of asphalt pavement roads and gravel pavement roads are 5,497 km and 2,020 km, respectively. Road distances between the main cities are listed in Table 1.4.3-2.

The road network of Beira Corridor linking the hinterland landlocked countries is listed as follows.

(1) Beira-Mutare-Harare-Lusaka Road

Beira-Mutare-Harare-Lusaka Road runs across the central Mozambique, crosses the Zimbabwean border at Machipanda and continues across North-eastern Zimbabwe to Harare and further to Lusaka. It thus provides a road access from the port to Eastern and Northern Zimbabwe and further to Zambia and even to South-eastern Zaire.

Between Beira and Harare, the road roughly follows the railway line, namely the west of Chimoio, on the western part of Mozambique, the road to the northern province of Tete branches off. This road continues to Malawi and Eastern Zambia.

(2) Beira-Chimoio-Tete-Malawi/Zambia Roads

The main existing roads link between the port of Beira and Malawi comprises the section of the Beira Machipanda Road up to the junction, west of Chimoio and the road from this junction to the north joining the Zimbabwe-Tete Malawi road at Changara.

The road section between Matundo on the Zimbabwe-Malawi Road and Katete on the Lusaka-Chipata Road (the Great East Road) in Zambia provides a link to Eastern Zambia, the only direct link between Mozambique and Zambia. Through this link, Zambia is also connected to the railhead at Moaitze.

Table 1.4.3-1 Road Type and Condition in Mozambique

Province	Type of Road (km)				Road Condition (km)		
	Asphalt Pavement	Gravel Pavement	Dirt Road	Total	Easy Access	Difficult Access	Non-Passable
Niassa	192	...	3,412	3,604	984	1,014	1,606
Cabo Delgado	648	230	2,411	3,289	977	1,392	920
Nampula	550	...	3,961	4,511	1,958	1,290	1,263
Zambezia	531	747	4,316	5,594	1,848	1,774	1,972
Tete	844	195	2,101	3,140	1,052	1,392	696
Manica	525	304	1,476	2,305	1,053	626	626
Sofala	645	51	2,241	2,937	697	983	1,257
Inhambane	625	96	1,700	2,421	735	1,502	184
Gaza	491	154	1,810	2,455	1,369	704	382
Maputo	446	243	808	1,497	865	552	80
Maputo Cidade		...	...	...	...	...	...
Total	5,497	2,020	24,236	31,753	11,538	11,229	8,986

Source: National Planning Commission-National Directorate of Planning

Table 1.4.3-2 Road Distance among Principal Cities in Mozambique

	Angoche													
Beira	1,189	Beira												
Goba	2,403	1,288	Goba											
Inhambane	1,917	802	552	Inhambane										
Xai-Xai	2,114	999	289	263	Xai-Xai									
Maputo	2,320	1,205	83	469	206	Maputo								
Machipanda	1,400	285	1,305	819	1,016	1,222	Machipanda							
Mocimboa Praia	784	1,631	2,845	2,359	2,556	2,762	1,846	Mocimboa Praia						
Nacala	368	1,215	2,429	1,943	2,140	2,346	1,434	628	Nacala					
Nampula	171	1,018	2,232	1,746	1,943	2,149	1,237	622	197	Nampula				
Pemba	600	1,447	2,661	2,175	2,372	2,578	1,662	356	444	438	Pemba			
Quelimane	778	485	1,699	1,213	1,410	1,616	704	1,220	804	607	1,036	Quelimane		
Tete	1,698	632	1,652	1,166	1,363	1,569	477	2,189	1,773	1,576	2,005	1,043	Tete	
Lichinga	829	1,676	2,890	2,404	2,601	2,807	1,887	1,271	855	658	1,087	1,265	2,234	Lichinga
Chimoio	1,313	198	1,218	732	929	1,135	87	1,655	1,339	1,142	1,471	609	434	1,800

(Source: the Ministry of Construction and Water)

1.4.4 Air Transport

The following are the principal airports in Mozambique. Their locations are shown in Figure 1.4.2-1. Regular flights between Maputo and the local airports are served.

International Airports:
- Maputo
- Beira

Domestic Airports:
- Nampula
- Pemba
- Quelimane
- Tete
- Lichinga

Two international airports, namely Maputo and Beira are networked to other international airports. Between Maputo and the other international airports, there are many flights to major international airports in South Africa, Europe and New York. International flights from Beira, however, are quite limited and there was only one weekly flight to Harare, Zimbabwe with connections to the other airports from Harare in March 1997. Recently, one weekly flight to Johannesburg, South Africa has been put into operation.

LAM Mozambique Airline is the only airline company to operate a regular service. Table 1.4.4-1 shows that, from 1990 to 1995, LAM Mozambique have been experiencing poor performance. The number of passengers carried in 1995 decreased drastically by 24.3 % down to 168,200 comparing to 222,200 passengers carried in 1994. And the cargo freight also decreased significantly down to 2,175,00 tons in 1995 from 3,217,900 tons in 1994.

Table 1.4.4-1 Traffic Performance of LAM Mozambique

Year	1990	1991	1992	1993	1994	1995
Passengers (x 1,000)	290.3	292.1	190.0	193.0	222.2	168.2
Freight (x 1,000 ton)	13,113.0	8,957.0	8,654.0	6,754.0	3,217.9	2,175.2

Source: Ports and Railways of Mozambique

1.5 Industrial Activities

1.5.1 General

In Mozambique, under the climate of the tropical or subtropical zone, agricultural sector of GDP at factor cost during 1990-1995 was more than 25 % and the industry sector of GDP was kept under low levels since the Mozambican industry has played the role of the raw material's supplier for a long time as shown in Table 1.5.1-1.

In order to grasp the industrial activities in Mozambique and neighboring countries using the Beira Corridor, origins and component of real Gross Domestic Product (GDP) by country are shown in Table 1.5.1-3 .

The components of GDP show that the ratios of gross fixed capital formation and the loss of trade are significant in Mozambique, and that those are relatively smaller in the neighboring countries. Origins of GDP at factor cost show that the ratio of 26.3 % of manufacturing in the Mozambican economy consists of 11.2 % (construction) and 15.1 % (industry and fisheries) and that the ratio of transportation in Mozambique is much higher than that in Zimbabwe and Zambia.

Mozambique, which has a long coast line in the Indian Ocean, play an important role as the gate way to the neighboring inland countries. Therefore, the transportation sector of the country has been generating much of the foreign currency for a long time. The transport sector at factor cost has a share of 15.5 % of GDP in 1995.

It is worthy noting that Mozambican economy depends heavily on private consumption relevant to import, which gives berth to big deficit of balance of payment. Therefore, Mozambique needs foreign currency in order to offset the loss of trade. Hence, the Mozambican economy will be developed by improving the transportation sector to earn more foreign currency as investment in Mozambique is very active. The improvement of Beira Port, where 79 % of port cargo is transit, is very effective to the generation of significant foreign currency.

Table 1.5.1-1 Total Production in Mozambique for 6 years, 1990-1995

(unit : %)

Economic Activities	Growth rate in volume (%)						Origins of GDP (%)
	1990	1991	1992	1993	1994	1995	1995
Agriculture	1.1	-4.0	-11.3	21.3	4.8	6.9	27.2
Industry	-8.3	-0.5	-5.2	-6.7	-6.0	16.3	15.1
Construction	1.6	3.0	-1.8	7.0	7.5	7.0	11.2
Transport & Communication	19.8	13.1	10.2	16.7	3.8	13.3	15.5
Commerce & Others	3.0	-0.3	18.3	22.3	15.0	-12.1	31.0
Total Production	1.3	0	1.7	14.3	6.6	2.1	100.0

Source : Bank of Mozambique, Statistical Bulletin, June 1997

Table 1.5.1-2 Component of Real Gross Domestic Product (GDP) in Mozambique for 6 years, 1990-1995

(unit : %)

Type of Expenditure	Growth rate in volume (%)						Components of GDP (%)
	1990	1991	1992	1993	1994	1995	1995
Private Consumption	-4.0	0.0	-5.5	20.2	-2.3	2	63.3
Government Consumption	1.0	0.0	8.9	5.8	28.9	-38.0	12.1
Gross Capital Formation	3.6	3.0	-1.2	3.4	7.3	-4.8	60.5
Exports of Goods & Services	11.6	27.5	-1.2	3.4	7.3	15.8	24.0
Imports of Goods & Services	0.0	1.9	-5.9	8.5	4.1	-13.8	-59.9
GDP at Market Prices	1.0	4.9	-0.8	19.3	5.0	1.4	100.0

Source : Bank of Mozambique, Statistical Bulletin, June 1997

Table 1.5.1-3 Origins and Component of Real GDP in Mozambique and Neighboring Countries

(unit : % of total)

Origins of Gross Domestic Product				
Country	Mozambique	Zimbabwe	Malawi	Zambia
Year	1995	1994	1994	1994
Agriculture & Forestry	27.2	13.6	31.3	18.0
Mining & Quarrying		7.2		6.1
Manufacturing	26.3	22.9	13.9	25.2
Transport & Communications	15.5	6.1	17.4	4.0
Distribution,Hotels & Restaurants		10.7	7.3	11.7
Public Administration		9.6	15.6	21.3
Other	31.0	29.9	14.5	13.7
GDP at Factor Cost	100.0	100.0	100.0	100.0

Components of Gross Domestic Product				
Country	Mozambique	Zimbabwe	Malawi	Zambia
Year	1995	1994	1994	1994
Private Consumption	63.3	51.5	22.7	66.3
Public Consumption	12.1	27.2	66.8	22.5
Gross Fixed Capital Formation	60.5	22.4	11	10.2
Change in Stocks		6.1	2.1	-1.4
Exports of Goods & Services	24.0	32.6	-2.7	23.4
Imports of Goods & Services	-59.9	-34.9		-19.3
Statistical Discrepancy		-4.9		-1.7
GDP at Market Prices	100.0	100.0	100.0	100.0

Source : Bank of Mozambique, Statistical Bulletin, June 1997

1.5.2 Agriculture

Agricultural production in Mozambique contributed 27.2 % to the GDP in 1995 as shown in Table 1.5.1-1.

To the Government's relief, the 1995/96 harvest was one of the largest in the history of Mozambique, and is estimated to have produced nearly 1.33 million tons of cereals.

The country enjoyed the unusually sufficient rainfalls which fell in most of southern Africa in 1996, and the rise in cereals output represents more than 20 % increase over the crop of 1995.

As illustrated in Table 1.5.2-1, the production of sugar beet is also growing: the 465,800 tons of sugar beet in 1996 represent a significant increase from 313,200 tons in 1995 and 234,000 tons in 1994. Also, the 65,000 tons of cashew nuts in 1996 represent a major increase from 33,400 tons in 1995 and 29,400 tons in 1994.

The overall agricultural production in 1996, except sisal hemp was more than that of 1995, and there was a notably increased penetration into South African and Portuguese markets by Mozambican exports.

Table 1.5.2-1 Trend on Yield of Agricultural Products in Mozambique during 1989-1996

(unit : 1,000 tons)

Name	1989	1990	1991	1992	1993	1994	1995	1996
Cashew nut	50.2	22.5	31.1	54.2	23.9	29.4	33.4	65.0
Cotton	28.0	29.7	40.0	49.8	47.0	49.5	51.0	56.0
Sugar beet	225.4	331.6	252.8	159.4	184.5	234.0	313.2	465.8
Copra	10.5	26.8	24.8	16.9	23.6	28.8	26.4	28.1
Tea	7.4	4.3	4.9	1.0	1.7	1.5	1.0	1.7
Sisal hemp	88.7	45.3	24.8	24.8	24.0	24.0	24.0	24.0
Rice	24.5	19.6	23.9	16.6	17.8	29.0	13.6	20.0
Maize	80.5	84.1	74.0	75.1	142.7	146.0	168.6	199.0
Bean	14.9	13.6	14.2	13.0	23.3	16.0	30.4	32.1
Horticulture	34.5	36.3	35.1	35.4	42.5	44.1	30.5	34.0

Source : National Planning Commission, Anuario Estatistico

1.5.3 Fisheries

Fishery occupies an important place in the national economy. Problems in fishery production resulted in rise in the share of prawns in the total export receipts. Prawns accounted for 40.5 % of all exports in 1995. The prime objectives of the sector are to increase food production particularly at the family level, increase the value of exports and increase employment of the sector.

Table 1.5.3-1 shows the prospect of the fish catch in Mozambique during 1989 - 1994.

The total fish catch of 24,170 tons in 1994 consists of 6,600 tons of prawn, 14,000 tons of fish meat, 350 tons of crab and 300 tons of lobster.

Table 1.5.3-1 Trend on Fish Catch in Mozambique during 1989 - 1994

(unit : tons)

Name	1989	1990	1991	1992	1993	1994
Prawn	5,891	6,855	7,675	6,759	7,341	6,600
Fish meat	14,630	15,097	14,996	11,557	8,522	14,000
Crab	135	387	389	416	406	350
Lobster	163	237	208	277	312	300
Other fishes	3,953	3,676	7,229	1,652	2,464	2,920
Total fishes	24,772	26,252	30,497	20,661	19,045	24,170

Source : National Planning Commission, Anuario Estatistico

1.5.4 Manufacturing Industry

In Table 1.5.1-3, the manufacturing sector contribution to the GDP at factor cost represents 22.9 % in Zimbabwe, 13.9 % in Malawi, 25.2 % in Zambia, whereas it contributes 26.3 % in Mozambique.

Among the factors of the GDP in Mozambique, the rate of construction resulting from high public investment (60.5 % of GDP on components) takes up 11.2 %.

At the independence, Mozambique was the eighth largest industrial producer in Africa. However, industrial development is extremely limited now in Mozambique with predominating light industries.

Industries are overwhelmingly concentrated in the two principal cities of Maputo and Beira.

Table 1.5.4-1 shows the characteristics of the principal products output of manufacture in Mozambique during 1989-1994. The output of copra oil (2,855 tons), wheat flour (39,890 tons), sugar (11,712 tons), soap (9,257 tons), lubricating oil (6,481 tons), cement (62,334 tons), electric battery (3,042,000 units) and bicycle (5,929 units) in 1994 has increased more than in 1993. The manufacturing output in 1994 includes beer (11,831,000 litter), cigarette (330 million pieces), cotton yarn (3,267 tons) and cloth of poplin (815,000 ㎡).

Table 1.5.4-1 Trend on Output of Principal Products of Manufacture in Mozambique during 1989-1994

Name	unit	1989	1990	1991	1992	1993	1994
Copra Oil	ton	3,224	3,812	3,360	2,991	2,766	2,855
Flour of Wheat	ton	87,240	49,368	60,171	50,293	27,582	39,890
Sugar	ton	24,674	33,141	10,408	13,953	11,455	11,712
Beer	1000l	41,295	35,290	22,660	21,059	20,386	11,831
Cigarette	million	523	414	50	288	352	330
Cotton Yarn	ton	12,144	4,676	3,843	7,279	5,894	3,267
Poplin	1000㎡	5,838	3,664	2,777	1,339	946	815
Soap	ton	12,155	8,843	9,417	6,544	7,920	9,257
Lubricating Oil	ton	9,262	7,297	6,670	4,511	4,433	6,481
Cement	ton	78,510	79,767	62,705	82,914	59,730	62,334
Electric Battery	1000unit	16,139	21,831	n.a.	2,843	2,283	3,042
Bicycle	unit	6,744	4,393	n.a.	3,222	4,596	5,929

Source : National Planning Commission, Anuario Estatistico

1.5.5 Mining

In Table 1.5.1-2, the GDP rate of the mining sector at factor cost was 7.2 % in Zimbabwe and 6.1 % in Zambia. The main mining production in Zimbabwe in 1994/95 consists of asbestos (51,800 tons/year), chrome ore (196,200 tons/year) and gold (229,000 fine oz). The principal mining production in Zambia in 1994/95 consisted of copper (350,476 tons), cobalt (2,485 tons), lead (2,002 tons) and zinc (3,446 tons).

In Malawi and Mozambique, mining production is little, but in Mozambique there are many mineral resources, such as tantalite (No. 1 in the world on reserves), iron, bauxite, titanium and copper. At present, mining products, which comprised only 3 % of total exports in 1993, have never been a major export in Mozambique.

The change in the output of the major mining products in Mozambique during 1989-1994 is shown in Table 1.5.5-1.

There has been increased interest in Mozambique's substantially under-exploited minerals resources. Although many deposits have been divided up among many persons with land concessions, concession owners are seeking joint ventures with experienced companies.

Meanwhile, the government seems set to begin threatening to cancel concessions which have been held by foreign interests for years without any serious exploration. Gencor of South Africa is about to commit itself to a 500 million US$ investment in tantalite mining. Companies such as Ashanti Gold Fields of Ghana in Manica Province, Ireland's Kenmare Resources in Niassa Province, and Anglo American in Sofala Province are already involved in exploiting gold deposits on a small scale. Others are interested in, or are already engaged in, mining for bentonite, tantalite, graphite, diamonds, titanium and mineral sands.

Table 1.5.5-1 Fluctuation in the Output of Principal Mining Products of Mozambique in 1989-1994

Name	unit	1989	1990	1991	1992	1993	1994
Coal	ton	n.a.	n.a.	n.a.	40,977	n.a	n.a.
Marble	m	687	488	279	968	1,311	1,501
Garnet	kg	1,965	2,562	1,280	601	312	1,173
Bauxite	ton	6,636	6,586	7,852	9,325	6,035	9,620
Bentonite	m	127	0	664	0	754	1,879
Gold	kg	0	72	394	296	149	335

Source : National Planning Commission, Anuario Estatistico

1.5.6 Transports and Communications

Inland countries, Zimbabwe, Malawi and Zambia, need foreign seaports as their trade gate. Now, Beira, Maputo and Nacala of Mozambique, Durban (South Africa), Dar es Salaam (Tanzania) and Lobito (Angola) are used as their main seaports for trade. Taking into account the distance (time) and the cost of cargo transportation, Beira Port is the most natural outlet for Zimbabwe, Malawi and Zambia. The distance from Beira to the main cities in each of the countries are Beira-Harare (600 km), Beira-Blantyre (649 km) and Beira-Lusaka (1,050 km), which are shorter than Maputo-Harare (1,270 km), Nacala-Blantyre (807 km), Dar es Salaam-Blantyre (1,800 km) and Durban-Lusaka (2,751 km), as shown in Table 1.5.6-1.

Beira Port has the most cargo volume (2,488,200 tons) and the most transit share (1,969,500 tons, 79.2%) in Mozambique. The population of hinterland in each port of Mozambique is estimated in Table 1.5.6-2 by the share of transit cargo volume in Table 1.5.6-1. The population of hinterland of Beira Port in 1995 was estimated to 19.88 million inhabitants that is 1.5 times higher than that of Maputo Port.

Table 1.5.6-1 Distance by Railway to Main City and Share of Transit Traffic of SADC Port in 1995

(unit : km, 1,000 tons)

Country / Port (Main City)	Mozambique	Zimbabwe (Harare)	Malawi (Bulantyre)	Zambia (Lusaka)	Others	Total
Beira		(600km)	(649km)	(1,050km)		
Transit volume	518	1,737	180	51	1	2,488
Maputo		(1,270km)		(2,020km)		
Transit volume	819	761			681	2,261
Nacala			(807km)	(1,705km)		
Transit volume	138		277			415
Dar es Salaam		(3,465km)	(1,800km)	(2,045km)		
Transit volume			11	1,083	3,142	4,236
Durban		(2,065km)	(3,658km)	(2,751km)		
Transit volume	29	307	105	12	26,050	26,503
Others' Port						
Transit volume	78	5	15		84,973	85,071
Total	1,519	2,810	588	1,148	114,847	121,590

Source : SATCC, Annual Report, 1996-1997

Table 1.5.6-2 Population of Hinterland of Beira Port in 1995

(unit : million persons)

Port	Mozambique	Zimbabwe	Malawi	Zambia	Tanzania	Total
Beira	5.70	8.37	5.29	0.52		19.88
Maputo	10.20	3.11				13.31
Nacala	1.52		4.71			6.23
Dar es Salaam				8.85	29.70	38.55
Total	17.42	11.48	10.00	9.37	29.70	77.97

Note : Population of each port is estimated by share of transit volume in Table 1.5.6-1

1.5.7 Water and Energy

The supply of drinking and irrigation water plays an important role in Mozambique and neighboring countries. The rate of those which can make use of the regional water infrastructure of Mozambique was 18 % in 1993. There is a plan to increase this figure to 30 % by 1996 and to 50 % by 2000.

The total volume on the generation of electricity in Mozambique and neighboring countries is shown in Table 1.5.7-1. Energy on the generation of electricity in Mozambique was 490 million kwh in 1993. This figure was lower than in the neighboring countries.

The government is planning to deregulate fuel distribution, which has aroused the interest of a Portuguese company, Petrogal, of Aramco of Saudi Arabia and of the Iranian government.

Meanwhile, the government increased fuel prices again in 1996, with 13 % in petrol and 9 % in diesel. The reasons given were the depreciation of the exchange rate, which brings about a rise in international oil prices and an increase in taxation on fuel.

Table 1.5.7-1. Electricity Generation in Mozambique and Neighboring Countries in 1993

(unit : million KWH)

	Electricity Generation		
Country	Total	by water power	
Mozambique	490	10.2%	50
Zimbabwe	7,600	22.2%	1,687
Malawi	800	98.0%	784
Zambia	7,800	99.5%	7,761
Total	16,690	61.6%	10,282

Source : National Planning Commission, Anuario Estatistico

1.6 Development Plan

1.6.1 National Development Plan

The prospective of National Development Plan of Mozambique and Zimbabwe is shown in Table 1.6.1-1. The National Reconstruction Plan of Mozambique in 1994 - 1996 included the public investment plan as in Table 1.6.1-2. Foreign donors such as Official Development Assistance (ODA) by Development Assistance Conference (DAC) countries and international agencies shown in Table 1.6.1-3 covers about 380 % of the national budget. Especially, the share of adjustment for infrastructure, besides the return of refugees, as the principal sector is large and this sector includes the huge investment of the Beira Port Transport System (BPTS).

According to Table 1.6.1-3, the past source of ODA consists of 68.8 % from DAC countries and 31.2 % from international agencies.

In the government program of the present National Development Plan, it was started in May 1995 that the main objective of economic development in Mozambique was the eradication of poverty and in order to achieve this objective, the Government established the target between 6 and 7 % of GDP growth rate during 1995-1997 and this figure would increase to 8 and 9 % until the end of the millennium.

The component of Public Investment Plan in 1995-1998 is shown in Table 1.6.1-4. The share of public investment on Transport and Communication (32.5 %) is the highest of all, more than the share on Health (21.6 %) or Education (12.6 %).

Table 1.6.1-1 Change of National Development Plan of Mozambique and of Zimbabwe

Mozambique	
No 1	10 Years Plan for Economic Reconstruction in 1981-1990
No 2	Economic Action Plan in 1984-1986
No 3	Economic Reconstruction Plan in 1987-1990
No 4	Economic and Social Plan for Reconstruction in 1991-1993
No 5	National Reconstruction Plan in 1994-1996

Zimbabwe	
No 1	3 Years Plan for National Development in 1982-1985
No 2	First 5 Years Plan for National Development in 1986-1990
No 3	Second 5 Years Plan for National Development in 1986-1990
No 4	Third 5 Years Plan for National Development in 1996-2000

Table 1.6.1-2 Public Investment by Sector of National Reconstruction Plan

(unit : million US$)

sector	1994 Budget	ODA	Total	(%)
Return of Refugees	26.6	92.1	118.7	28.6
Aid for each Family	5.2	33.1	38.3	9.2
Adjustment for Infrastructure	24.0	131.2	155.2	37.4
Preservation of Health & Medical Treatment	5.2	18.3	23.5	5.7
Education	2.7	8.2	10.8	2.6
Support for Public sector	19.6	48.9	68.5	16.5
Total	83.3	331.8	415	100.0

sector	1995 Budget	ODA	Total	(%)
Return of Refugees	31.9	99.8	131.7	30.8
Aid for each Family	6.9	32.4	39.3	9.2
Adjustment for Infrastructure	25.9	137.8	163.7	38.3
Preservation of Health & Medical Treatment	4.6	17.9	22.5	5.3
Education	2.8	8.2	10.9	2.6
Support for Public sector	17	42.2	59.2	13.8
Total	89.1	338.3	427.3	100.0

Source : Republica de Mozambique, National Reconstruction Plan 1994-96, 1993

Table 1.6.1-3 Official Development Aid to Mozambique

(unit : million US$)

Country	1990	1991	1992	1993
Germany	37.4	64.6	36.3	136.2
Portguee	44.6	101.8	164.3	109.4
Italy	106.2	58.9	249.9	97
Sweeden	136.1	135	97.2	71.8
Other countries	427.2	411.3	462.3	396.6
Total of DAC countries	751.5	771.6	1010.0	811.0
International Agency	256.5	300.7	459.3	367.0
Arab countries	0.1	0.3	2.2	0
Grand Total	1,008.1	1,072.6	1,471.5	1,178.0
Japan	16.9	15.8	38.7	18.9

Source : OECD, Geographical Distribution of Financial Flows to Aid Recipients

Table 1.6.1-4 Component of Public Investment Plan in 1995-1998

Component	1995	3 years Plan of Public Investment 1996	1997	1998	1996-98 Total
Transport & Communication	29.9%	36.0%	28.4%	30.4%	32.5%
Health	13.6%	16.7%	22.7%	25.9%	21.6%
Education	12.0%	13.0%	12.7%	11.0%	12.6%
House Building	10.3%	9.7%	13.1%	13.4%	12.1%
Agriculture	11.4%	8.2%	7.4%	6.1%	7.5%
Service on Birth	6.4%	7.5%	6.0%	5.9%	6.5%
Other Investment	16.4%	8.9%	9.7%	7.3%	7.2%
Total Public Investment	100.0%	100.0%	100.0%	100.0%	100.0%

Source : Minisory of Planning and Finance, 3 years Plan of Public Investment 1996-98

1.6.2 Regional Development Plan

The population of Sofala Province, where Beira Port is located, was estimated at some 1.5 million inhabitants in mid-1996. The sectoral structure of Sofala's economy is shown in Table 1.6.2-1. The per capita GDP in Sofala , estimated at around US$ 220, is more than twice the official figure of the country, even though it is generally understood that this is underestimated. However, the level of the per capita GDP does not put Sofala in a good position compared with other economies in the region. For example, Malawi, the country with the poorest economy in the region after Mozambique, has a per capita GDP of around US$ 200.

The mean structure of Sofala exports is shown in Table 1.6.2-1. The main revenue deriving from transactions between Sofala and the rest of the world is from prawns and seafood. However, it is estimated that the contribution of timber and sugar could increase significantly in the relatively short term.

On the basis of available information on volumes of production by sector, an attempt was made to establish some elements that could help produce indicators of the volumes of production in the sectors.

With regard to public accounts, Sofala is one province that shows no deficit. In fact, the general level of fiscal revenue is in the order of US$ 24 million, against a spending level of US$ 19 million, of which US$ 8 million is current expenditure and about US$ 11 million is investment, including the contribution from the central state budget.

Table 1.6.2-1 Sectorial Structure of Sofala Economy

Item		Probable Values	Structure
		million US$	%
	Agriculture	100-120	20
	Industry	280-300	55
	Construction	10	2
	Transport etc.	75-100	15
	Trade	40-80	8
Total		505-615	100

Source : Sofala Province, Towards the 21st Century

Table 1.6.2-2 Structure of Sofala Exports

Main Exports in Sofala Province		Structure
	Prawns and Seafood	64%
	Raw Cotton	13%
	Wood and Wood Products	8%
	Cashew Kernels	8%
	Others	7%
Total Exports		100%

Source : Sofala Province, Towards the 21st Century

The strategic vision established at the "Sofala Towards the 21st Century Conference" held in November, 1996 is as follows:

In order to achieve the economic growth of over 10 % per annum in Sofala Province Towards the 21st Century, the following strategic vision should be established.

(1) Increase in the use of Beira Port by Zimbabwe and other countries

(2) More Investment by commercial investors
   1) Influx of the investments and new investors to Beira and other points along the coast
   2) Investments in sugar concluded (Tica, Buzi, Sena)
   3) Faster rate of investment, with the creation of more saw mills and the completion of projects
   4) Investment in refrigeration for the fishing industry
   5) Rapid success in geological and feasibility studies permit some production of minerals

(3) The main existing industries (cement, asbestos, mills, textiles, etc.) 100 % operational

(4) Rehabilitation of infrastructure
   1) Rehabilitation of main roads successfully completed
   2) Extension of electric power lines to the districts concurrent with investment in saw mills and the wood industry
   3) Reconstruction of the Sena railway

(5) Others
   1) Shops occupied by experienced traders with financial resources
   2) Greater decision-making in the Province by commercial banks without banking decision in Maputo, etc.

Instances of influx of investments and new investors to Beira except investment in sugar industry, in saw mills and in refrigeration for the fishing industry are shown in Table 1.6.2-3.

Table 1.6.2-3 Some Projects around Beira Port

No	Project	Volume/year	Investment
1	Beira Iron Project	2.5 million tons	US$ 660 million
2	Temane and Buzi gas Field Development	(note-1)	US$ 127 million
3	Project to revive Moatize Coal Mines	0.2 million tons	US$ 300 million
4	Pulp Plant and Vegitable Warehouse	0.5 million tons	

note-1 : 2 trillion ft^3 of reserves

Source : the newspaper,"Business Day", 1997

According to the newspaper "Business Day" from the Republic of South Africa (RSA) in August 13th, 1997, the Beira Iron Project, in which JCI of mining house in RSA is main investor, would have an annual turnover of about US$ 317 million after it produced its first metal of 2.5 million tons in 2001 following a capital cost of US$ 600 million and Mozambique's Minister of Mineral Resources and Energy told that the Government was supportive. However, the US$ 660 million facility near Beira Port included certain infrastructure and port upgrades at Beira which would be able to accommodate 125,000 tons ships.

According to same newspaper, the Beira iron project will use natural gas from the Temane and Buzi gas fields near Beira Port and kickstart large scale development of gas in the country. Temane is estimated to have more than 1 trillion ft^3 of reserves, with a possible 2 trillion ft^3, more than enough to supply the plant. Offshore fields, including the Sofala block, could also supply the plant with gas in the future. The partners in the project, Arco, a leading US energy producer, and South Africa's Sasol, are to invest US$ 127 million in gas-field development.

According to the newspaper "Business Day" of RSA in February 28, 1997, the US$300 million rehabilitation of Moatize to Beira railway line, as the plan to revive Moatize coal mines by National Coal Company, is scheduled to begin later in 1997. The line was almost totally destroyed during the country's 16 years of civil war and has not been functioning since the 1986 destruction of the Dona Ana Bridge on the Zambezi river. Once the railway is restored, it will be possible to begin selling the more than 150,000-200,000 tons (US$2.25 million) of coal that have been lying at the mines.

Further, the infrastructure of transportation of hinterland of Beira Port is to be completed in future by many projects, such as building the Chilund Bridge by Japanese Aid.

Therefore, the demand of cargo volume of Beira Port is forecast to increase significantly in future.

1.6.3 Development Plan for Beira Corridor

The 10-year Development Plan of Beira Port Transport System (BPTS) by Southern Africa Transport and Communications Commission (SATCC) was prepared as a guideline to develop the Beira Corridor. The plan covers all transport and telecommunication links in the hinterland of Beira Port, this includes the central provinces of the Mozambique (Sofala, Manica and Tete Province), Southern Malawi and Northern and North-eastern Zimbabwe as well as Zambia.

The development objectives of BPTS as stated in this plan were to:

- To provide a set of alternative and direct transport routes for landlocked countries,
- To generate foreign currency for the Mozambique,
- To improve the standard of living for the people in Beira.

The Beira Corridor Authority (BCA) was established in 1985 to carry out the planning, implementation and supervision of the BPTS programs, based on Ministerial Decree published in the Government Gazette on January 1, 1986. At the end of June 1996, BCA terminated its activities and CFM-C took over the full responsibility for the operation and maintenance of the transport infrastructure. At the termination of the 10-year development program, comprising close to 80 project elements at a total cost of more than 400 million US$, the Beira Corridor had been reestablished and modernized to serve the central region of the Mozambique, as well as Zimbabwe and other hinterland landlocked countries.

The 10-year Development Plan was largely based on a series of port, railway, road and infrastructure projects as well as technical assistance, some of which were implemented and some of which were not. The individual projects selected for implementation were all indispensable for the development of the Beira Corridor. The key elements were: deepening of the Access Channel, renovation of the Multipurpose and Container Terminal, construction of the New Oil Terminal, rehabilitation of the Beira-Machipanda Railway and the Beira-Machipanda Road and improvement of public utilities and infrastructure in Beira. Projects which were not implemented were improvements of the Sena Railway and related terminals.

The BPTS projects carried out in the period from 1987 to 1996 are tabulated in Tables 1.6.3-1 and 1.6.3-2.

Table 1.6.3-1 Beira Port Transport System Project Carried out during 1987-1996

Code No.	Project Title
Rail	
R-OP-1	Motive Power, Rolling Stock and Operation Plan for CFM-C (Study)
R-CE-1	Rehabilitation of the Beira-Machipanda Railway Line
R-CE-4(I)	Rehabilitation of the Sena Railway Line (Phase I)
R-CE-7	Track Maintenance Equipment
R-ME-1(C)	Rehabilitation of Wagons
R-ME-2(A)	Rehabilitation of Older Locomotives
R-ME-2(B1)	Acquisition of 5 Mainline Locomotives (with financing from Japan)
R-ME-2(B2)	Acquisition of 10 Mainline Locomotives (with financing from Canada)
R-ME-2(C)	Acquisition of 6 Shunting Locomotives
R-ME-4(I+II)	Rehabilitation of Diesel Locomotive Workshop
R-ME-7	Rescue Crane
R-ME-11	Supply of Ballast Wagons for CFM-C
R-ST-1	Emergency Repair, Railway Telecomm., Beira-Machipanda
Road	
RD-CE-1(A1)	Emergency Rehabilitation of Beira-Machipanda Road, Sofala Province
RD-CE-1(A2)	Emergency Rehabilitation of Beira-Machipanda Road, Manica Province
RD-CE-1(B)	Reinforcement of Road Sections
RD-CE-1(C)	Reconstruction Road Sections
RD-CE-1(D)	(Study for) General Road Reconstruction
Software	
TA-C-1/2	Technical Assistance to Central Services + Training
TA-P-1(A)	Technical Assistance to Beira Port (1987-1990)
TA-P-1(B)	Technical Assistance to Temporary Container Terminal (1989-1992)
TA-P-2(A1)	Technical Assistance to Beira Port (2nd Contract)
TA-P-2(A2)	Technical Assistance to Beira Port (3rd Contract)
TA-P-2(B)	Technical Assistance to Multipurpose and Container Terminal (1993-1995)
TA-P-3	Technical Assistance to Port Training
TA-P-4	Technical Assistance to Tugboat Operation
TA-P-5	Pilot Services and Training Pilot
TA-P-6	Technical Assistance to Oil Terminal Operation
TA-R-1(A)	(exist) Technical Assistance to Railway
TA-R-1(B)/-2	(exist) Technical Assistance to Railway Operation + Training
TA-R-3	Technical Assistance to Rehabilitation of Wagons
TA-R-5	Technical Assistance to Track Maintenance
MS-G-1	Incentive Scheme (Study)
MS-G-2	Private Sector Development (Study)
MS-G-3	Implementation of Management Information System

Source: Final Progress Report, Beira Corridor Authority

Table 1.6.3-2 Beira Port Transport System Project Carried out during 1987-1996

Code No.	Project Title
General	
PR-M-1(A)	Organization and Manpower Development Plan (Study)
PR-M-1(B)	Financial and Tariffs Development Plan (Study)
PR-M-1(C)	Management Information System (Study)
PR-M-2(B)	(Support to Workers:) Workers' Transport
PR-M-2(C)	(Support to Workers:) Workers' Housing
PR-M-3	Beira Town Study
PR-M-4(I)	Technical Assistance and Logistical Support to BCA (mid87-mid90)
PR-M-4(II)	Technical Assistance and Logistical Support to BCA (mid90-mid93)
PR-M-4(III)	Technical Assistance and Logistical Support to BCA (Oct93-mid96)
PR-M-5(H)	Housing Complex for Expatriate Personnel (Macti)
PR-M-5(E)	Emergency Power Supply for Beira Town
PR-M-5(T)	Emergency Procurement Fund for Transports Publicos Urbanos
PR-M-6	Training Facilities
PR-M-10	Housing for Technical Assistance Personnel
Port	
P-A-1	Channel Dredging
P-A-2(I+II)	Navigation Aids
P-CE-1(A)	Reconstruction of Berth 2-5
P-CE-1(B)	Construction of Maintenance Building
P-CE-1(C)	Construction of Transit Shed
P-CE-1(D)	Rehabilitation of Port Administration Facilities
P-CE-2	New Oil Terminal
P-CE-10	Service Port Facilities
P-CE-11	Port Roads (North Access Road)
P-CE-13	Port Traffic Control and Communication Center
P-CE-14	Power Supply for Beira Port
P-CE-15	Fire Fighting System
P-CE-15(b)	Rehabilitation of Fire Fighting System
P-ST-1	Telecommunications Network, Beira
P-ME-1(I)	Crash Repair Program for Cargo Handling Equipment
P-ME-1(II)	New Container Handling Equipment for Temporary Container Terminal
P-ME-1(III)	Container Gantry Crane for Multipurpose and Container Terminal
P-ME-1(IV)	Container Handling Equipment for New Container Terminal
P-ME-2	Tugs and Pilot Boats for Beira Port
P-ME-3	Equipment for Handling of Bulk Cargo
P-ME-4	Deep-sea Pilot Boat

Source: Final Progress Report, Beira Corridor Authority

1.6.4 Development Plan for Beira Port

According to the final progress report of the Beira Corridor Authority, the major port project elements under the BPTS Projects carried out during 1987-1996 are as followings. Recently, the projects of a sugar and cereal facility and a wooden chip facility of 500,000 tons per annum are underway at the north end of the port area.

(1) Channel Dredging (P-A-1)

1) Objectives

To deepen and widen the entrance channel to Beira Port so as to enable ships of PANAMAX size, third generation RO-RO vessels and up to 50,000 DWT product tankers to enter the harbor without major tidal problems.

2) Description

First Stage: Dredging from a depth of CDL -7.0 m and widening to a minimum bottom width of 120 m: completion before middle of September 1989.

Second Stage: Dredging depth varying from CDL -8.0 m to CDL -9.2 m and widening to a minimum width of 135 m.

(2) Navigation Aids (P-A-2)

1) Objectives

To increase safety of navigation through restoring lights and buoys, improve intensity and range of navigational aids as well as providing workshop facilities and training for repair and maintenance staff.

2) Description

Phase I: Rehabilitation of and acquisition of equipment for repair workshop for navigation aids. Acquisition of 17 new buoys.

Phase II: Rehabilitation of Macuti Lighthouse, installation of radar beacon in Macuti Lighthouse and acquisition of land-fall-buoy with radar beacon, to be positioned at the deep-sea position 20-00 S/35-244E; approximately 30 nautical miles from the coast.

(3) Multipurpose and Container Handling Terminal (P-CE-1)

- Reconstruction of Quay 2 to 5.
- Construction of Maintenance Building.
- Construction of Transit Shed.
- Rehabilitation of Administration Facilities.

(4) Reconstruction of Berths 2-5 (P-CE-1(A))

1) Description

- Demolition of Quays 2 to 5 (approximately 645 m by 45 m).
- Demolition of seven sheds, the police station and sundry minor structures.
- Construction of new quay area which consists of a substructure of 1,075 concrete piles of 0.8 m and 1.0 m diameter with a superstructure of in-situ cast and precast concrete.
- Construction of a new terminal area behind the new quay wall.
- Railway work, access road work, drainage and electrical installation.

(5) New Oil Terminal (P-CE-2)

1) Objectives

To reduce the shipping cost for oil products by the increment of the size of oil product tankers through the increase of accommodation capacity up to 50,000 DWT.

2) Description

Construction of a new marine facility one km upstream (north) of the present oil terminal of Quay 11. The works are intended to serve as an oil terminal for the unloading oil tankers of 500 - 50,000 DWT and the loading oil tankers of 500 - 2,500 DWT.

a) A tanker jetty consisting of:

i) A platform head (dimensions 50 x 15.2 m) supported on three sand-filled steel sheet pile cells of 14 m diameter with connecting arches.

ii) A trestle bridge (dimension 215 m x 11 m) connecting the platform to a shore, supported by steel piles.

iii) Two main breasting dolphins and four mooring dolphins (for the tankers' mooring lines), each founded on a 14 m diameter steel sheet pile cell.

iv) Six cat-walks (truss type) for access to the dolphins as required for handling of mooring lines.

b) An earth filled causeway with two lane access road, including a pile supported abutment which serves as transition between the causeway and the jetty.

c) An earth filled one lane service road, running along the pipe-way, providing access to the pipe-way for maintenance and inspection.

d) An earth filled parking and service area, to where the engineer's office shall be relocated to serve as a future administration building.

e) A pile supported pipe-way, connecting the jetty with the existing tank farm in the existing port area.

f) Four pipelines (12"fuel, 16"diesel, 16" jet oil and 16" petrol and gas) will initially connect the platform with the existing tank farm.

g) Dredging of the berth basin along the terminal to a depth of CD -12.45 m, and the approach to the basin to a depth of CD -8.0 m.

h) Loading/unloading equipment, consisting of three 10" hydraulically operated loading arms and hoses.

i) Stripping system, slop oil system, freshwater and fire fighting system.

(6) Equipment for Container Handling (P-ME-1)

- Crash repair program for existing cargo handling equipment.
- New equipment for the Temporary Container Terminal
- Container cranes for the New Multipurpose Container Terminal
- Other equipment for the New Multipurpose Container Terminal

(7) Tug and Pilot Boat for Beira Port (P-ME-2)

1) Objectives

To provide Beira Port with modern service vessels in order to enable the harbor to cope with the expected increase in the number and size of calling ships.

2) Description

Procurement of two 30 ton harbor tugs, two 12.5 m pilot boats and two 9.1 m work & line boats. The regular functioning of the vessels is ensured through technical assistance and supply of spare parts.

(8) Deep-Sea Pilot Boat / Modification of Tug Boats (P-ME-4)

1) Objectives

To provide the maritime division of CFM-C with a pilot boat, capable of negotiating the waves at the entrance of the Access Channel to Beira Port. The project further aims to insure adequate navigational assistance during night time, made possible by the Capital Dredging Project (P-A-1) and the Navigational Aids Project (P-A-2).

2) Description

Acquisition of one 13.5 m deep-sea going pilot boat and modification of superstructure of the two tug boats by the names of Buzi and Pungue delivered under the Project P-ME-2.

CHAPTER 2

PRESENT SITUATION OF BEIRA AND OTHER PORTS

Chapter 2 Present Situation of Beira and Other Ports

2.1 Port Facilities

2.1.1 General

The history of Beira Port dates back to 1887 when a military post was founded at the estuary of the Pungue River. The first section of the existing wharf was built immediately after the First World War, and the major extensions took place after 1930 with the construction of Quays 2 to 5. In 1953, the existing coal terminal was constructed and the port was expanded upstream and terminated with the construction of Quay 11 to serve Ro-Ro vessels and oil tankers in 1981.

The 10-year development plan of the Beira Port Transport System (BPTS) was prepared with the assistance of SATCC during 1985, covering all transport and telecommunication links in the hinterland of Beira Port. The Beira Corridor Authority (BCA) was established in July 1987 to implement the programs included in the 10-year development plan and was closed in June 1996. Under the control of BCA, infrastructure rehabilitation and re-equipment of the Port as well as technical assistance and training required for the implementation and operation of the port facilities were carried out. The renovation of Quays 2 to 5 into a Multipurpose and Container Terminal and the construction of a New Oil Terminal at Quay 12 were the projects installed according to the 10-year development program.

The outline of the existing port facilities is shown in Figure 2.1.1-1.

2.1.2 Wharf

Accommodation of oceangoing ships is provided by a continuous quay with 10 berths of 1,632 m in total length and a new Oil Terminal with 260 m in length located one km upstream of the old oil terminal at Quay 11. The southern end of the port contains an additional berth of Quay 1 used as a fishing harbor and Chiveve Dock for berthing of the service boats of the port. A dry dock is also located in the south side in Chiveve Dock.

The Multipurpose and Container Terminal of 645.90 m in total length of Quays 2 to 5 with two shore gantry cranes was constructed during the period from 1987 through 1992. The date of the provisional hand-over was March 24, 1992. The construction works at the New Oil Terminal commenced in September 1992. The substantial completion of the works was certified in

September, 1994 and the terminal has been in operation from October, 1994.

The main characteristics of the quays are given in Table 2.1.2-1. And the cross sections of each quay are shown in Figures 2.1.2-1 to 2.1.2-7. The facility layout of Chiveve Dock is illustrated in Figure 2.1.2-8 and the cross sections of Service Boat Jetty and other quays are shown in Figures 2.1.2-9 to 2.1.2-11.

The seawall located west side of Capitania was damaged by toe scouring and was newly constructed as shown in Figure 2.1.2-12. The former type of the seawall along the Pungue River as shown in Figure 2.1.2-13 extends from the south corner of the new seawall which remains with no damage.

Table 2.1.2-1 Main Characteristic of Terminals of Beira Port

Terminal Wharf	Function	Length	Design Depth	Year in Use
Multipurpose and Container Terminal		645.90 m		
Quay 2	Multipurpose and Container	161.50 m	12.0 m	1992
Quay 3	Multipurpose and Container	161.50 m	12.0 m	1992
Quay 4	Multipurpose and Container	161.45 m	12.0 m	1992
Quay 5	Multipurpose and Container	161.45 m	12.0 m	1992
General Cargo Terminal		858.00 m		
Quay 6	General Cargo	170.00 m	10.0 m	1964
Quay 7	General Cargo	165.50 m	10.0 m	1975
Quay 8	Coal/Ore	187.90 m	10.0 m	1953
Quay 9	General Cargo	167.30 m	10.0 m	1967
Quay 10	General Cargo and Ro-Ro	167.30 m	10.0 m	1967
Oil Terminal		388.55 m		
Quay 11	Liquid Bulk and Ro-Ro	128.55 m	10.0 m	1981
Quay 12	Liquid Bulk	260 m	13.5 m	1994
	Total Length	1,892.45 m		
Others				
Chiveve Dock	Service Boat Use	448.00 m	4.5 m	
Quay 1	Fishing Harbor	183.00 m	6.0 m	

Source: Beira Port Transport System, 10-year Development Plan, SATCC

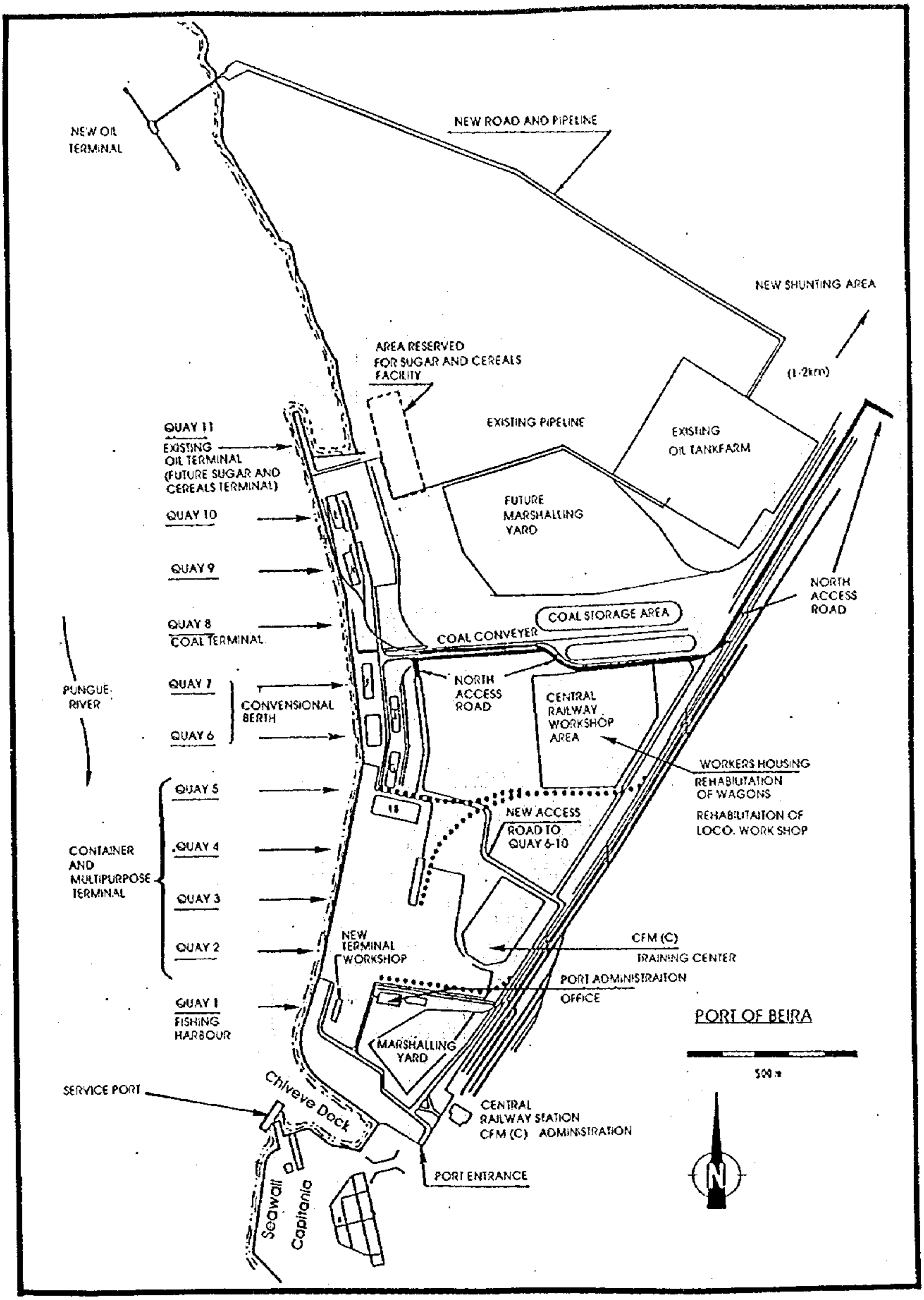


Figure.2.1.1-1 Outline of Existing Port Facility of Beira Port

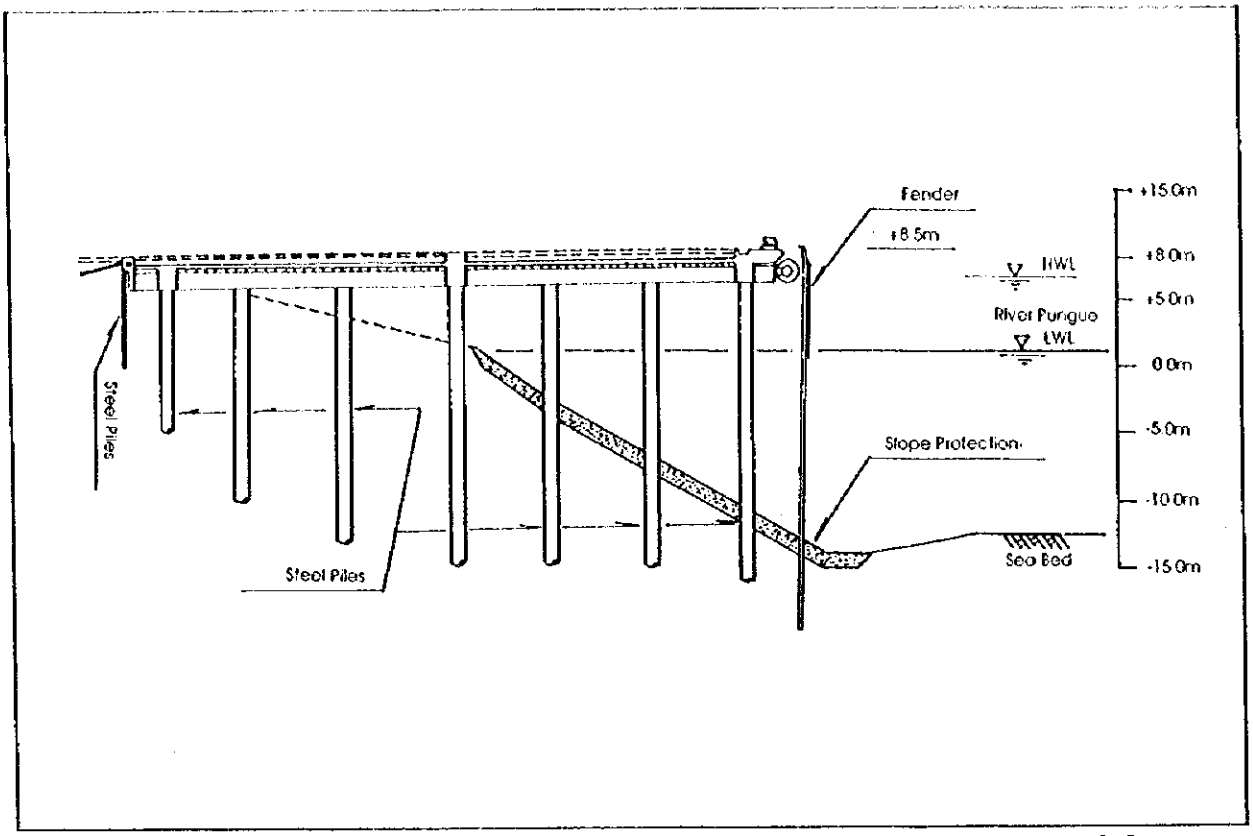


Figure 2.1.2-1 Cross Section of Multipurpose and Container Terminal Quay (Quay 2-5)

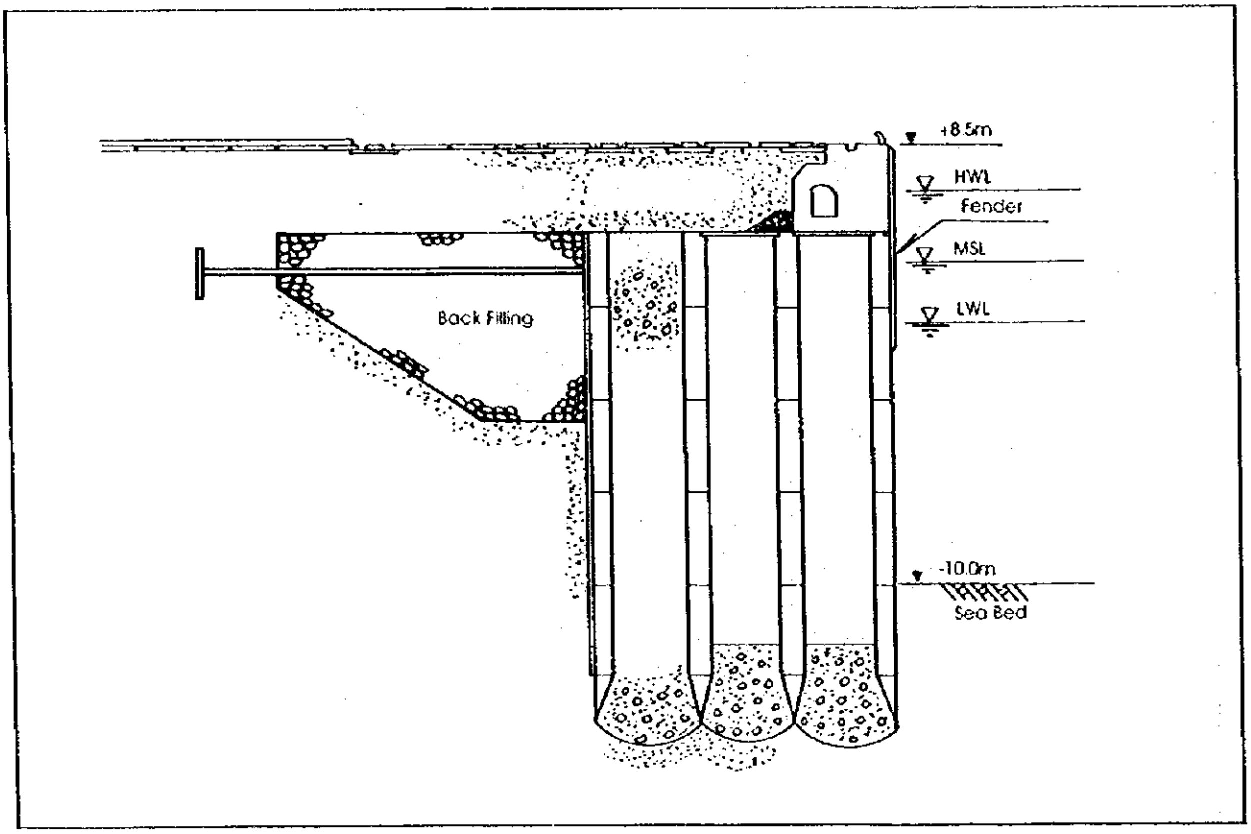


Figure 2.1.2-2 Cross Section of General Cargo Terminal Quay (Quay 6,7)

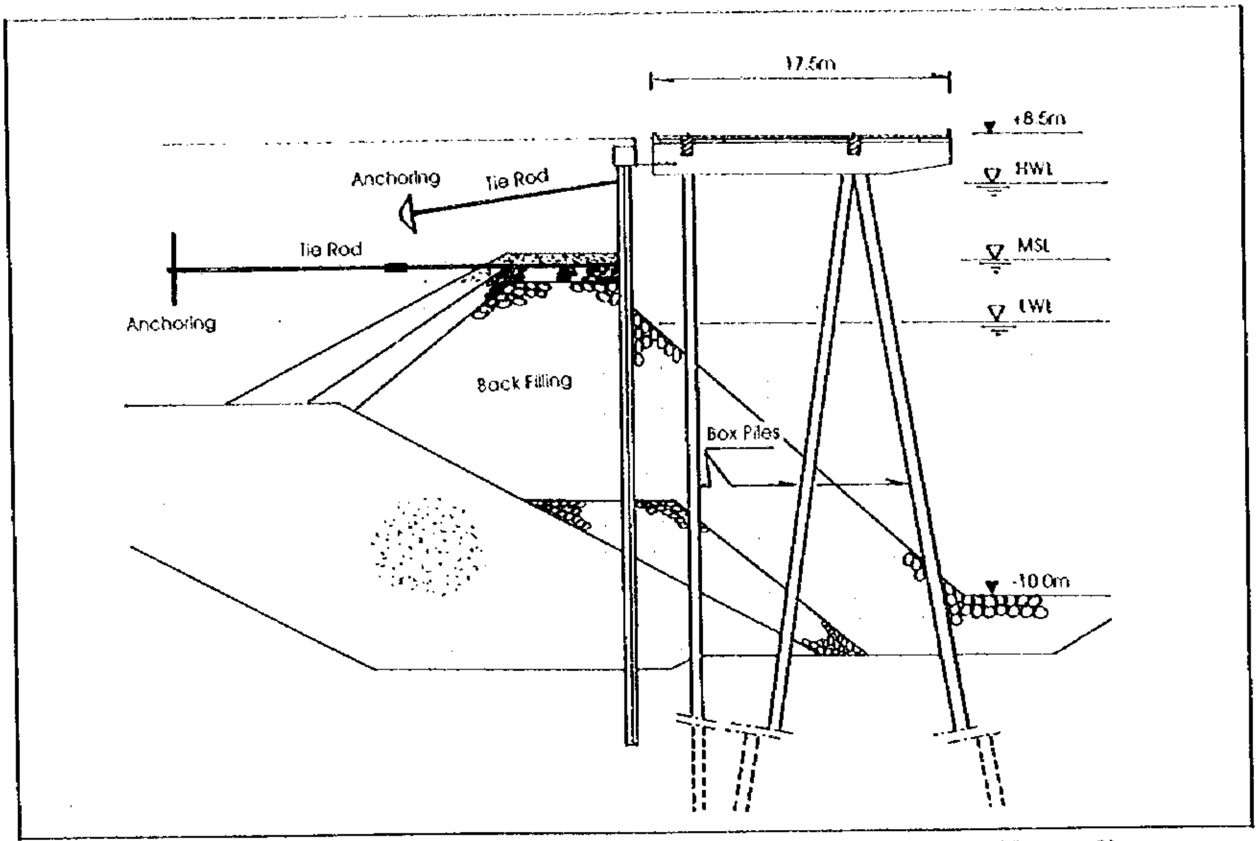


Figure 2.1.2-3 Cross Section of Coal/Ore Terminal Quay (Quay 8)

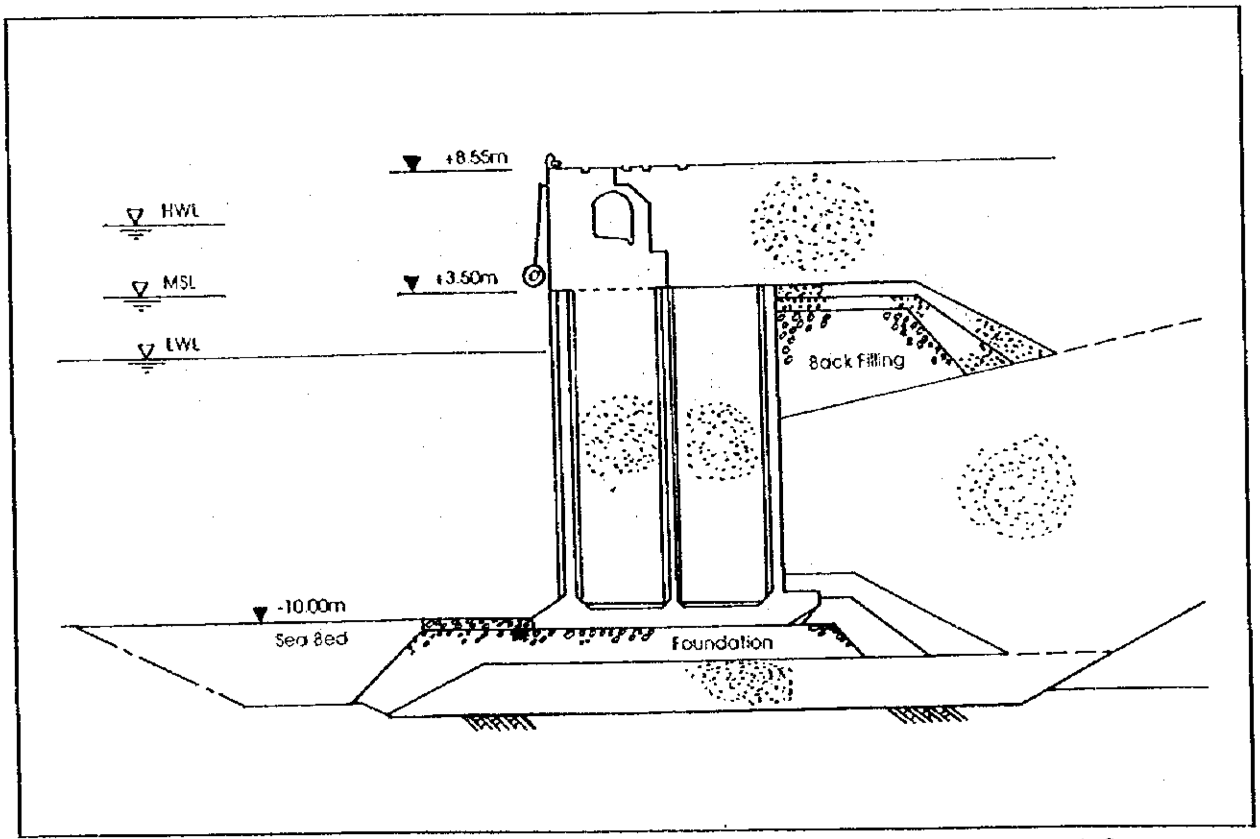


Figure 2.1.2-4 Cross Section of General Cargo and Ro-Ro Terminal Quay (Quay 9,10)

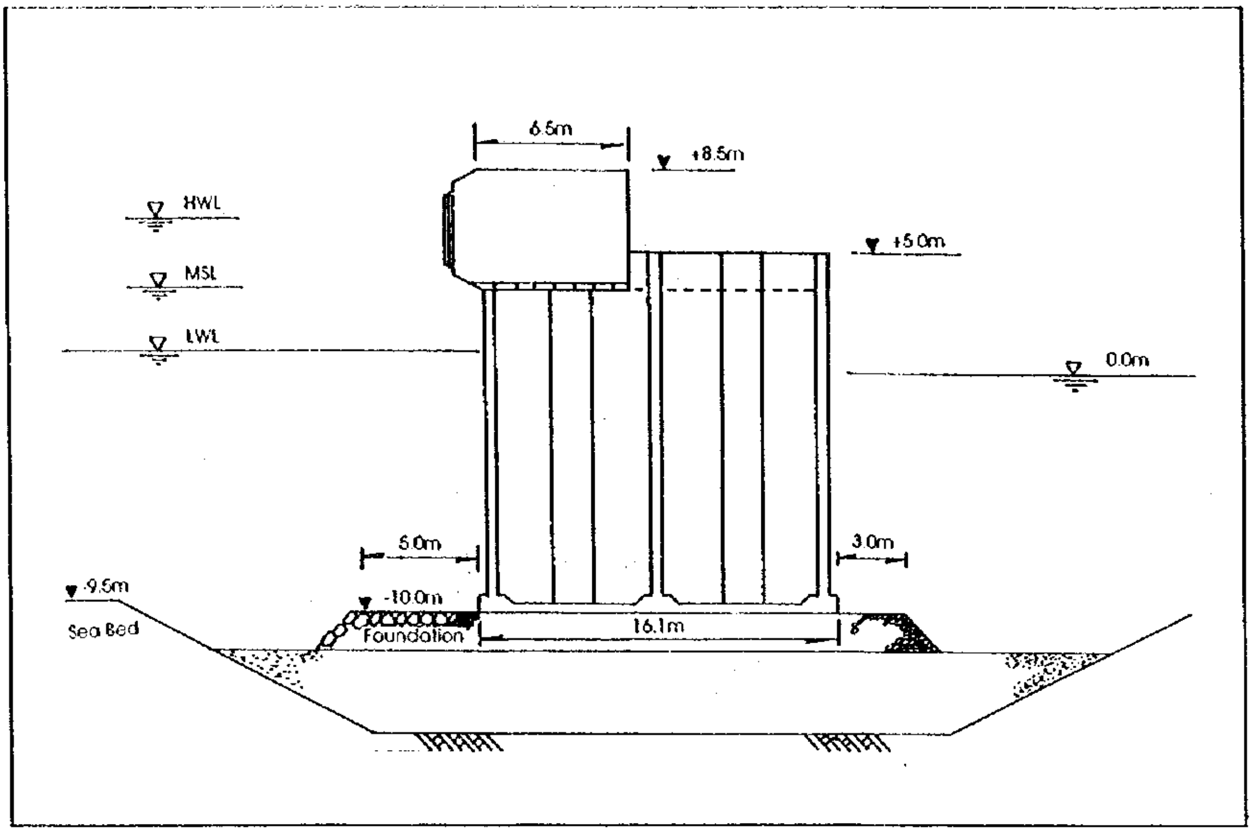


Figure 2.1.2-5 Cross Section of Old Oil Terminal Quay (Quay 11)

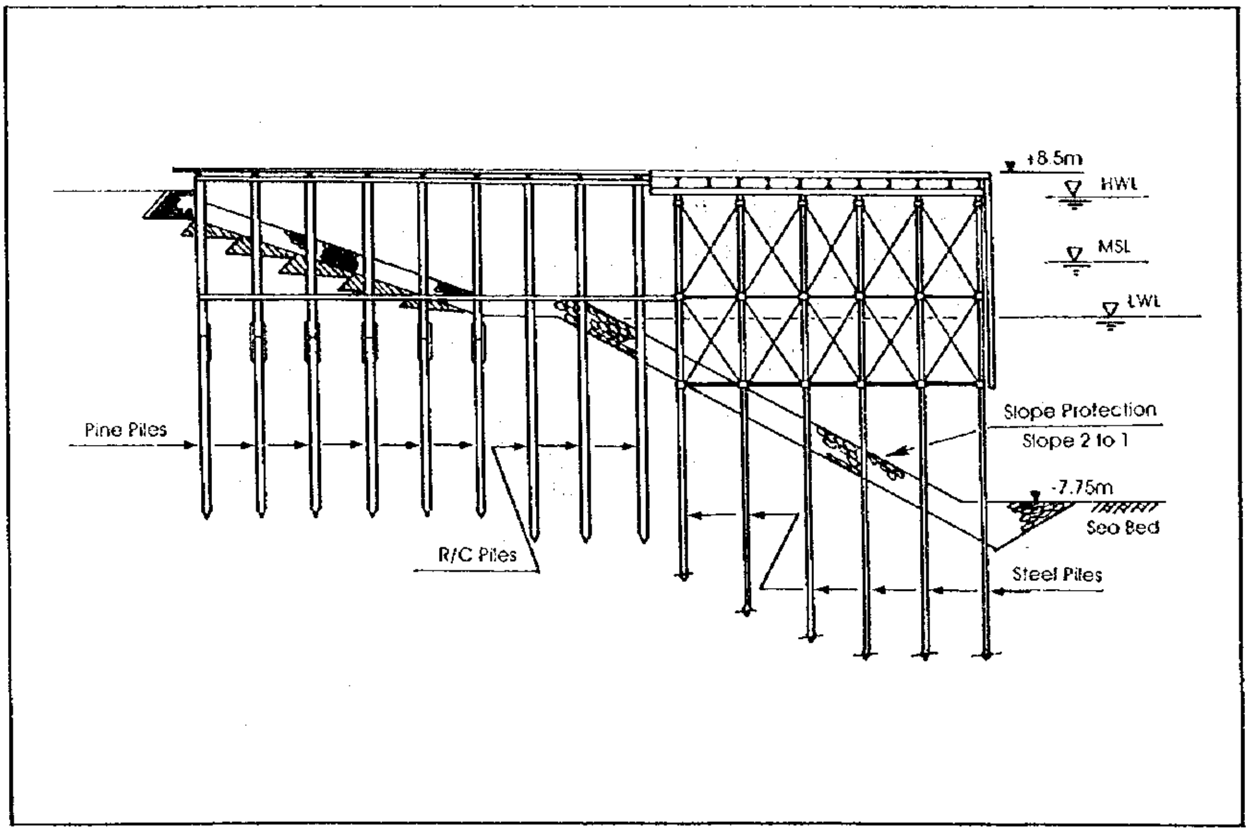


Figure 2.1.2-6 Cross Section of Fishing Harbor Quay (Quay 1)

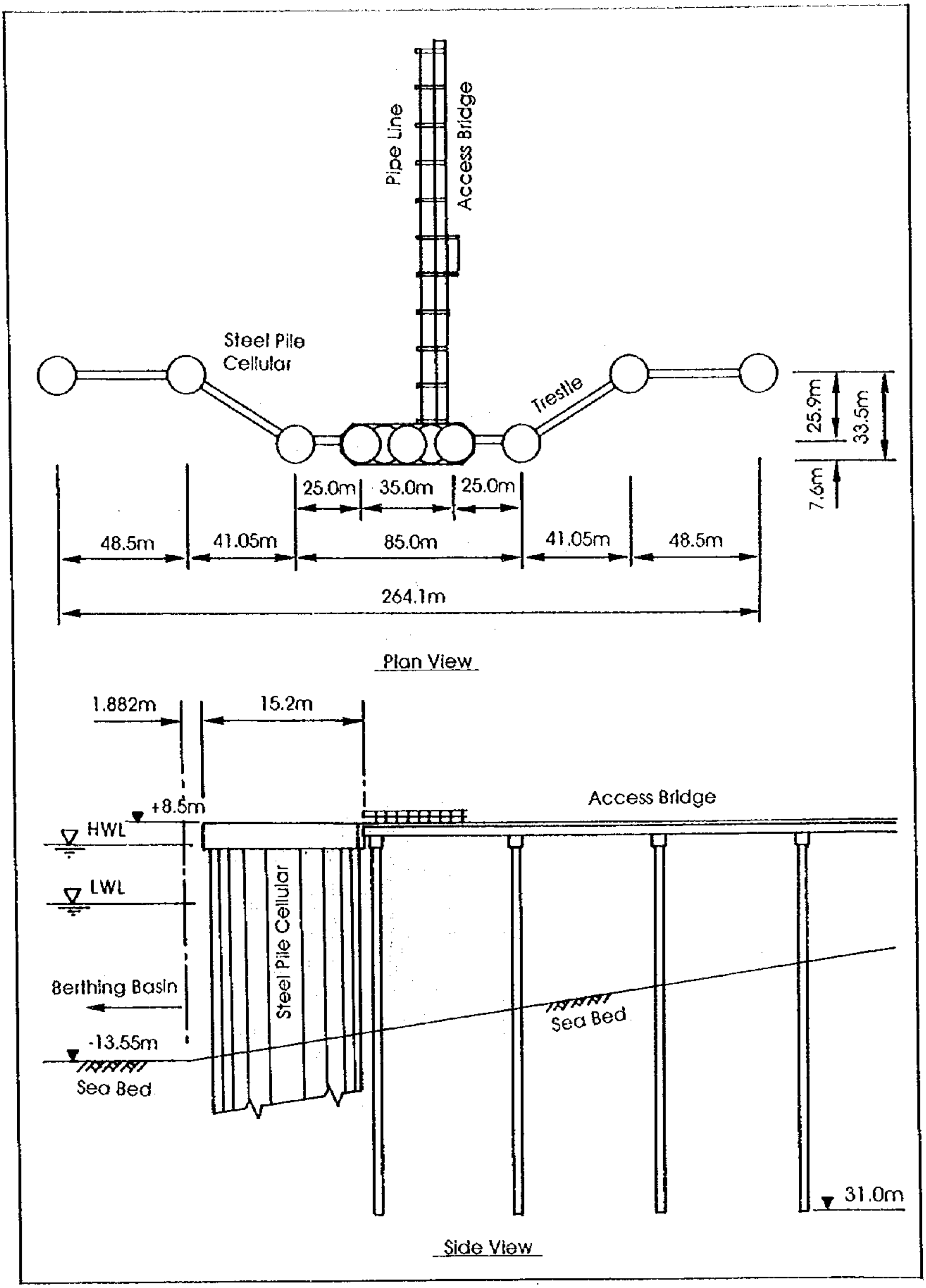


Figure 2.1.2-7 Plan and Cross Section of New Oil Terminal Quay (Quay 12)

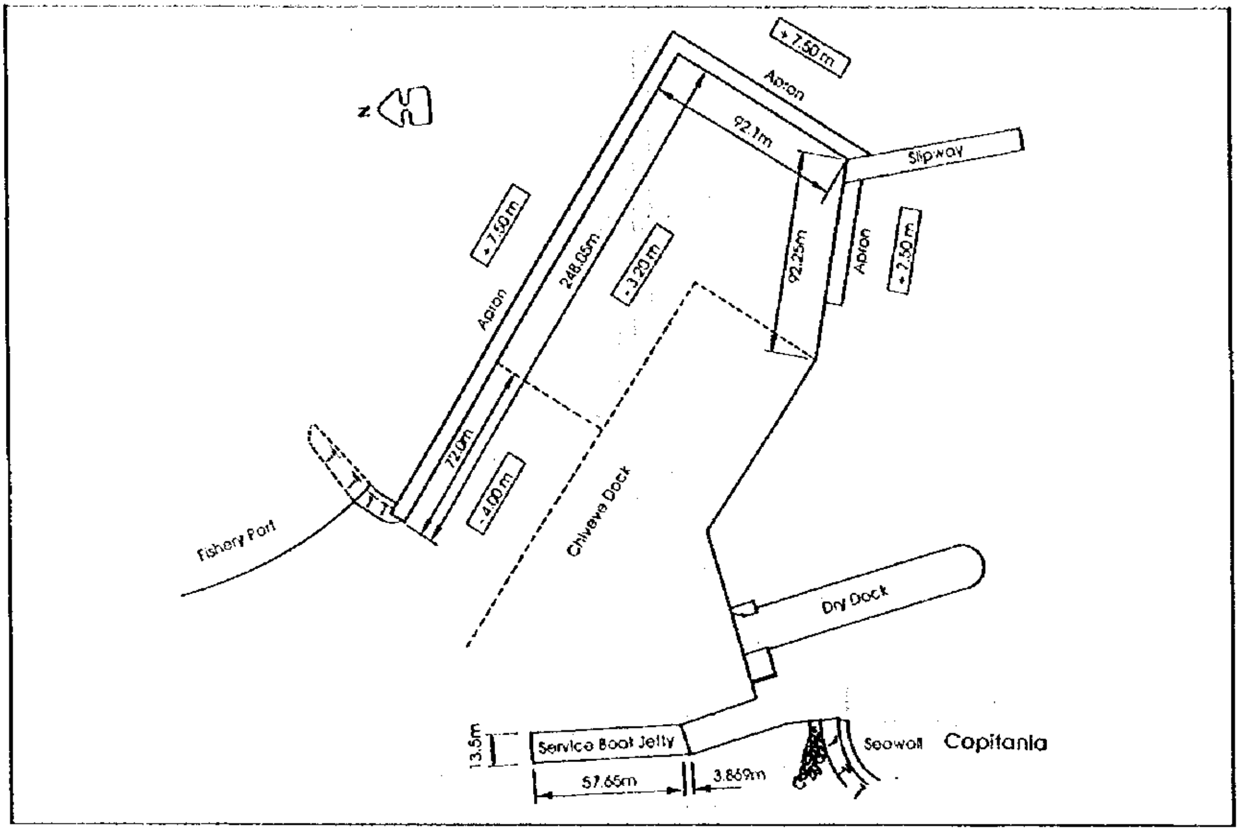


Figure 2.1.2-8 Layout of Chiveve Dock

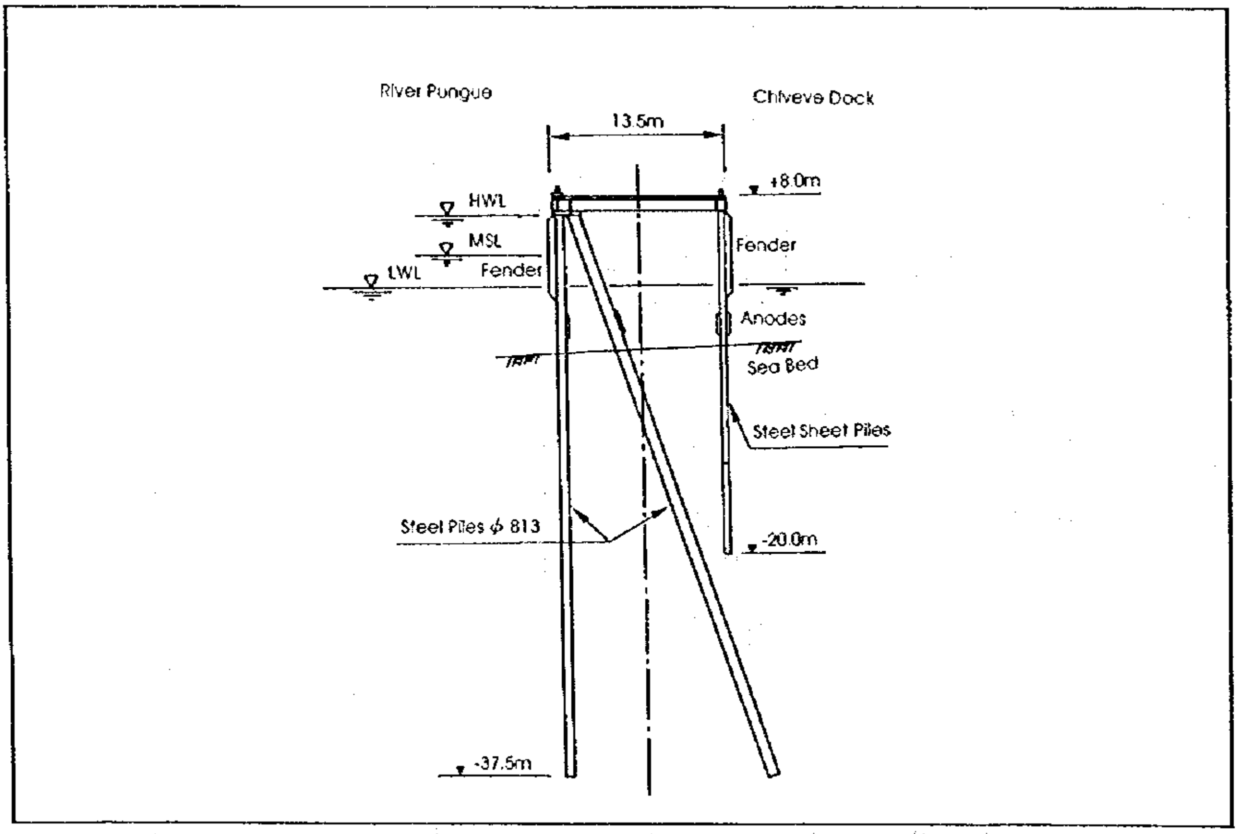


Figure 2.1.2-9 Cross Section of Service Boat Quay (Chiveve Dock)

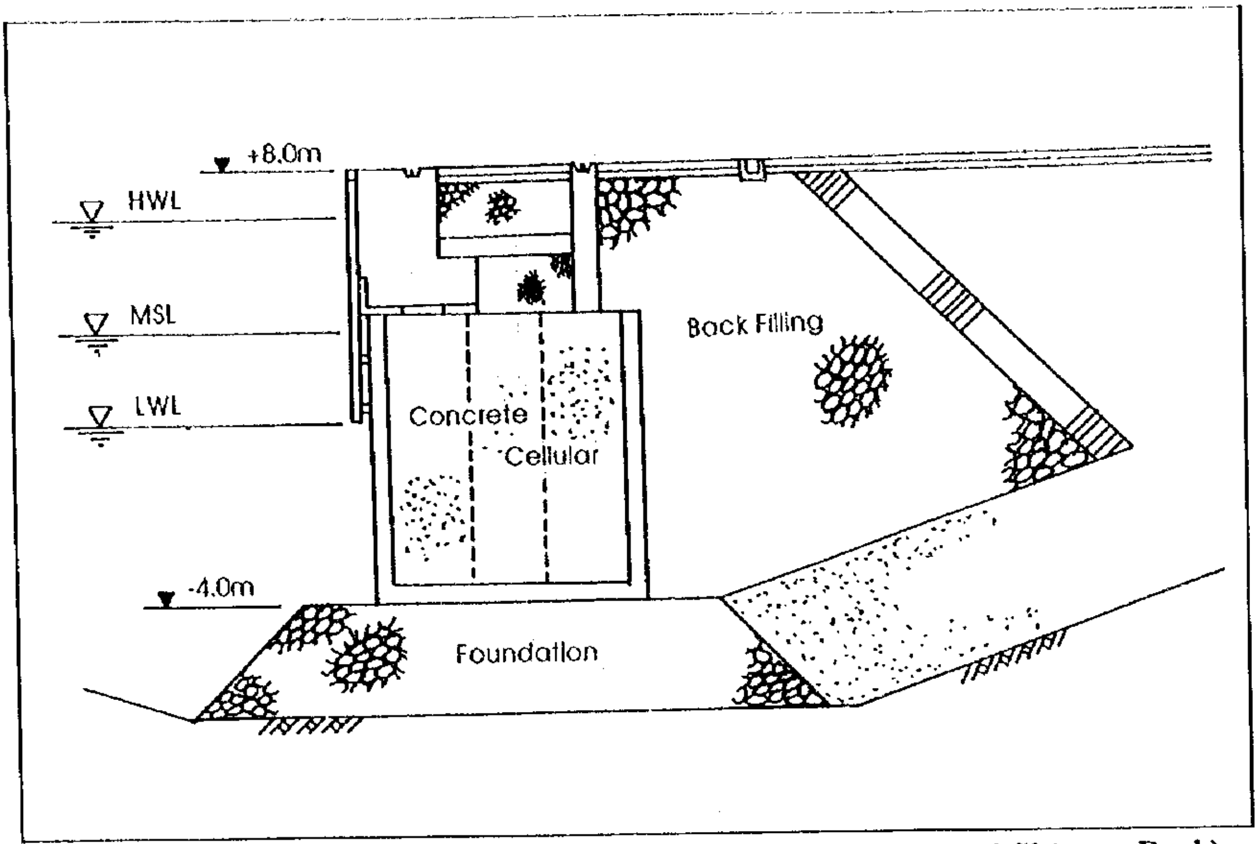


Figure 2.1.2-10 Cross Section of -4.0m Quay (North Side of Chiveve Dock)

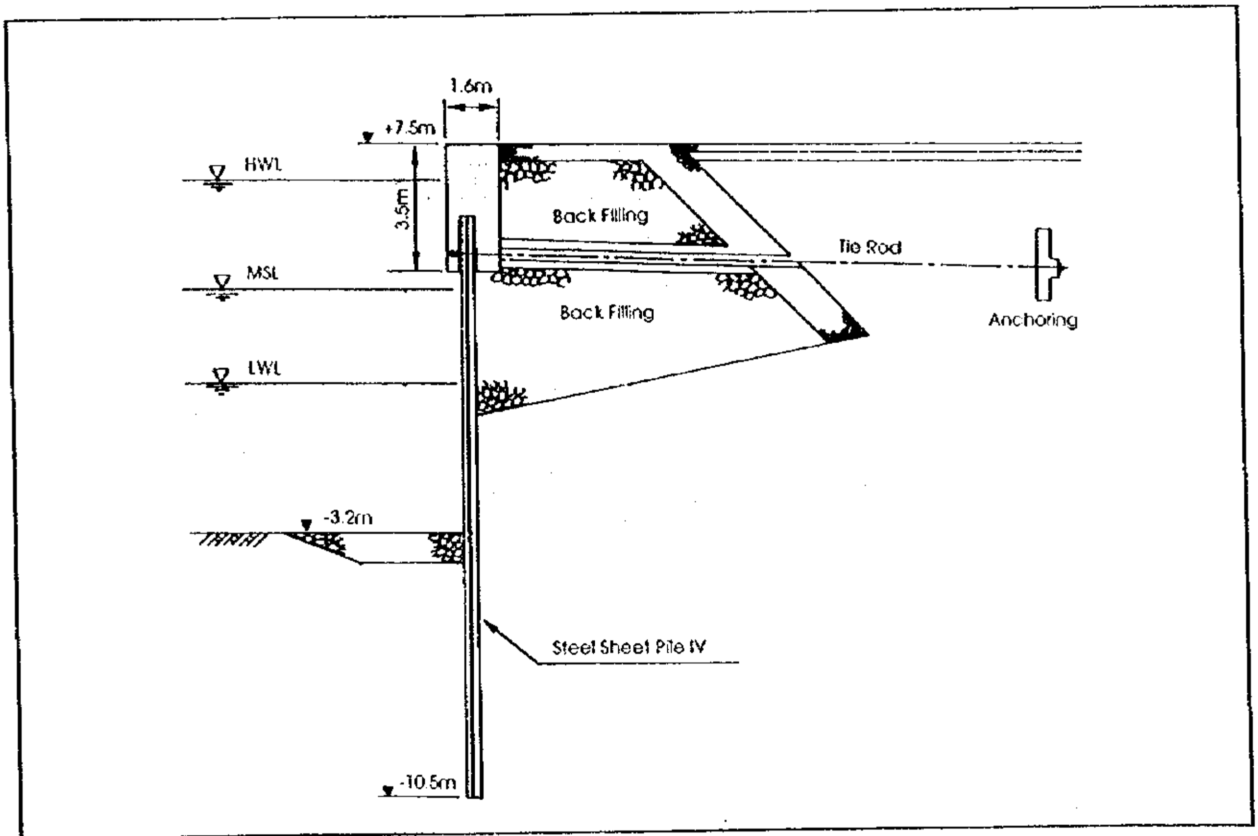


Figure 2.1.2-11 Cross Section of -3.2m Quay (South Side of Chiveve Dock)

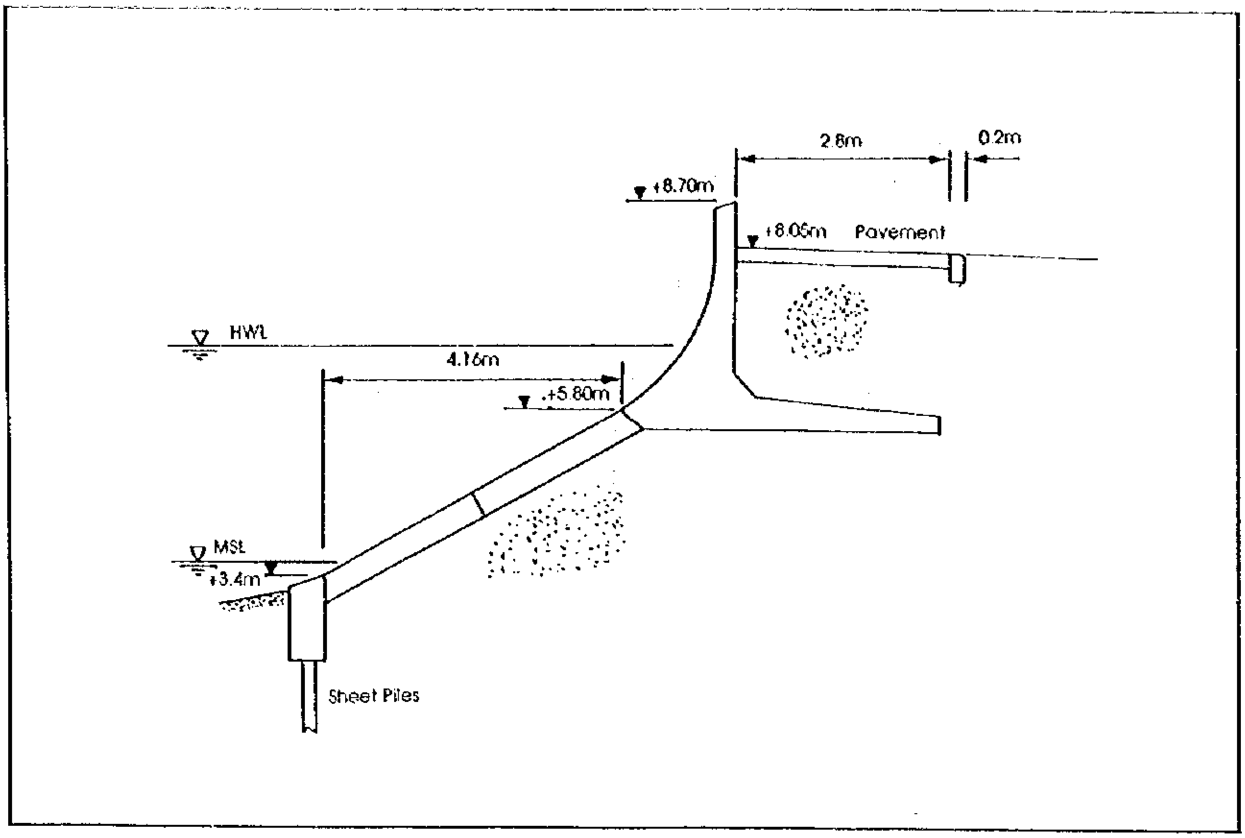


Figure 2.1.2-12 Cross Section of New Seawall along Pungue River (West Side of Capitania)

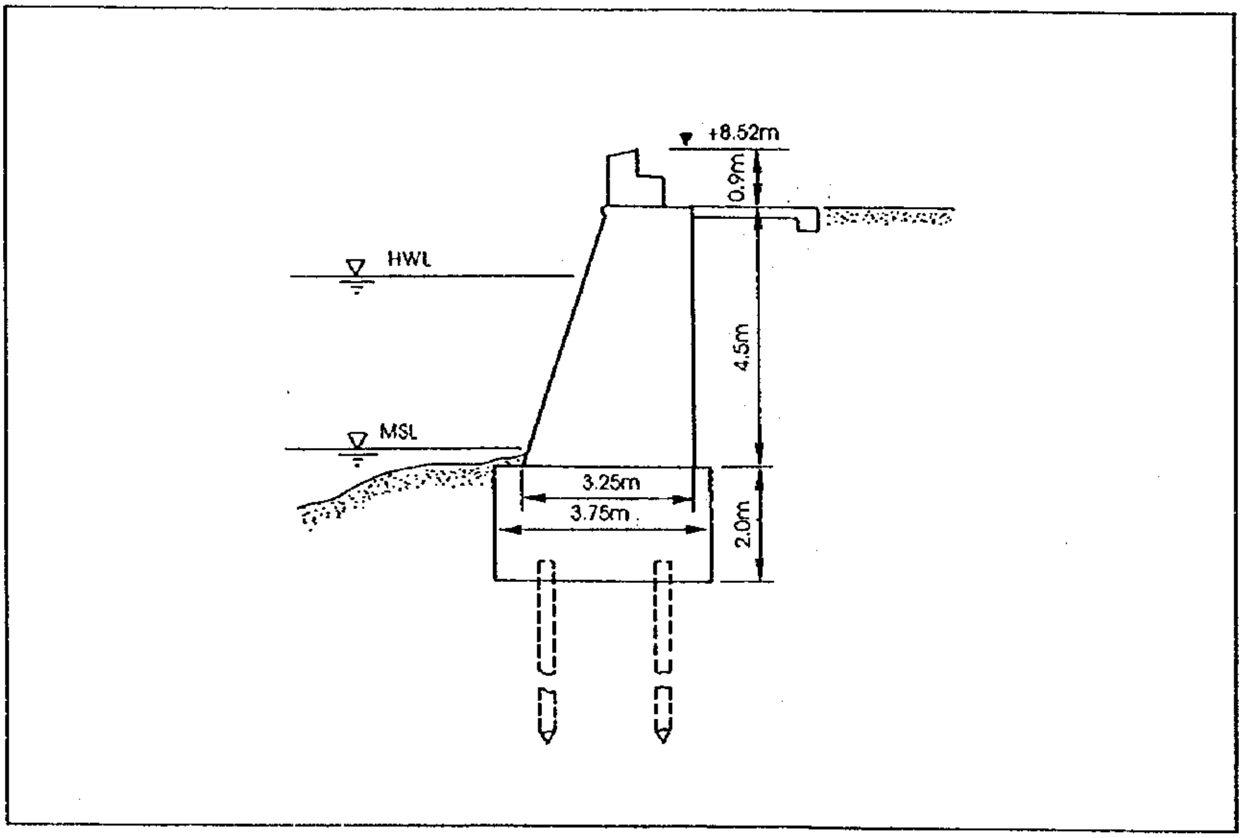


Figure 2.1.2-13 Cross Section of Old Seawall along Pungue River (South Side of Capitania)

2.1.3 On-land Facilities and Cargo Handling Equipment

On-land facilities and cargo handling equipment of each terminal are listed as follows. The location of the facilities is shown in Figure 2.1.1-1.

(1) Multipurpose and Container Terminal

Container yard:	200,000 m^2 with 144 reefer points.	
Gantry crane:	2 units	
	100,000 TEUs/year	
	40 ton handling capacity with 50 ton capacity hook	
Rail transfer crane:	Rail-mounted type	
	1 unit	
	40 ton handling capacity with 50 ton capacity hook	
Container handling equipment:		
	Forklifts of 42 tons	6 units
	Forklifts of 28 tons	4 units
	Forklifts of 16 tons	2 units
	Tug masters	10 units
	Trailers	10 units
	Terminal chassis	35 units
Warehouse:	11,000 m^2	
	for stripping and stuffing operations of containers with forklifts of 3 tons	

(2) General Cargo Terminal

Covered warehouses:	15,000 m^2	
Transit sheds:	10,000 m^2	
Agent's warehouses:	60,000 m^2	
Handling equipment (available along Quays 6 - 10):		
	Electric cranes from 3 to 20 tons	25 units
	Mobile cranes of 15 tons	2 units
	Forklifts of 3 tons	23 units
	Forklifts of 1.5 tons.	2 units

(3) Coal/Ore Terminal

Yard:	21,000 m^2 paved area
Storage:	Capacity of 150,000 m^3
Conveyor:	One outgoing transport belt
	Production speed of 700 ton/hour
	Discharge rate of railway-wagons of 400 ton/hour

(4) Ro-Ro Terminal

Yard:	21,000 m^2 paved area
Capacity:	3,540 tons/day
	425,000 tons/year.

(5) Oil Terminal

The New Oil Terminal at Quay 12 is situated one km north upstream of the Old Oil Terminal at Quay 11.

1) Old Oil Terminal (Quay 11)

Pipeline system:	Capacity 400 tons / hour
Unloading 12"	4 units
Loading 6"	1 unit
Loading 8"	1 unit

2) New Oil Terminal (Quay 12)

Tanker size:	Unloading of 500 to 50,000 DWT tanker
	Loading of 500 to 2,500 DWT tanker
Pipeline system:	12" pipeline for fuel
	16" pipeline for diesel
	16" pipeline for jet oil
	16" pipeline for petrol
Tank farm:	Tank farm 2.3 km in-land

(6) Cold Storage Facilities

Cool chambers:	15 chambers with 1,100 tons capacity for citrus fruit	
	Temperature 1.5℃ to 4.5℃	
Deep freezer	490 tons capacity	
	Temperature −9℃ to −20℃	
Handling equipment:	Electric forklift	5 units (2 side shift)

(7) Bulk Handling

For handling of tallow and vegetable oils

Mobile bulk handling unit:	200 tons/hour	1 unit
	90 tons/hour	2 units
Bagging unit:	120 tons/hour	2 units

2.1.4 The Access Channel and Turning Basin

At the capital dredging during 1989 and 1990, the Access Channel and the turning basin of Beira Port were constructed as follows. The slope of the channel was designed as 1 : 10.

Table 2.1.4-1 Dimensions of the Access Channel and Turning Basin

Section	Construction Depth(m)	Construction Width(m)
Turning Basins		
E5	5.5	200.
E15	7.5	145.
Channels		
E4	8.00	200
E6	8.00	135
E7	8.00	135
E8	8.00	135
E9	8.80	135 - 250
E10	9.20	250 -155
E11	8.70	155
E12	8.80	140
E13	8.50	140
E14	8.70	160

The coordinates of the center line of the Access Channel are shown in Table 2.1.4-2, of which the alignment is given in Figure 2.1.4-1.

Table 2.1.4-2 Coordinate of Center Line of the Access Channel

(UTM grid)

Point No.	E (m)	N (m)
1	691825.6	7807074.5
2	690688.0	7804286.0
3	690928.0	7802380.0
4	691541.0	7800480.0
5	692485.0	7799135.0
6	698024.0	7801082.0
7	704284.2	7801428.6
8	708055.0	7798966.0

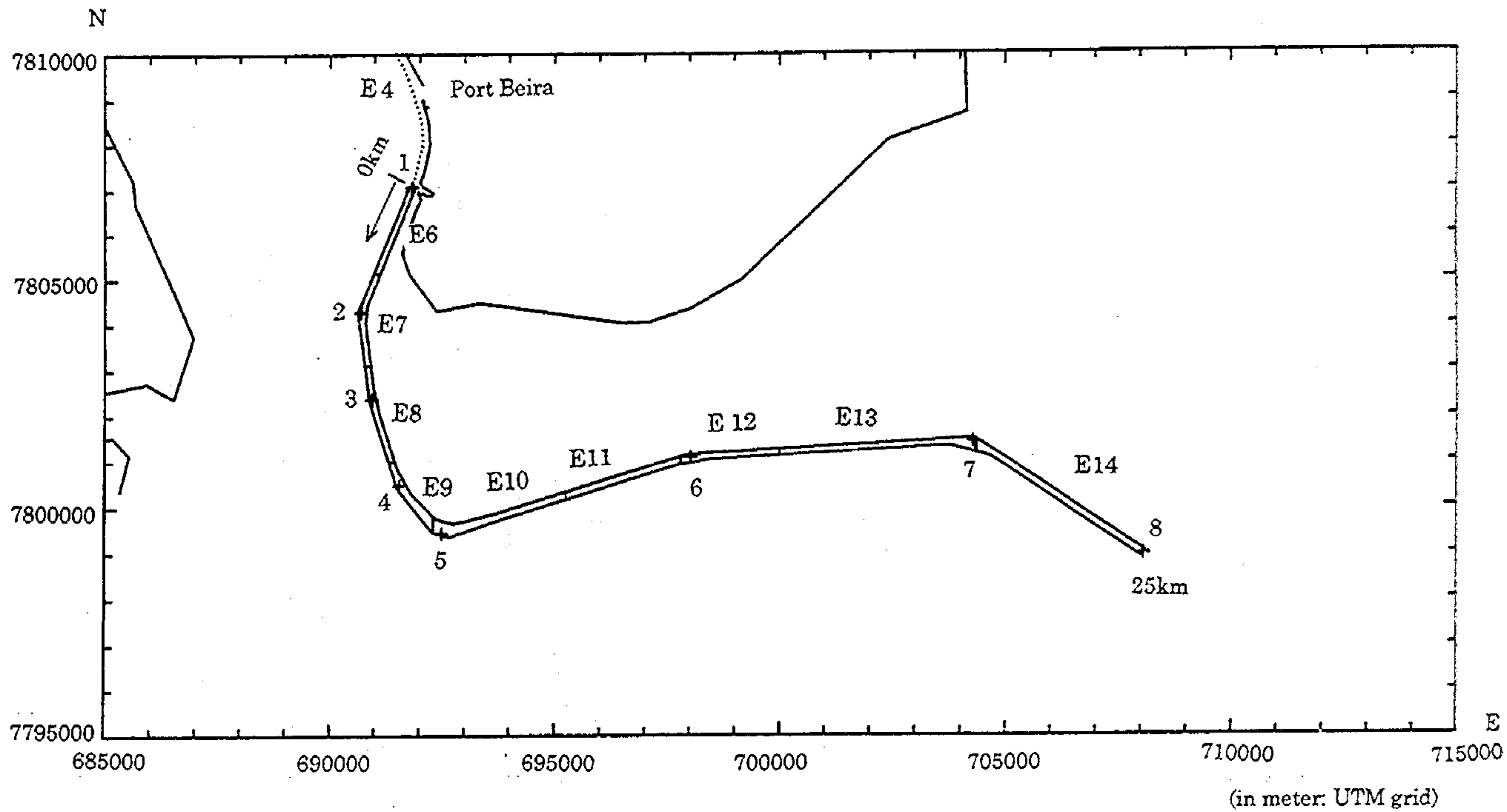


Figure 2.1.4-1 Location of Sections in the Access Channel.

2.1.5 Navigation Aids

Beira Port is located along the left bank at the estuary of the Pungue River, and connected with the open sea through the Macuti Channel. The total length of the Access Channel is about 28 km; E4 is about 3 km and E6 to E14 is about 25 km in Figure 2.1.4-1. Anchorage facilities for deep sea vessels are located near the entrance to the Access Channel and another anchorage for shallow draft vessels is located in Section E7 near the port entrance.

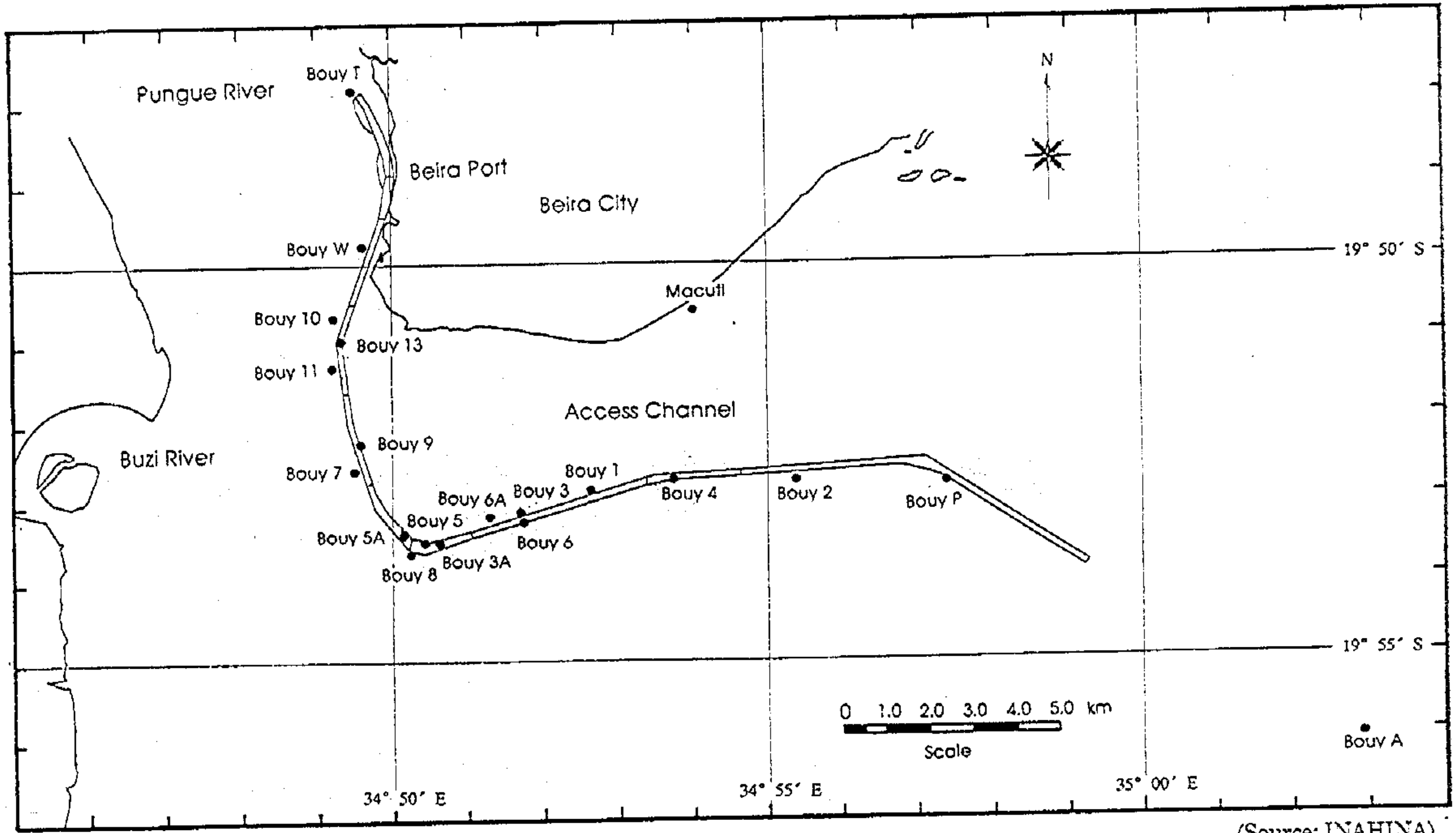
Pilotage is compulsory to enter and leave the Port. The boarding to ships is conducted usually near to Buoy P shown in Figure 2.1.5-1, except during the period of strong winds more than 25 knots. And night navigation is allowed only for ships of less than 7.5 m in draft and less than 140 m in Length Overall.

The location and a description of the navigation aids at Beira Port are shown in Table 2.1.5-1. Most of the buoys are subject to be moved from their original position according to the current bathymetry and the depth of the Access Channel by INAHINA.

Table 2.1.5-1 Location of Navigation Aids of Beira Port

Year: 1997

No.	Name	Latitude (South)	Logitude (East)	Lantern	Altitude (m)	Range (mile)	Height (m)	Description	Remarks
0120	Buoy MA	20°08.855′	35°19.598′	LFlW10s		9		R&W Cylinder	Racon (M)
0124	Buoy A	19°56.038′	35°02.925′	M0(A)W8s		8.5		R&W Cylinder	Racon (C)
0126	Buoy P	19°52.765′	34°57.390′	F1 R 3s		5.5		Red Cylinder	
0127	Buoy 1	19°52.840′	34°52.636′	F1 G 2s		4		Green Cylinder	
0128	Buoy 2	19°52.727′	34°55.386′	F1 (2) 6s		4.5		Red Cylinder	
0129	Buoy 3	19°53.106′	34°51.710′	F1 G 5s		4		Green Cylinder	
0130	Buoy 3A	19°53.496′	34°50.638′	F1 G 3s		4		Green Cylinder	
0131	Buoy 4	19°52.712′	34°53.738′	F1 R 5s		5.5		Red Cylinder	
0134	Buoy 5	19°53.489′	34°50.437′	F1(2)G6s		4		Green Cylinder	
0135	Buoy 5A	19°53.391′	34°50.142′	F1 G 2s				Green Cylinder	
0136	Buoy 6	19°53.226′	34°51.751′	F1 R 3s				Red Cylinder	
0138	Buoy 6A	19°53.158′	34°51.301′	VQ R 0,6s		4		Red Cylinder	
0140	Buoy 7	19°52.580′	34°49.496′	F1G 5s		4		Green Cylinder	
0142	Buoy 8	19°53.640′	34°50.249′	F1 (2) R 6s		5.5		Red Cylinder	
0143	Buoy 9	19°52.243′	34°49.575′	F1 G 2s		4		Green Cylinder	
0144	Buoy 10	19°50.666′	34°49.228′	F1 R 5s		5.5		Red Cylinder	
0145	Buoy 11	19°51.2883	34°49.208′	F1 (2) G 6s		4		Green Cylinder	
0146	Buoy 13	19°50.951′	34°49.332′	F1 G 2s		4		Green Cylinder	
0148	Buoy W	19°49.771′	34°49.616′	F1 R 3s		5.5		Red Cylinder	
0150	Buoy T	19°47.805′	34°49.496′	Spar R				Red Conic Section	Spar Buoy
0157	Macuti	19°50.6′	34°54.0′	F1 W 10s	36	20	28	Tronchonical Tower R&W Stripes	Racon (M)
0163	Timbue	18°50.2′	30°21.1′						
0175	Vilhena	18°05.8′	36°54.8′	F1(2)W10s	33	15			
0116	Chingono	20°37.1′	34°53.2′		11	7	12	White base	



(Source: INAHINA)

Figure 2.1.5-1 List of Navigation Aids of Beira Port

2.1.6 Dredging Fleet and Maintenance Facility

(1) Dredging Fleet

In Beira, EMODRAGA renders dredging services with a dredging fleet comprising one grab dredger, three split type hopper barges, two tug boats and one survey boat. Their characteristics and dimensions of a fleet are outlined below:

1) Grab Dredger

- Lurio

A crane with 40 tons lifting capacity mounted on the pontoon.

Pontoon	24 m x 12 m x 2 m
Gross Tonnage	169 tons
Bucket Capacity	1.5 m^3
Purchase Year	1979
Condition	Good

2) Split Hopper Barge

- BD I

Hull	57 m x 10 m x 3.7 m
Gross Tonnage	703 tons
Hopper Capacity	650 m^3
Purchase Year	1987
Condition	Fair

- BD II

Hull	57 m x 10 m x 3.7 m
Gross Tonnage	703 tons
Hopper Capacity	650 m^3
Purchase Year	1987
Condition	Good

- BD IV

Hull	32 m x 6.5 m x 2.4 m
Gross Tonnage	151 tons
Hopper Capacity	150 m^3
Purchase Year	1979
Condition	Bad

3) Tug Boat

- Chire

Hull	19.2 m x 5.75 m x 2.75 m

Gross Tonnage	112 tons
Engine	340 ps x 2
Purchase Year	1986
Condition	Fair

- Rambe

Hull	12 m x 4.2 m x 1.9 m
Gross Tonnage	16 tons
Engine	275 ps
Purchase Year	1979
Condition	Bad

4) Survey Boat

- Tiky

Hull	9.9 m x 3.39 m x 0.91 m
Gross Tonnage	13 tons
Engine	180 ps x 2
Purchase Year	1977
Condition	Bad

In Maputo, EMODRAGA has a dredging fleet comprising one trailing suction hopper dredger, one backhoe dredger, one split type hopper barge, one tug boat and one general service boat. Their characteristics and dimensions are outlined below:

1) Trailing Suction Hopper Dredger

- Rovuma

Principal Dimensions	77.75 m x 13.4 m x 5.95 m
Draft	5.4 m
Propulsion Engine	1,125 ps x 2
Pump Engine	950 ps x 1
Hopper Capacity	1,538 m^3
Dredging Depth	24.0 m (maximum)
Bottom Door	22
Complement	28 persons (1-shift)
Drag Arm	Single Drag (Starboard Side)
Gross Tonnage	1,745.83 tons
Existing Working Area	Maputo Port
Purchase Year	1962
Condition	Bad

The annual dredging capacity of Rovuma is estimated at 1.5 to 1.8 million m^3 and operated under the following conditions:

Working Cycle	40 - 75 minutes/cycle
Operation Condition	10 hours/day, 5 days/week 2 months for repair and maintenance/year
Maximum Operable Wave Height	1.2 - 1.3 m

She is repaired at ENAMA (Estaleiros Navais de Maputo) in principle and repair cost is usually 200,000 to 300,000 US$/year.

It can be presumed that she is still useful for dredge work at the Port of Maputo but may not be transported to the other ports without reinforcement on hull construction because of her poor seaworthiness and decrepitude.

2) Backhoe Dredger

- Tembe

Hull	35.6 m x 11.4 m x 2.75 m
Engine	720 ps
Bucket Capacity	2.0 m^3
Purchase Year	1983
Condition	Good

3) Split Hopper Barge

- BD III

Hull	32.0 m x 6.5 m x 2.4 m
Hopper Capacity	150 m^3
Purchase Year	1979
Condition	Bad

4) Tug/Survey Boat

- Saskia

Hull	12.65 m x 3.36 m x 1.5 m
Engine	240 ps
Purchase Year	1972
Condition	Fair

5) General Service Boat

- Chali

Hull	11.58 m x 3.58 m x 0.91 m
Engine	150 ps
Purchase Year	1987
Condition	Good

(2) Maintenance Facility

1) BEIRANAVE

In BEIRANAVE, the shipyard in Chiveve area, Beira, there is a graving dock with the size of 110 m length, 17 m width and 6.5 m depth.

BEIRANAVE can perform repair works using this dock, up to 110 m overall length and 15 m breadth of the ship.

And also they have;

a) One 15 tons rail crane and one 20 tons mobile crane

b) Mechanical workshop with parallel lathe, universal milling machine, shaping machines and radial drill

c) Plate workshop with rolling machine, shearing machine and bending machine up to 2 m x 12 mm capacity

d) Pipe workshop with hydraulic pipe bender

e) Electric workshop

LISNAVE, advanced shipbuilding company of Portugal, the biggest share holder of BEIRANAVE with a 40 % share, is undertaking technical assistance in shipbuilding and ship-repair.

From the results of the survey, it is confirmed that BEIRANAVE is the most suitable maintenance yard for the new dredger.

2) Other facilities in Beira

In Beira, EMODRAGA has a warehouse for storing materials, spare parts, consumables, etc. and machining quarter for small parts production and repair.

And also CFM-C has a pier, machine shop, warehouse in Beira, which will support the new dredger as the maintenance facilities.

3) ENAMA

ENAMA has a floating dock in Maputo. The dock has a nominal lifting capacity of 4,200 tons and maximum dockable ship sizes are 115 m x 18 m x 6.5 m. This floating dock is presumed to be suitable but there are two problems from the view point of repairment work for the new dredger, one is her existing mooring location of Maputo, and second is her existing structural condition, considerable repair should be required.

4) SOMONAV

SOMONAV is one of the most substantial shipyards in Mozambique, but unfortunately, the size of graving dock, 80 m x 12.45 m x 3.9 m, is too small to dock the new dredger.

5) Other Facilities in Maputo

EMODRAGA has a warehouse, a workshop and a training school for dredging operators in Maputo. Mainly, they are used for the trailing suction hopper dredger "Rovuma", but they could also be useful for the new dredger.

6) Repairing Facility in South Africa

When serious break-downs or big scale renovation becomes necessary, it can be undertaken by DORBYL MARINE SHIP REPAIR in Durban Port, the Republic of South Africa, where the repair works of Rovuma have been executed.

(3) Maintenance Procedure

The new dredger will be constructed and equipped in accordance with the rules of the International Classification Society to register the ship with the specified class notation, and also annual maintenance and/or repair works will be conducted by EMODRAGA under supervision of the Classification Society's supervisor to maintain her class in accordance with the requirement of the Classification Society.

The Classification Society will dispatch their staff for survey and inspection of the ship's condition and make their requirement for necessary countermeasure at EMODRAGA's request.

For the moment, resident surveyors of Lloid's Register of Shipping and Bureau Veritas are residing in Maputo. A surveyor of Lloid's is also residing in Beira.

2.1.7 Service Boats

Following service boats such as tug boat, pilot boat and line boat, are prepared to secure the navigation and berthing/deberthing works of calling vessels. These service boats are moored in Chiveve Dock on the south side of the Fishing Harbor in which the pontoons are installed for use of tug boats, pilot boats and line boats.

(1) Tug Boat

Size	30 ton bollard pull harbor tug
Number	Two boats
Name	Pungue, Buzi
Year in use	July, 1989

(2) Pilot Boat

Size	12.5 m
Number	Two boats
Name	Pilot 1, Pilot 2
Year in use	May, 1988

(3) Deep-sea Pilot Boat

Size	13.5 m
Number	One boat
Year in use	April, 1995

(4) Work and Line Boat

Size	9.1 m
Number	Two boats
Year in use	April, 1991