Appendix 4-3-4 Present Aspect of Non-oil Industrial and Industry Promotion Policy

(1) Present Industrial Situation

1) Development of Industries and Trend of Sectoral GDP

a. Trend of GDP in Petroleum Sector

Since the beginning of modernization in the Sultanate of Oman in the 1970's petroleum has played an important role in developing the country.

Table A-4-3-23 shows the trend of sectoral GDP from 1981 to 1988. Table A-4-3-24 shows various sectors' shares of GDP.

Production of crude petroleum and natural gas increased from 499.6 million RO(MRO) in 1981 to 955.4 MRO in 1981. The petroleum sector's share of GDP was 40.8% in 1981, decreasing to 34.4% in 1984 in spite of the increasing of the sectoral GDP, from 499.6 MRO to 636.0 MRO. The reasons for the decrease of the petroleum sector's share were the diversification of the national economy and the development of other sectors.

An Oil refinery began operating in 1983, and its share of GDP was 0.27% in 1984. The GDP share related to petroleum including the oil refinery decreased from 40.76% in 1981 to 34.64% in 1984. But the share increased to 45.2% in 1988, although the share of the oil refinery was almost at the same level, 0.3%.

The sectoral GDP of crude petroleum has been continuously increasing, from 493.6 MRO in 1981 to 974.5 MRO in 1988. Table A-4-3-25 shows the average price of export crude petroleum. The price per barrel was at a low level, US $12.3 per barrel in 1975, rising to US $36.9 per barrel in 1980, but decreasing to US$13.5 per barrel in 1986. Table A-4-3-26 shows the average production rate of crude petroleum per day. The production rate was 341.4 thousand barrels per day in 1975, and started to increase to 388.8 thousand barrels per day in 1983, and increased further to 619.1 thousand barrels per day in 1988.

The increase of sectoral GDP of petroleum in the 1980's was mainly due to increased production.

The sectoral GDP of natural gas have also been continuously increasing, from 6.0 MRO in 1981 to 20.9 MRO in 1988. The GDP share increased from 0.5% in 1981 to 0.94% in 1988.

Table A-4-3-27 shows the production of natural gas, which increased from 92,964 MMSCF in 1980 to 171,185 MMSCF in 1988.

Table A-4-3-28 shows the daily average production of natural gas in

the Government Gas System from 1981 to 1988. The daily average production increased from 37.1 MMSCF per day in 1981 to 153.9 MMSCF per day in1988.

Natural gas's share of GDP increased during the 1980's mainly due to increased production.

Table A-4-3-29 shows the trend of government revenues from 1981 and 1987.

Table A-4-2-30 shows the relative share of the government revenue during 1981 and 1987. The share of oil revenues decreased from 92.2% in 1980 to 79% in 1987, but remains high.

Judging from the above data, it is very clear that the economy of the Sultanate of Oman depends greatly on crude petroleum production. The petroleum price in the world market is not stable, as Oman has experienced. Developing a policy free from the dominance of crude petroleum production is an urgent issue in the Sultanate of Oman. The deposits of crude petroleum are estimated to be 4.075 billion barrel (1988 estimate), will be completely consumed within 20 years if the present production rate continues. The government, therefore, has made a clear policy in terms of the fundamental objectives of the nation forward the promotion of alternative industries independent of petroleum production. The measures undertaken to carry out this policy have been successful during the past two decades, but are not yet complete. The depression of crude petroleum prices since 1986 has greatly influenced the government's revenues, which are indispensable in terms of implementing the measures to achieve this fundamental objective. More aggressive measures to develop alternative industries should be undertaken by the government in future.

b. Sectoral GDP in Industry

GDP of non-oil sectors increased from 750.1 MRO in 1981 to 1,256.5 MRO in 1988. The share of GDP of non-oil sectors reached 66.9% in 1984, but decreased again to 56.7% due to the economic depression, as shown in Table A-4-3-30.

GDP of the service sector increased from 552.4 MRO in 1981 to 826.0 MRO in 1988. But the share of GDP of the service sector decreased to 37.3% in 1988. Of the subsectors of service activities, the government subsector increased constantly in spite of the depression of petroleum prices from 1986.

Table A-4-3-23 Trend of Sectoral GDP

(Unit: Million Rial Omani)

Economic Activity	1981	1982	1983	1984	1985	1986	1987	1988
Petroleum Sector	499.6	501.7	593.3	636.0	764.7	868.6	925.7	995.4
Crude Petroleum	493.6	494.9	583.6	623.4	750.5	850.7	905.7	874.5
Natural Gas	6.0	6.8	9.7	12.5	14.2	17.9	20.0	20.9
Mining & Quarrying	2.0	3.5	6.5	9.5	10.9	12.4	9.6	9.3
Agriculture & Livestock	34.9	37.5	45.1	53.1	65.8	62.1	63.3	70.4
Fishing	14.8	16.6	19.1	17.3	15.9	17.0	20.5	31.3
Industry	146.0	198.8	242.4	322.0	354.1	393.5	324.2	325.4
Manufacturing (Oil Refinery)	0.0	0.0	2.8	5.0	7.2	4.7	5.4	5.9
(Others)	20.6	30.2	35.0	50.9	60.1	76.3	78.9	81.3
(Total)	20.6	30.2	37.8	55.9	67.3	81.0	84.3	87.2
Construction	107.1	142.3	174.7	221.3	239.3	235.4	144.5	122.0
Electricity & Water	18.3	26.3	29.9	44.8	47.5	78.0	95.4	116.2
Services	552.4	633.3	703.3	840.9	924.8	857.1	794.0	826.0
Wholesale & Retail Trade	180.4	244.6	238.6	286.9	316.6	250.5	191.9	210.5
Transport & Communications	43.2	51.3	58.9	73.3	86.5	84.4	80.3	84.4
Financial & Business Service	62.1	76.7	84.2	112.3	128.3	127.0	100.0	96.1
Ownership of Dwellings	81.4	85.8	94.9	103.3	111.3	121.3	126.0	131.3
Government Service	170.2	176.6	203.9	235.6	248.1	239.1	259.7	263.0
Other Services	15.1	18.3	22.8	29.5	34.0	34.8	36.1	40.7
Less : Imputed Bank Service Charges	32.2	35.3	40.7	52.8	58.1	60.1	57.9	58.1
GDP at Producer's Value	1,217.5	1,356.1	1,569.0	1,826.0	2,078.1	2,150.6	2,079.4	2,199.7
Plus : Import Duties	8.1	11.0	16.3	24.5	27.0	23.9	16.2	15.6
GDP at Purchasers' Value	1,225.6	1,367.1	1,585.3	1,850.5	2,105.1	2,174.5	2,095.6	2,215.3

Note: GDP by Kind of Activity at 1978 Constant Prices

Source: Statistical Year Book

Table A-4-3-24 Share of Respective Sectoral GDP

(unit:%)

Economic Activity	1981	1982	1983	1984	1985	1986	1987	1988
Petroleum Sector	40.76	36.70	37.43	34.37	36.33	39.94	44.17	44.93
Crude Petroleum	40.27	36.20	36.81	33.69	35.65	39.12	43.22	43.99
Natural Gas	0.49	0.50	0.61	0.68	0.67	0.82	0.95	0.94
Mining & Quarrying	0.16	0.26	0.41	0.51	0.52	0.57	0.46	0.42
Agriculture & Livestock	2.85	2.74	2.84	2.87	3.13	2.86	3.02	3.18
Fishing	1.21	1.21	1.20	0.93	0.76	0.78	0.98	1.41
Industry	11.91	14.54	15.29	17.40	16.82	18.10	15.47	14.69
Manufacturing (Oil Refinery)	0.00	0.00	0.18	0.27	0.34	0.22	0.26	0.27
(Others)	1.68	2.21	2.21	2.75	2.85	3.51	3.77	3.67
(Total)	1.68	2.21	2.38	3.02	3.20	3.72	4.02	3.94
Construction	8.74	10.41	11.02	11.96	11.37	10.83	6.90	5.51
Electricity & Water	1.49	1.92	1.89	2.42	2.26	3.59	4.55	5.25
Services	45.07	46.32	44.36	45.44	43.93	39.42	37.89	37.29
Wholesale & Retail Trade	14.72	16.43	15.05	15.50	15.04	11.52	9.16	9.50
Transport & Communications	3.52	3.75	3.72	3.96	4.11	3.88	3.83	3.81
Financial & Business Service	5.07	5.61	5.31	6.07	6.09	5.84	4.77	4.34
Ownership of Dwellings	6.64	6.28	5.99	5.58	5.29	5.58	6.01	5.93
Government Service	13.89	12.92	12.86	12.73	11.79	11.00	12.39	11.87
Other Services	1.23	1.34	1.44	1.59	1.62	1.60	1.72	1.84
Less : Imputed Bank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Service Charges	2.63	2.58	2.57	2.85	2.76	2.76	2.76	2.62
GDP at Producer's Value	99.34	99.20	98.97	98.68	98.72	98.90	99.23	99.30
Plus : Import Duties	0.66	0.80	1.03	1.32	1.28	1.10	0.77	0.70
GDP at Purchasers' Value	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Note: Per cent is based on GDP by Kind of Activity at 1978 Constant Prices

Source: Statistical Year Book

Table A-4-2-25 Trend of Average Oil Price

	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988
Average Price of Exported Crude Petroleum (US$/Barrel)	12.349	36.922	36.922	34.368	29.166	28.000	26.984	13.460	17.300	13.522

Source: Statistical Year Book

Table A-4-2-26 Average Production Rate of Crude Petroluem per Day

	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988
Average Production of Crude Petroluem (Thousand Barrels/day)	341.4	283.3	328.2	335.9	388.8	416.4	498.1	559.7	582.2	619.1

Source: Statistical Year Book

Table A-4-2-27 Production of Natural Gas

	1980	1981	1982	1983	1984	1985	1986	1987	1988
Production of Natural Gas (MMSCF: Million Standard Cubic Feet)	92,964	105,120	104,390	125,925	139,080	141,985	164,615	171,140	171,185

Source: Statistical Year Book

Table A-4-2-28 Daily Average Production of Natural Gas

(Unit:MMSCF)

	1980	1981	1982	1983	1984	1985	1986	1987	1988
Daily average production of natural gas in Government Gas System	37.1	46.1	55.6	73.7	96.5	109.4	136.6	151.5	153.9

Source: Statistical Year Book

Table A-4-2-29 Trend of Government Revenues

(Million Rial Omani)

Item	% 1980	1980	1981	1982	1983	1984	1985	1986	1987	% 1987
A. Revenues										
Oil Revenue	92.2	1,095.5	1,341.3	1,215.7	1,277.5	1,304.6	1,510.0	928.9	1,194.9	79.0
Gas Revenue	1.2	14.0	18.1	18.9	20.2	34.4	36.7	37.9	39.0	2.6
Custom Duties	0.7	8.6	11.3	14.7	21.7	31.6	41.1	37.0	26.9	1.8
Corporate Income Taxes	0.5	6.5	10.5	11.4	18.7	20.4	26.4	25.6	21.2	1.4
Interest from Investments	1.7	19.8	38.6	14.2	9.2	21.3	19.6	25.1	30.5	2.0
Other Revenue	3.7	43.5	58.3	58.9	76.5	100.9	129.2	133.5	166.8	11.0
1. Revenue from Internal Sources		1,187.9	1,478.1	1,333.8	1,423.8	1,513.2	1,763.0	1,188.0	1,479.4	
2. Repayment of Loans to the Government		N.A.	N.A.	N.A.	N.A.	N.A.	13.2	32.8	32.7	
3. Total Revenue (1+2)		1,187.9	1,478.1	1,333.8	1,423.8	1,513.2	1,776.2	1,220.8	1,512.1	

Source: Statistical Year Book

Table A-4-3-30 Sectoral GDP in Industry

(Unit: Million R.O.)

	1981	1982	1983	1984	1985	1986	1987	1988
GDP at Purchasers' Value	1,225.6	1,367.1	1,585.3	1,850.5	2,105.1	2,174.5	2,095.6	2,215.3
Oil Sector's Share	499.6	501.7	596.1	641.0	771.9	873.3	931.1	1,001.3
Non-oil Sector's Share	750.1	889.7	1,013.6	1,237.8	1,364.3	1,338.3	1,206.2	1,256.5
% of Non-oil	60.02%	63.94%	62.97%	65.88%	63.87%	60.51%	56.44%	55.65%
Non-oil to GDP	61.20%	65.08%	63.94%	66.89%	64.81%	61.55%	57.56%	56.72%
Agro(Ag.+Liv.+Fis.)	49.7	54.1	64.2	70.4	81.7	79.1	83.8	101.7
% of Agro	4.06%	3.96%	4.05%	3.80%	3.88%	3.64%	4.00%	4.59%

GDP of the private sector, comprising the wholesale, retail trade, transport and communications, finance and business services and ownerships of dwellings increased from 382.2 MRO in 1981 up to 676.8 MRO in 1985, but decreased to 563.0 MRO in 1988. This shows the private-sector economy is still in a fragile stage and is easily affected by factors such as the petroleum price depression.

GDP of the mining and quarry sector increased gradually from 2.0 MRO in 1981 to 12.6 MRO in 1986, but decreased to 9.3 MRO in 1988. There are many mineral deposits in the northern part of Oman. There seems to be a possibility of developing these deposits, but the development is still at the feasibility study level.

GDP of the agriculture and livestock sectors increased steadily from 34.9 MRO in 1981 to 70.4 MRO in 1988. The share of GDP of these sectors increased from 2.9% in 1981 to 3.2% in 1988. During these 7 years, the average growth rate was 10.5%. Although the share of this sectors to the total GDP is still at a low level, diversification policies have succeeded during this period.

GDP of the fishing sector increased steadily from 14.8 MRO in 1981 to 31.3 MRO in 1988. The share of GDP of this sector became 1.41% in 1988.

Total GDP of the agricultural sector increased to 101.7 MRO and its share of GDP reached 4.6% in 1988. Considering the proportion of people working in this sector, more aggressive measures to diversify agricultural industries should be taken into consideration.

GDP of the industrial sector increased from 146.0 MRO in 1981 to 393.5 MRO in 1986, but decreased slightly to 325.4 MRO in 1988. GDP of the manufacturing sector steadily increased from 20.6 MRO in 1981 to 87.2 MRO in 1988(from 29.6 MRO to 81.3 MRO, excluding the oil refinery).

GDP of the construction sector increased from 107.1 MRO in 1981 to 239.3 MRO in 1985, but decreased to 122.0 MRO in 1988. GDP of the construction sector has a big portion in GDP of the industry sectors viz. about 40%. GDP of the electricity and water sectors increased greatly, from 18.3 MRO in 1981 to 116.2 MRO in 1988.

The share of GDP of the industry sector increased from 11.9% in 1981 to 18.1% in 1986, but slightly decreased to 14.7% in 1988. The share of GDP of manufacturing sector excluding oil refinery in GDP of the industry sector increased from 1.7% in 1981 to 3.7% in 1988.

c. Trend of Manufacturing Development

Before the beginning of modernization in the early 1970's, there was only artisan manufacturing in traditional industries in Oman, such as wooden shipbuilding, handwoven textile manufacturing, small pottery industries and goldsmithes.

From the statistical data, the registered number of manufacturing industries, which were only 10 in 1976, increased to 3,379 at at the end of 1988. 42.3% of the total manufacturing belong to small-capital industries in the range of under 5 thousand RO., and only 5% of the total manufacturing belong to large-capital industries in the range of 100 thousand RO. By sector, non-metallic mineral products, wood products, fabricated metal products and food and beverages are the four main manufacturing industries in Oman.

(2) Characteristics of Industry in Oman.

The characteristics of industry in Oman can be summarized as follows:

a. The products market in the Sultanate of Oman is not so big. The estimated population is 1.5 million at present and will be about 3.0 million in 2010. So demand for consumer goods like daily necessary can easily be fulfilled by constructing a moderate-scale factory.

b. Accordingly, there are some monopoly corporations such as a vegetable oil factory, a detergent factory, a corrugated paper box factory, a mineral water factory and a cold storage facility producing factory.

c. There are many expatriates in the industrial field due to a lack of skilled labours in Omanies.

d. There are many factories which have introduced automation due to a shortage of labour.

e. Some import substitute-oriented industries also export products because their modernized factories sometimes have to be on a big scale beyond the domestic demand due to economic considerations.

f. There are protective tariffs in the following commodities:

1. Bananas
2. Seeds
3. Dried Lemons (Except for GCC Origin)
4. Any oils of fat products similar to local products

5. Polyorthine 'Spongy' formed as pillows (or of other frames)
6. Polyorthine 'solid' in the form of insulators or others
7. Polyorthine bags(printed or plain)

(The following commodities are excluded from the above protection fees but subject to high tariff)

1. Pipes (Cement, Asbestos, etc.)
2. Dyes (Lifuescent & Solid)
3. Carton Boxes Similar to Local Products
4. Cement Similar to Local Products
5. Cement Products
6. Copper Wire Similar to Local Products (except for GCC products)

g. Subcontracting factories are not well developed.

h. There are various types of promotion strategies introduced by the Government of Oman.

(3) Industrial Promotion Strategies of the Government of Oman are as follows:

a. Provision of Industrial Estate:

In order to promote industry, encourage industrial investments and create job opportunities, the Rusayl Industrial Estate was developed in the Rusayl Valley, 45km from central Muscat, 129km from Nizwa and 10km from the coast. The Rusayl Estate was officially inaugurated on December 4, 1985, and was almost completed midway through 1988. In the Estate, infrastructure and utilities are available, such as electric power, water, natural gas, telecommunication, sewage treatment plant and other miscellaneous facilities.

The developed area available for building and facilities is 100 hectares, comprising 125 plots of varying sizes from 1,000m^2 to 70,000m^2. Current rent is 0.5 RO per square metre per annum. Already constructed standard factory buildings are also available for the following rental rates:

	Are (Sq.m)	Rent per Sq.m per Year(RO)
Type A	4,482	2.0
Type B	1,500	2.5
Type C	750	3.0
Type D	300	4.0

Table A-4-3-31 Specification of Industries in Rusayl

Sl. No.	Name	Production	Capacity		Year Established
1	Areei Vegitable Oil Deriatives S.A.O.	Vegitable Oil	15,000 tons	Food Related	1982
2	Modern Oman Bakery	Bread/Bakery pro.	276,600 Ro		
3	National Tea Co.	Tea Packing	300 tons		
4	Al-Bustan Tea Packing Co. S.A.O.	Tea/Tea with Lime	500 tons		1989
5	Oman Textile Mills Co. S.A.O.	Textiles	7,100,000 m	Textile	
6	Khalid Abdulla Saleh Al-Namani	Readymade Garments	1,560,000 N		
7	Muscat Garment Industry LLC	Garments	1,500,000 N		
8	Al-Amal Industry Co.	Baby Diapers	25,000,000 N	Paper	1987
		Sanitary Napkins	20,000,000 N		
9	Computer Stationar Industr LLC	Computer Sheets	2,640 tons		1985
10	National Gas Co.	LPG	37,000 tons	Basic Chemical	
11	Mohsin Haider Darwish (Gases Devision) LLC	Oxygen/Nitrogen	2,300,000 C.M		1970
		Acetylen	180,000 C.M		
		Carbondioxide/ Dryice	864 tons		
12	Muscat Industiral Gases Co.	Oxygen/Nitrogen	1,500,000 C.M		
		Acetylen	120,000 C.M		
13	Oman Insecticides & Air Freshner Co.	Insecticides and Aerosol	700 tons	Insecticides	
14	Poly Products LLC	Beding products	60,000 N	Plastic	1979
		Flexible Foam	1,000 tons		
		Rigid Foam	600 tons		
15	Jotun LLC	Paints	4,600,000 L	Paint	
16	Khimji Permoglaze Oman	Paints	2,000,000 L		1985

Sl. No.	Name	Production	Capacity		Year Established
17	Oman Perfumery LLC	Ladies Perfumes	12,400 bottle	Perfume	
		Eau De Toilette	54,440 bottle		
18	Al-Macki Establishement	Tyre Retreading	1,500 N	Tyre	1976,1985
19	Amiantit Oman S.A.O	Asbestos Pipes	30,000 tons	Pipe	1976
		Plastic Pipes	2,990 tons		
		Fibreglass Tank/ Boat	1,200 tons		
20	Muna Noor Incorporated	Plastic Pipes	4,500 tons		1986
21	Artline Manufacturing Co.LLC	Etched Glass	4,800 S.M	Glass	
22	Oman Cement Co. S.A.O	Cement	624,000 tons	Cement	
23	Al-Naser Tiles & Cement Products Co.	Tiles (Marble Quarry)	345,000 S.M	Non-Metal	
24	Oman Concrete Products Est.	Aggregate/Sand	252,000 tons		
25	Moder Crushers Industries Co.LLC	Aggregate/Sand	360,000 tons		
		Interlocking-Block	300,000 S.M		
26	Shanfari Crushers Co.	Kerb Stone/Paving	165,000 N		
		Cable Covers	45,000 N		
27	Assarian Concrete Products Co.LLC	Kerb Stones	600,000 M		
		Interlocking Tiles	210,000 S.M		
		Concrete Block	2,000,000 N		
28	Oriental Building Material Industry	Concrete Block	2,500,000 N		
		Kerb Stones	50,000 N		
		Mosic Tiles	73,000 S.M		
		Paving Stones	13,000 S.M		
29	Oman Marble Co.	Marble	40,000 S.M		1989
30	National Aluminium Products Co.	Aluminium Extrusions	60,000 tons		1987
31	Al-Khoudh Steel Furniture Industry Co.	Metal Furniture	180 tons		1986

Sl. No.	Name	Production	Capacity	Year Established
32	Bilad Oman LLC	Steel Fabrication	10,000 tons	1985
33	Chainlink Fencing Co.	Chainlink-Fencing,	750 tons	
		PVC	840 tons	
		Gabian Nete	3,000 tons	
34	Areej Vegetable Oil & Derivatives	Tin cans	9,000,000 N	
35	Sharikat Fanniya Omania LLC	Assembly of A/C	8,000 N	
36	Reem Batteries & Power Appliances Co. S.A.O	Car Batteries	225,000 N	
37	Oman Cables Industry (SAOG)	Wire & Cables	1,350 tons	
38	Oman Water Pumps MFG Co. (S.A.O)	Elec./Diesel Pumps	1,870 N	
39	Oman Metal Industries LLC	Vehicel Body Buldg.	1,000 tons	1985
40	Wadi Mahram Trading & Cont. Co.	Steel Products		
41	Al-Anan Printing Press LLS	Office Stationery		
42	Local Tents Factory	Canvas tents		
43	Al-Khuldy Ents	Potato Chips		
44	Al-Arabi Nails Factory LLC	Steel Nails		
45	Speedcraft Contracts	Ceilings		
46	Al-Bayan Establishement	Insecticides Stamps		
47	Nasib Al-Shanfari Ind. Gases	Oxygen/Nitrogen		
48	Al-Zidjali Trading	Blocks Decorative-Concrete		
49	Muscat Wire Industry	Wire Nails/ Steel Wires		
50	OH/Garments Manufacturing	Garments	2.4 million	
51	Saud Food Industry LLC	Beans/Lentils		
52	Decorative Glass Manufacturing Co. LLC	Stained/ Etched Glass	600 pair/day	1986,1987
53	Al-Wardha Foorwere & Leather Products Co.	Footwear		1980

Sl. No.	Name	Production	Capacity	Year Established
54	Reem Radiators & Accessories	Radiators		1987
55	Sweets of Oman (SAOG)	Sweets		1990
56	National Biscuit Ind.	Biscuits	2,400 tons(Bis.) 600 ..(waters) 600 .. (corn/cereal)	1986

Over 56 companies are now effectively operating or preparing operations. Table A-4-3-31 shows the specification of the companies. They are classified into the follow sectors:

1. Food-Related Products	8
2. Textile, Wearing Apparel	6
3. Paper Products and Printing	3
4. Basic Chemical Products	4
5. Chemical Products	12
6. Non-Metal Products	9
7. Metal Products	14

The Team prepared a questionnaire regarding import and export cargoes and sent it to all the companies. The results of the replies from 15 companies are al follows:

	Imports	Exports
1-1 National Tea Co.	304 tons(1988) 246 tons(1989)	10 tons 2 tons
1-2 National Biscuit Ind.	Maiz 85 tons etc. Total 475 tons (1989)	1,350 tons (42.4%)
2-1 Oman Textile Mills Co.	Yarn 700 tons (1990)	634,000 m
3-1 Al Amal Ind. Co.	Wood Pulp 698 tons etc. Total 1,305 tons	Baby diapers 185 tons etc. Total 188 tons
5-1 Jotun Paints	Chemicals/Solvents 1,500 tons	-
5-2 Oman Insecticides & Air Freshing Co.	Chemical 158 tons Can etc. 1.56 Million N	-
5-3 Poly Products	Cloth 1.2 Million m Chemical 970 tons etc. Total 2,092 tons	Mattress 201.3 tons Bedding Products 15,000 N
5-4 The National Detergent Co.	Soup Noodle 1,450 tons etc. Total 2,092 tons (1990)	700 tons (40%)
7-1 Oman Water Pumps Manu. Co.	70 tons(1989)	-
7-2 Oman Cables Ind.	Copper Rods 735 tons PVC Granules 350 tons (1990)	50 - 65%

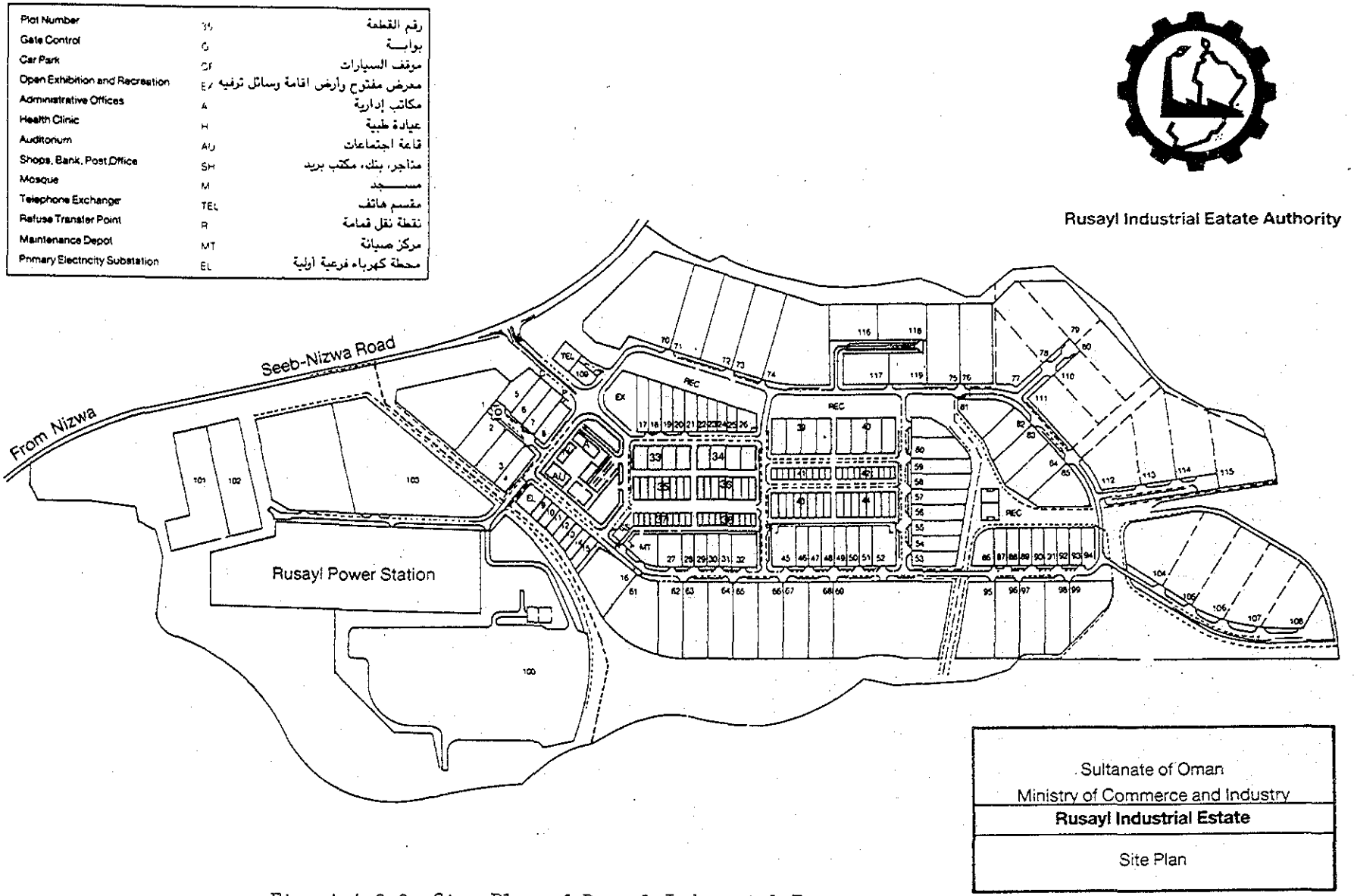


Fig. A-4-3-9 Site Plan of Rusayl Industrial Estate

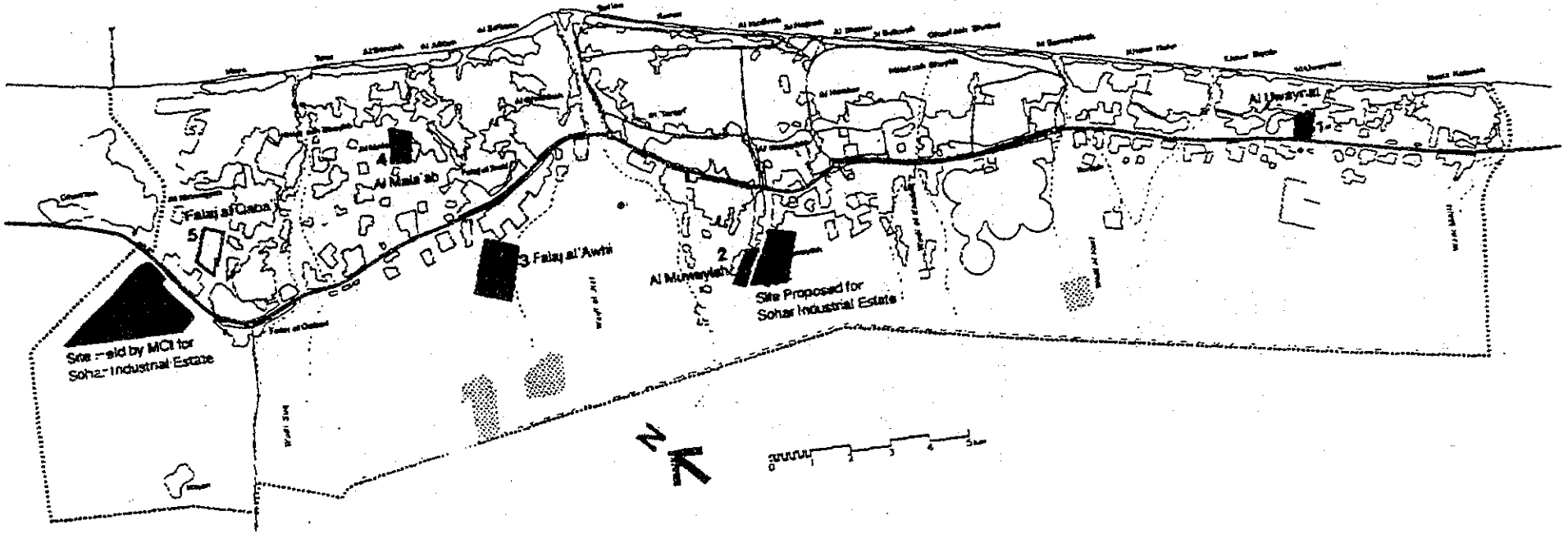


Fig. A-4-3-10 Proposed Site of Sohar Industrial Estate

7-3 Muscat Ind. Co.	Wire Rods 14,000 tons Other Chemical 450 tons	Chain Frames 57,950 N Bed Frames 33,618 N
7-4 Al Khoudh Steel Furniture Ind. Co		
7-5 Reem Radiators & Accessories Co.	Copper etc 32,259 RO	Products 66,020 RO
7-6 Chainlink Fencing Co	GIWire 904 tons PVC Coated Wire 365 tons	Fence 1,000 Rolls Others 25 tons
7-7 Bilad (Oman) LLC	Steel Section 170,000 RO Steel Sheet 100,000 RO	-

They are producing various consumer goods using imported materials and exporting some of their products, mostly to G.C.C. member countries.

The capacity of utilities is as follows:

1. Power Supply 500 MW
2. Water Supply 2,500 cm/day

Fig.A-4-3-9 shows the site plan of the Rusayl Industrial Estate.

The government of Oman has now a plan of the Rusayl Industrial Estate. The government of Oman has now a plan for four other industrial estate development in Sohar, Raysut, Nizwa and Sur. Fig.A-4-3-10 shows the proposed site of a industrial estate in Sohar.

b. Implementation of Feasibility Study for Finding New Industry:

In order to explore the possibility of introducing new industries, feasibility studies are implemented using government revenus. The feasibility study to introduce a petro-chemical industry in the Sohar area is now being carried out by the Ministry of Petroleum and Minerals. The detailed results of the study could not be supplied to the Team, but the outline of the project is as follows:

1) Products:

i) Ammonia	445,000 tons/year
ii) Urea	580,000 tons/year
iii) Methanol	500,000 tons/year

iv) MTBE(Methyl Tertialy Butyl Ether) 50,000 tons/year or 100,000 tons/year

v) SMDS(Shell Middle Distillate Synthesis) 500,000 tons/year

2) Feedstocks:

i) Natural Gas for Ammonia 39 MMSCF/day; 12,870 MMSCFp.a.
for Urea 34 " ; 11,220 "
for Methanol 46 " ; 15,180 "
for SMDS 100 " ; 33,000 "

ii) Butane for MTBE 72,700 tons p.a.
(100,000 tons p.a.)

3) Markets:

i) Ammonia, Urea; for India and Far East
ii) Methanol ; for USA
iii) MTBE ; for USA, Europe and Japan
iv) SMDS ; for Singapore

4) Required Land Areas and Manpower:

i) Ammonia Plant; 5 ha 135 persons
ii) Urea Plant ; 8 " 169 "
iii) Methanol ; 6 " 139 "
iv) MTBE ; 10 " 138 "
v) SMDS ; 39 " 200 "

Table A-4-3-32 shows the results of prefeasibility studies by Dar Al-Handasah consultants.

c. Low interest Loan from Oman Development Bank:

In order to promote development in agriculture, fishery, mining and industry, the Oman Development Bank can provide investors with investment capital at low interest as follows:

	Interest rate per year
Project in C.A.	6%
Other Areas	4%

d. Government Loans without Interest:

In order to promote industrial development, the Ministry of Commerce and Industry can provide industrial investors with

Table A-4-3-32 Profiles of Projects Recommended by Consultants for Further Study

Product	Market	Annual Output	Investment (th, OR)	Employment	Finacial Rate of Return (%)
Dry Mixed Foods (Imports of Materials in bulk for repacking with minimal processing)	Domestic	502 t	614	23	15
Fish Meal and Fish Oil	Export	35,200 t	10,420	55	29(I)
Breaded Fish Products	GCC	540 t	1,257	12	12
Fertilizer Blending (Compound NPK fertilisers)	Domestic	10,000 t	605	13	10
Shade Netting and Produce Bags (for agriculture)	Domestic	1,080 rolls 1.4m bags	117	9	52
Building Sealants (blending and repacking of imported sealants)	Domestic	225,000 litters	198	9	58
Stamped Rubber Products (e.g. footvalves and flanges)	Domestic	37 t	127	7	10
Iron and Steel Castings (mainly for water supply system)	Domestic	2,900 t	1,032	41	26(I)
Nuts, Bolts, Screws and Domestic Washers	Domestic	864 t	973	21	14(I)
Brass Fitting (e.g. door handles, water faucets)	GCC	300 t	548	27	53(I)
Electroplating	GCC	10,000 sq.m.	323	12	15
Locks and Hinges	Domestic	1.2m.pieces	738	42	20(I)
Shelving Storage Systems	Domestic	800 t	689	25	28(I)
Portable Fire Extinguishers	Domestic	25,000 units	740	11	12
Handtools	Domestic	215 t	1,204	48	15

Source: Dar al-Handasah Consultants, op. cit., Vol.3, Table 14.1

Note: Projects marketed (I) are those the consultants have assigned highest priority for further study.

investment capital without interest subject to the following conditions:

1. Omanis must have 75% share of investment
2. A joint stock company must place 25% of its share on the stock market.
3. The limitations of the loan are as follows:

	Limit of Loan
Project in C.A.	1 time of the total paid-up capital
Other Area	1.28 times of the total paid-up capital

e. Exemption of Corporation Tax:

Omani corporations in which capital investment is completely owned by Omanis are exempt from corporation tax. Other corporations are exempt from corporation tax for 5 years.

Appendix 4-3-5 Natural Gas Utilization

(1) Ammonia Production Plant

From Shell's feasibility study, the feedstocks of ammonia are natural gas and the volume is 39 MMSCFD. The capacity of the plant is assumed to be 1,350 MTD. The output volume of ammonia is 445,000 MTPA. They estimated the required land as 5 ha and the required manpower as 135 persons. The production flow will be as per the following figure:

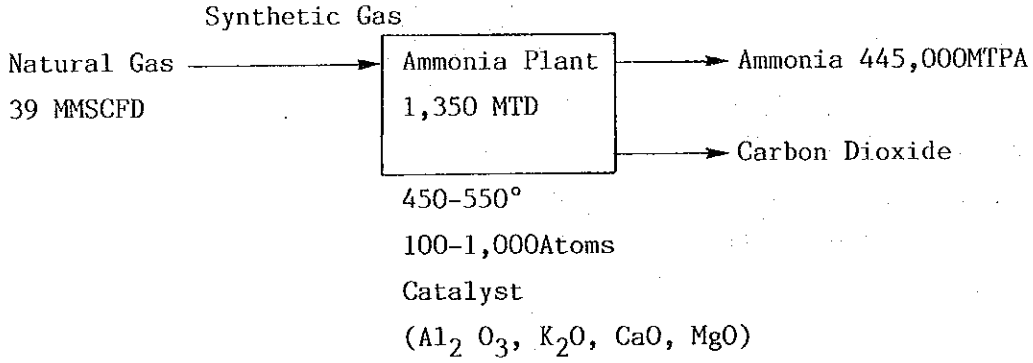


Fig. A-4-3-11 Ammonia Production Flow

(2) Urea Production Plant

From Shell's feasibility study, the feedstocks of urea are natural gas and the volume is 34 MMSCFD. The capacity of the plant is assumed to be 1,760 MTD. The output volume of urea is 580,000 MTPA. They estimated the required land as 8 ha and the required manpower as 169 persons. But feedstocks of urea are actually ammonia and carbon dioxide, so the production flow will be as per the following figure:

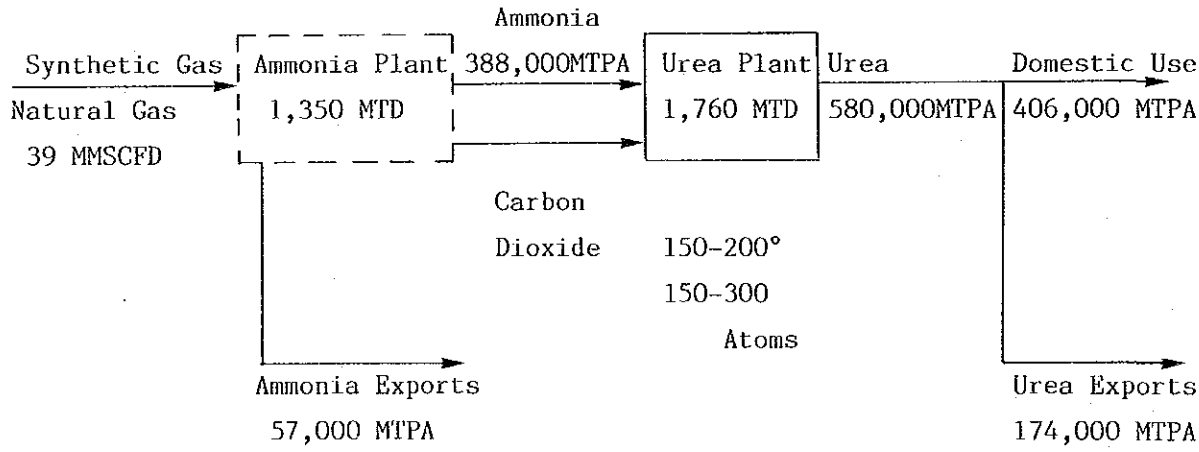


Fig. A-4-3-12 Urea Production Flow

From the feasibility study report, 10 percent of ammonia production is expected to be exported and 30 percent of the urea is expected to be exported. So the volume of ammonia production can fully supply the urea plant.

(3) Methyl Alchol Plant

From Shell's feasibility study, the feedstocks of methyl alcohol are natural gas and the volume is 46 MMSCFD. The capacity of the plant is assumed to be 1,500 MTD. The output volume of methyl alcohol is 500,000 MTPA. They estimated the required land area as 6 ha and the required manpower as 139 people. The production flow will be as per the following figure:

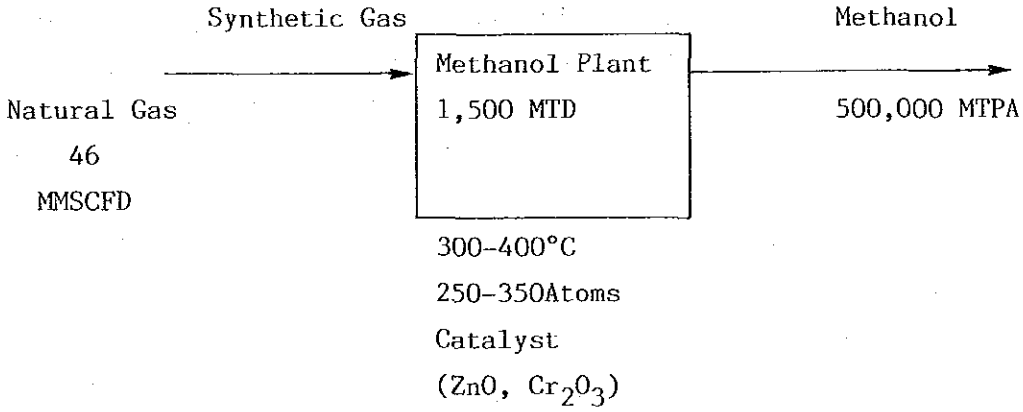


Fig. A-4-3-13 Methanol Production Flow

In the above production flow, natural gas is usually separated to synthetic gas, so gas separation plants are generally planned. Generally speaking, methanol production in crude oil-producing countries is believed to be economical, considering long-distance exports compared with LNG transportation.

Shell's feasibility study also examined MTBE and SMDS production, as described in Appendix 4-3-4.

Appendix 4-3-6 Free Trade Port Function

(1) Function of free trade zones

There are many free trade zones around the world. They have in various names as follow:

1) Free port
2) Free Port City
3) Free Trade Port
4) Free Port Quarter
5) Free Trade Zone
6) Foreign Trade Zone
7) Export Processing Zone
8) Free Perimeters
9) Free Transit Zone

There are many variations in the objectives of establishment, regulation and incentives of these free trade zones. Commonly, they are defined as areas free from import duties and export taxes to promote trade.

(2) Benefits of Free Trade Zones

Historically, they have been developed to activate trade and obtain revenues. Recently, they have been expanded into Export Processing Zones where manufacturing is carried out under duty-free conditions. The benefits of establishing free zones are as follows:

1) Promotion of Export-oriented Industries
2) Diversification of National and Regional Economy
3) Regional Development
4) Increase of Employment Opportunity
5) Improvement of Technical/Managerial Skills
6) Technology Transfer
7) Improvement of Accessibility of International Markets
8) Direct Generation of Wealth

The above benefits will be enjoyed by the host country as follows:

1) By preparing free trade zones, potential export oriented industry corporations can be given an incentive to build a factory in the zone so that the products are competitive with other corporations due to exemption from import duties and export taxes. As stated in Appendix 4-3-5, the import duty free strategy of materials for

import substitute industries is now being undertaken by the government, and the import substitute industries should export their products because of the small domestic market and high productivity. Accordingly, export-oriented industries which should invest in free zones should be selected in order not to depress existing domestic industries.

2) By introducing free trade zones, consuming goods and provisions are at least necessary for the residences of foreigners in the free trade zone. Utilities are also necessary, although investors want to minimize local expenditure. So the local economy will surely be stimulated to some extent. Moreover, some companies may use local services for their daily activities, like packaging, and may use regional soft infrastructures, like banking and insurance companies. From this point of view, the more companies are introduced the better, and companies that use local half-finished products are preferable.

3) In order to give incentives to investors, well-developed infrastructures and utilities must be prepared, such as good port facilities, electric power, gas and water supply plants. These infrastructures are useful not only for companies in free trade zone but also for regional industries and residents.

4) By establishing the free trade zone authority, employment opportunities to the authority at least increase. Some companies may use local labour in spite of comparatively high costs compared with the labour forces in Southeast Asia. According to the Sohar Structure Plan, 35% of the labour force in Sohar is now working in the UAE, and they may be potential members of the labour forces of the new companies in the free trade zone.

5) The relations between the improvement of technical and managerial skills by on-job training and the supply of skilled labours to new companies are like the relations between a chicken and an egg. Unless the free-trade zone authority can prepare skilled labours and allow the companies to introduce their own skilled labouers, no

companies will want to invest in the free-trade zone. If new companies use their own skilled foreign workers, it would be very difficult to develop skilled Omani labourers. But the introduction of free trade zones may be recommendable for improvement of technical and managerial skills to some extent.

6) Technology transfer will become successful through employing Omani labourers by the companies in the free trade zone.

7) By holding international exhibition in the free trade zone, the accessibility to the international market may be improved. Moreover, the marking of the free trade zone is the key to whether the free trade zone is successful or not. Through this marketing process, the access to international markets will increase.

8) Direct generation of wealth is as follows:
   1) Income of Port Charges including Cargo Handling Charges
   2) Income from Rent of Land and Facilities
   3) Income from Utility Consumption of Electricity, Gas and Water
   4) Generation of Additional Foreign Exchange Earnings

On the other hand the incentives to investors are as follows:
   1) Benefits of New Investment
   2) Political Stability
   3) Has Expansion Potential to New market

There are many free-trade zones around the world. In the Gulf region, there are many free trade zones in Bahrain, Fujairah, Sharjaha, Umm-Al-Quwain and Jebel Ali. It is very important to analyse the situation to see whether the new port is competitive with these zones and also with free zones around the world. As mentioned above, the introduction of a free-trade zone in the new port area is very attractive to the regional development if the investors are attempted to invest in the free zone.

(3) Potential for Free Trade Zones in the Northern Part of Oman.

The most competitive free trade zone is the Jebel Ali Development Area in the UAE to the free zone in the northern part of Oman. It has a 45 ha free trade area and is going to expand to 100 ha. It has well-developed port facilities of 67 berths having -14m depth and -11.5m depth as presented in Appendix 4-3-7. As stated in Appendix 4-3-7,

the following incentives are given to Jebel Ali Free Trade Zone.

1) 100% foreign ownership, no local partner is required
2) No recruitment problem, no work permit difficulties
3) 100% repatriation of capital and profits
4) No currency restrictions
5) No corporate taxes for 15 years
6) No personal income taxes
7) Cheap energy

The total number of companies will grow to approximately 350 during 1990, compared with 220 in May 1989.

In order to be competitive with the Jebel Ali Free Zone, there are many issues to be solved, including:

1) Construction of comprehensive and high-quality port facilities including a huge free trade zone area.
2) Relaxation of immigration controls, and granting exemption from "Omanization" requirement in respect of recruitment of manpower for users of the free trade zone.
3) Rationalization of customs procedures for movement of goods for users of the free trade zone.
4) Subsidizing the cost of land, utilities and energy in the free trade zone so that preferential rates can be offered to users of the free trade zone.
5) Establishment of a dynamic and efficiently commercialized Free Trade Zone Authority organization.
6) Encouraging the establishment of the supporting soft infrastructure, such as banking and insurance companies.
7) Construction of infrastructures and utilities that can supply users of the free trade zone at comparative low prices.

Although there are many issues to be solved, the potential for a free zone in the northern part of Oman seems to be high because of the following advantages:

1) The northern part of Oman is geographically located at the entrance of the Arabian Gulf. It is very close to Iran, the GCC countries and the Indian Subcontinent.

Table A-4-3-33 Re-export Value in Oman

SITC Section/Division	1987				1988			
	Value in (000 R.O.)				Value in (000 R.O.)			
	Re-export	Export	Total Export & Re-export	Quantity in Tons	Re-export	Export	Total Export & Re-export	Quantity in Tons
0. Food and Live Animals	1,509.1	19,590.8	21,089.9	47,861	2,426.0	28,958.9	31,384.9	62,034
00 Live Animals	-	4,975.1	4,975.1	2,866	33.9	5,755.0	5,788.9	3,222
01 Meat and Meat Preparation	206.0	-	206.0	314	514.4	-	514.4	749
02 Dairy Products and Eggs	214.9	-	214.9	287	638.6	-	638.6	914
03 Fish and Fish Preparation	11.7	11,804.2	11,815.9	20,654	2.0	18,921.6	18,923.6	35,355
04 Cereals and Cereal Preparations	291.2	24.4	315.6	3,047	465.8	-	465.8	3,230
05 Fruits and Vegetables	68.5	2,254.7	2,323.2	10,007	87.2	3,903.3	3,990.5	12,972
06 Sugar, Sugar Preparations and Honey	262.9	-	262.9	2,512	27.7	-	27.7	74
07 Coffee, Tea, Cocoa, Spices and Manufactures Thereof	401.6	-	401.6	323	584.5	-	584.5	510
08 Feed for Animals (Not Including Unmilled Cereals)	-	522.4	522.4	7,750	0.1	379.0	379.1	4,889
09 Miscellaneous Food Preparations	52.3	-	52.3	101	71.8	-	71.8	119
1. Beverages and Tobacco	175.3	385.2	560.5	910	1,805.3	496.8	2,302.1	11,553
11 Beverages	39.1	-	39.1	114	1,532.5	-	1,532.5	10,855
12 Tobacco and Tobacco Manufactures	136.2	385.2	521.4	796	272.8	496.8	769.6	698
2. Crude Materials, Inedible, except Fuels	2,423.0	16.5	2,439.5	53,350	1,528.8	80.9	1,609.7	43,755
21 Hides, Skins and Furskins Undressed	-	-	-	-	-	-	-	-
22 Oil-Seeds, Oil Nuts & Oil Kernels	1.4	-	1.4	2	2.8	-	2.8	10
23 Crude Rubber (Including Synthetic and Reclaimed)	-	-	-	-	2.3	-	2.3	19

SITC Section/Division	1987				1988			
	Value in (000 R.O.)				Value in (000 R.O.)			
	Re-export	Export	Total Export & Re-export	Quantity in Tons	Re-export	Export	Total Export & Re-export	Quantity in Tons
24 Wood, Lumber and Cork	329.2	-	329.2	3,544	51.8	-	51.8	495
25 Pulp and Waste Paper	37.6	-	37.6	567	53.7	-	53.7	1,047
26 Textile Fibres (Not Manufactured into Yarn, Thread or Fabrics and	45.9	-	45.9	25	-	-	-	-
27 Crude Fertilizer and Crude Materials (Excluding Coal, Petroleum and Precious Stones)	571.5	-	571.5	11,383	13.6	-	13.6	37
28 Metalliferous Ores and Metal Scrap	1,414.6	-	1,414.6	38,234	1,342.6	-	1,324.6	41,890
29 Crude Animal and Vegetable Materials n.e.s.	60.4	16.5	76.9	162	62.0	80.9	142.9	257
3. Mineral Fuels, Lubricants and Related Materials	279.7	-	279.7	682	786.2	-	786.2	1,469
32 Coal, Coke and Briquettes	-	-	-	-	-	-	-	-
33 Petroleum and Petroleum Products	275.7	-	275.7	673	757.1	-	757.1	1,430
34 Gas Natural and Manufactured	4.0	-	4.0	9	29.1	-	29.1	39
4. Animal and Vegetable Oils and Fats	115.6	-	115.6	199	55.1	-	55.1	78
41 Animal Oils and Fats	-	-	-	-	-	-	-	-
42 Fixed Vegetable Oils and Fats	115.6	-	115.6	199	44.4	-	44.4	59
43 Animal or Veg.Oils and Fats, Processed & Waxes of Animals or Veg. Origin	-	-	-	-	10.7	-	10.7	19

SITC Section/Division	1987				1988			
	Value in (000 R.O.)				Value in (000 R.O.)			
	Re-export	Export	Total Export & Re-export	Quantity in Tons	Re-export	Export	Total Export & Re-export	Quantity in Tons
5. Chemicals	2,377.0	-	2,377.0	4,008	2,218.8	-	2,218.8	1,408
51 Chemicals Elements and Compounds	8.9	-	8.9	8	4.3	-	4.3	10
52 Inorganic Chemicals	183.0	-	183.0	173	13.6	-	13.6	84
53 Dyeing, Tanning and Coloring Materials	145.7	-	145.7	238	162.5	-	162.5	167
54 Medical and Pharmaceutical Products	116.3	-	116.3	102	57.5	-	57.5	13
55 Essential Oils and Perfume Materials Toilet, Polishing and Cleaning Preparations	1,297.9	-	1,297.9	836	1,691.4	-	1,691.4	794
56 Fertilizers, Manufactured	19.6	-	19.6	132	12.4	-	12.4	70
57 Explosives and Pyrotechnic Products	230.4	-	230.4	1,765	-	-	-	-
58 Artificial Resins and Plastic Cellulose	43.2	-	43.2	48	14.4	-	14.4	35
59 Chemical Materials and Products n.e.s.	331.4	-	331.4	706	262.7	-	262.7	235
6. Manufactured Goods	5,042.8	9,589.1	5,042.8	23,434	4,679.9	17,396.4	22,076.3	29,545
61 Leather, Leather Manufactures n.e.s. and Dressed Furskins	0.8	-	0.8	1	3.7	-	3.7	-
62 Rubber Manufacturers, n.e.s.	591.2	-	591.2	733	886.6	-	886.6	872
63 Wood and Cork Manufactures (Excluding Furniture)	136.3	-	136.3	409	44.0	-	44.0	108
64 Paper, Paperboard and Manufactures Thereof	453.0	-	453.0	806	346.7	-	346.7	404
65 Textile Yarn Fabrics, Made-up Articles and Related Products	273.7	-	273.7	390	326.0	-	326.0	175

SITC Section/Division	1987				1988			
	Value in (000 R.O.)				Value in (000 R.O.)			
	Re-export	Export	Total Export & Re-export	Quantity in Tons	Re-export	Export	Total Export & Re-export	Quantity in Tons
66 Non-metallic Mineral Manufactures n.e.s.	241.3	-	241.3	1,355	124.0	-	124.0	856
661.2 Cement	(63.4)	-	(63.4)	(4,193.5)	(6.5)	-	(6.5)	(8.6)
67 Iron and Steel	443.6	-	443.6	2,628	1,374.0	-	1,374.0	
68 Non-Ferrous Metals	123.5	9,589.1	9,712.6	14,306	9.4	17,396.4	17,405.8	18,164
69 Manufactures of Metal n.e.s.	2,779.4	-	2,779.4	2,808	1,565.5	-	1,565.5	2,431
7. Machinery and Transport Equipment	60,764.0	-	60,764.0	31,554	69,003.1	-	69,003.1	28,818
71 Power Generating Machinery and Equipments	765.5	-	765.5	456	2,801.0	-	2,801.0	638
72 Machinery Specialised for Particular Industries	7,260.4	-	7,260.4	7,010	7,784.7	-	7,784.7	8,047
722 Tractors	(28.8)	-	(28.8)	(14)*	(42.2)	-	(42.2)	(15)*
722.3 Road Rollers Mechanically Propelled	(110.1)	-	(110.1)	(15)*	(32.7)	-	(32.7)	(9)*
722.41 Bulldozers, Angledozers and Levellers	(1,170.0)	-	(1,170.0)	(76)*	(501.9)	-	(501.9)	(26)*
723.44 Boring & Sinking Machinery	(456.0)	-	(456.0)	(699.5)	(1,431.5)	-	(1,431.5)	(3,029.2)
73 Metal Working Machinery	403.7	-	403.7	285	229.9	-	229.9	179
74 General Industries Machinery and Equipment, & Machine Parts n.e.s.	2,084.8	-	2,084.8	2,488	1,841.8	-	1,841.8	1,928
741.5 Air-Conditioning Machines, Self-Contained, other than Window Types	(30.3)	-	(30.3)	(12.6)	(49.8)	-	(49.8)	(29.5)
75 Office Machines and Automatic Data Processing Equipment	381.1	-	381.1	33	152.2	-	152.2	15

SITC Section/Division	1987				1988			
	Value in (000 R.O.)				Value in (000 R.O.)			
	Re-export	Export	Total Export & Re-export	Quantity in Tons	Re-export	Export	Total Export & Re-export	Quantity in Tons
76 Telecommunication and Sound Recording and Reproducing Apparatus and Equipment	942.3	-	942.3	147	1,594.3	-	1,594.3	188
761 Television Receivers, Colour or Monochrome	(222.0)	-	(220.0)	(35.6)	(251.4)	-	(2,514.4)	(37.1)
77 Electrical Machinery, Apparatus and Appliances n.e.s. and Parts Thereof	1,892.7	-	1,892.7	1,431	1,566.9	-	1,566.9	1,057
775.9 Air-Conditioners, Domestic Window Type	(387.1)	-	(387.1)	(20.7)	(592.2)	-	(592.2)	(311.1)
78 Road Vehicle (Including	32,692.7	-	32,692.7	19,532	36,174.6	-	36,174.6	16,572
781 Passenger Motor Cars	(26,204.2)	-	(26,204.2)	(6,412)*	(31,639.1)	-	(31,639.1)	(6,511)*
782.1 Motor Vehicles for Transport of Goods or Materials	(1,923.6)		(1,923.6)	(509)*	(1,381.3)	-	(1,381.3)	(393)*
782.2 Special Purpose Motor Lorries and Vans	(1,106.0)	-	(1,106.0)	(339)*	(518.4)	-	(518.4)	(46)*
783.1 Public Service Type Passenger Motor Vehicles	(251.8)	-	(251.8)	(179)*	(406.9)	-	(406.9)	(170)*
783.2 Road Tractors for Semi-Trailers	(3.7)	-	(3.7)	(1)*	(1.8)	-	(1.8)	(1)*
79 Other Transport Equipment	14,338.8	-	14,338.8	172	16,857.7	-	16,857.7	194
8. Miscellaneous Manufactured Articles	3,384.6	-	3,384.6	1,761	2,844.0	-	2,844.0	1,207
81 Sanitary, Plumbing, Heating and Lighting Fixtures and Fittings	45.7	-	45.7	33	79.1	-	79.1	23
82 Furniture	460.5	-	460.5	362	200.8	-	200.8	221

SITC Section/Division	1987				1988			
	Value in (000 R.O.)				Value in (000 R.O.)			
	Re-export	Export	Total Export & Re-export	Quantity in Tons	Re-export	Export	Total Export & Re-export	Quantity in Tons
83 Travel Goods, Handbags and Silmilar Articles	3.7	-	3.7	4	4.1	-	4.1	3
84 Articles of Apparel and Clothing Accessories	701.0	-	701.0	297	859.0	-	859.0	475
85 Footwear	15.4	-	15.4	21	36.1	-	36.1	22
87 Professional, Scientific and Controlling Instruments and Aparatus n.e.s.	549.4	-	549.4	109	254.5	-	254.5	86
88 Photographic Apparatus, Equipment and Supplies and Optical Goods n.e.s. Clocks and Watches	927.3	-	927.3	127	674.8	-	674.8	91
89 Miscellaneous Manufactures Articles n.e.s.	681.6	-	681.6	808	735.6	-	735.6	286
9. Commodities & Transaction Not Elsewhere Classified	8,786.3	9,488.4	18,269.8	80,958	6,724.5	15,961.6	22,626.1	132,165
Total	84,858.5	39,060.0	123,912.5	245,284	92,071.7	62,894.6	154,966.3	312,032

* Numbers
n.e.s. not elsewhere stated.

2) The Sultanate of Oman is politically stable and there seems to be no investment risk.
3) There are not as many export goods compared with imported consumer goods and the space for exports by sea is available at a comparatively low cost to Europe and the Far East.
4) There is a well-developed international airport and a good highway along the Batinah Coast. It is very easy to approach to the airport within 2 hours.

In order to construct the new port facilities, about 10 years are necessary. In order to compete aggressively with the Jebel Ali Free Zone, the sooner is the new port constructed the better. But there are many issues to be solved as mentioned above, so the measures needed to prepare a good surrounding environment for a free trade zone must be proceeded in accordance with the progress of the new port construction.

The potential free trade zone activities are as follows, as analysed by Ewbank Preece Ltd.:

1) Entrepot trade as transshipment, re-export and sea-air trade
2) Export processing
3) Offshore banking and insurance.

1) Entrepot Trade

They analyzed the potential of entrepot trade as transshipment, reexport and sea-air trade through the analysis of import value to GCC. nations, Iran and Iraq from eastern supplying countries such as Japan, Australia, Singapore, South Korea, India and Pakistan. The demond of GCC member countries are not so big that the distribution centers which can distribute small amount of commodities have a good potential in the northern part of Oman. The following table shows the commoditywise reexport value in 1987 and 1988. Almost all commodities are reexported from Oman:

Table A-4-3-33 shows the reexport value of summatried commodity and the proportion of the reexport value to the total export:

As shown in Table A-4-3-33, the proportion of the re-export value to the total export value is 59.4 percent and thus there are high hopes for locating a distribution center in the free trade zone. From the classified commoditywise proportion, the machinery and transport equipment can be

Table A-4-3-34 Proportion of Re-export

SITC Division	Value in 1,000R.O.					Quantity	
	Re-Export	%	Export	%	Total	Tons	% of Re-Export
0. Food and Live Animals	2,426.0	7.7	29,958.9	92.3	31,384.9	62,034	2.6%
1. Beverage and Tobacco	1,805.3	78.4	496.8	21.6	2,302.1	11,553	2.0
2. Crude Material, Inedible except Fuels	1,528.8	95.0	80.9	5.0	1,609.7	43,755	1.7
3. Mineral Fuels, Lubricant and Related materials	786.2	100	-		786.2	1,469	0.9
4. Animal and Vegetable Oils and Fats							
5. Chemicals	2,218.8	100	-		2,218.8	1,408	2.4
6. Manufactured Goods	4,679.8	21.2	17,396.4	78.8	22,076.3	29,545	5.1
7. Machinery and Transport Equipment	69,003.1	100	-		69,003.0	28,818	74.9
8. Miscellaneous Manufactured Articles	2,844.0	100	-		2,844.0	1,207	3.1
9. Commodities & Transaction Not Elsewhere Classified	6,724.5	29.7	15,961.6	70.3	22,626.1	132,165	7.3
Total	92,071.7	59.4	62,894.6	40.6	154,966.3	312,032	100.0

found to be 74.9 percent.

From Table A-4-3-33, commodities that are re-exported in big amounts are as follows:

11 Bereage	1.5 million R.O.	10,855 tons
28 Metalliferous Ores and Metal Scrap	1.3 "	41,890 "
55 Essential Oils and Perfume Materials Toilet, Polishing and cleaning Preparations	1.7 "	794 "
67 Iron and Steel	1.3 "	6,535 "
69 Manufactures of Metal n.e.s.	1.6 "	2,431 "
71 Power Generating Machinery and Equipment	1.4 "	6,535 "
72 Machinery Specialised for Particular Industries	7.8 "	8,047 "
74 General Industries Machinery & Equipment, & Machine Parts n.e.s.	1.8 "	1,928 "
76 Telecommunication and Sound Recording and Reproducing Apparatus and Equipment	1.6 "	188 "
77 Electrical Machinery, Apparatus and Appliances n.e.s & Parts Thereof	1.6 "	1,059 "
78 Road Vehicle	36.2 "	16,572 "
79 Other Transport Equipment	16.9 "	194 "
04 Cereals and Cereal Preparations	0.5 "	3,230 "
33 Petroleum and Petroleum Products	0.8 "	1,430 "

Judging from the above re-export cargoes, the potential distribution centers to G.C.C. member countries, Iran and Iraq are as follows:

a. Food-related products distribution centers such as cereal and cereal products and beverages(including the expansion of the existing flour mill)
b. Petroleum products distribution centers
c. Iron and other metal distribution centers
d. Chemical products distribution centers
e. Various kinds of machinery distribution centers

2) Export Processing

The following table shows the existing manufacturing activity at Jebel Ali Free Zone at the investigated years.

Table A-4-3-35 Manufacturing Activity at JAFZ

SITC No.	Activity	No.of Firms	No.of Firms
31	Manufacture of Food, Beverages and Tobacco	02	03
32	Textile, Wearing Apparel and Leather Industries		
34	Manufacture of Paper and Paper Products, Printing and Publishing	18	31
35	Manufacture of Chemicals and Chemical Petroleum, Coal, Rubber and Plastic Products	09	05
36	Manufacture of Non-Metallic Mineral Products, except Petroleum Products and Coal	03	
37	Basic Metal Industries	03	03
38	Manufacture of Fabricated Metal Products, Machinery and Equipment	11	10
39	Other Manufacturing Industries	03	07
	Total:	50	61
		(Aug. 1987)	(Feb. 1989)

As shown in the above table, textile and garment manufactures outnumber any other manufacturing activity. The Jebel Ali Free Zone Authority now has a policy of not issuing any further garment-manufacturing licenses for fear of quota repercussions, especially from the USA.

The manufactured fabricated metal products are now used for the offshore and onshore oil drilling facilities as well as in the construction industry within the country.

Potentially viable export industries in Oman are agro-related industries and fish processing, as described in Appendix 4-3-4. However, these are raw material base industries and are not suitable industries for a Free Trade Zone. Other major potential export industries are petro

chemical industries utilizing natural gas resources, but they are also raw material-based industries and thus not suitable for the Free Trade Zone.

Accordingly, it is recommended that suitable commodities for regional distribution centers to G.C.C. member countries, Iran and Iraq be produced in a Free Trade Zone in Oman. Textile and garment manufacturing industries have already been established in the Rusayl Industrial Estate, and so, do not seem to be suited for Free Trade Zone activities because of the competition with domestic industries.

Petrochemical industries may not be suitable for the Free Trade zone because they are raw material-based industries, but derivative petrochemical industries, such as these manufacturing using synthetic resins and rubber, seem to be suitable. Large scale metal industries, such as iron refining mills, seem to be difficult to develop in Oman. But iron and other metal manufacturers seem to be suitable for Free Trade Zone activities.

Large projects in and around the Jebel Ali Free Zone are as follows:

a. Dubal(Dubai Aluminum Co.)Area: 480 ha.
   Project Cost:(U$1,400 Million)
   Aluminium Smelting Plant : 158,000 tons/year
   Desalination Plant: 24 Million Gallons/day
   Power Plant: 515 MW
   Feedstocks: from Dugas
b. Dubai Electricity Co.
   Power Plant: 227 MW
   Desalination Plant: 24 Million Gallons/day
c. Dugas
d. Phosphoric Acid Plant (In planning stage)
   Import: Phosphate rocks from Jordan
   Products: Phosphoric Acid
   Export: Products to Fertilizer Co. in India
e. Cereal Silo(Gulf Imports & Exports Co.)
   Capacity of Silo: 120,000tons
f. Arabian Rebar
   Products: 30,000tons/year of Coasted Steel

g. Abu Dhabi's Star Energy Co.
Distribution of Light Oil Products (Petrol, Aviation Fuel and Diesel Oil)

h. BP Arabian Agencies
Blending of Lubricants of 30,000 tons/year

Appendix 4-3-7 Outline of Major Ports in the UAE

I. PORT RASHID

1. Port Facilities

1.1 Container Terminal

Quay Length: 1,350 meters

Berth: 5

No.31: 225 meters (-11.5 meters) for selfsustaining ships

No.32: 225 meters (-12.8 meters) served by two Liebherr Tango 30 ton gantry cranes

No.33-35: 330 meters (-12.8 meters) served by two 30.5 ton and two 41 ton Mitsubishi gantry cranes

Open Storage: 50 hectares including areas for Ro/Ro cargoes

Plant:

Straddle Carriers: 30.5 tonnes (3 high) * 7
41 tonnes (3 high) * 9

Fork Trucks: 2.5 tonnes * 2
25 tonnes * 1
Empty Container Handlers * 7

Terminal Tractors: Roll Type * 22
Ro/Ro type * 4

Trailers: Roll type * 94

Reefer Points: 277 plug-in points

1.2 General Cargo

Quay Length: 5,682 meters

Berth: 30

No.1-4: 175 meters (-10.1 ~ -9.3 meters)
Sheds: 7,200 sq.m. * 4

No.5-15: 183 meters (-10.7 ~ -9.3 meters)
Sheds: 7,200 sq.m. * 7

No.16: 213 meters (-11.5 meters)

No.17-24: 184 meters (-11.5 meters)
Sheds: 7,200 sq.m. * 3

No.25: 151 meters (-11.5 meters)

No.26-27: 133 meters (-11.5 meters)

No.28-30: 283 meters (-11.5 meters)

Sheds: 7,200 sq.m. * 2

Open Storage: 71 hectares

Equipment

Forklift Trucks: 11 * 2.5 tonnes, 23 * 3 tonnes. 9 * 5 tonnes

Mobile Cranes: 4 * 25 tonnes, 1 * 33 tonnes

Tractor Units: 4 * Roll type, 4 * draw bar type

Trailers: 28 * Roll type, 20 * draw bar type

Mobile Lighting Towers: 6 Units

Stand-by Equipment

Cranes: 15 tonnes * 1

Forklifts: 3 tonnes * 17

Tractors: draw bar * 1

Trailers: draw bar * 20

2. Port Traffic

2.1 Cargo

Table A-4-3-36 Container Cargo

	1986	1987	1988	1989
Import FRT	2,438,119	*2,326,469	**2,319,264	**2,904,756
Loaded TEU	169,861	230,574		
Empty TEU	24,846	33,248		
Export FRT	393,750	*484,253	**613,566	**733,742
Loaded TEU	88,107	144,577		
Empty TEU	100,375	114,746		
Total TEU	383,189	523,145	557,521	**539,341
Total FRT	2,831,869	*2,810,722	**2,932,830	**3,638,498
Transshipment FRT	1,840,525	*2,453,186	**2,643,435	**3,069,828

*: January / November, **: January / October

Table A-4-3-37 General Cargo

	1986	1987	1988	1989
Import			**1,538,034	**1,844,769
Export			**79,031	**148,774
Total	1,958,578	*1,867,018	**1,617,065	**1,993,543
Transshipment			**123,570	**143,834

*: January / November, **: January / October

Cargo tonnages of container transshipment handled from Jan. 89 to Jun. 89 by region are as follows;

Table A-4-3-38 Container Transshipment

Unit:Cubic ton

	Tranship-in	Tranship-out
N.EUROPE	235,346 (12.1%)	122,870 (6.3%)
S.EUROPE & MED	128,152 (6.6)	178,758 (9.2)
AFRICA	24,266 (1.3)	31,230 (1.6)
MIDDLE EAST	24,795 (1.3)	78,672 (4.1)
ARAB.GULF	201,439 (10.4)	562,418 (29.0)
INDIAN S/C	723,671 (37.3)	482,914 (24.9)
S/E ASIA	4,923 (0.3)	12,310 (0.6)
AUST. & N.Z.	27,522 (1.4)	6,143 (0.3)
FAR EAST	378,298 (19.5)	342,922 (17.7)
W/C USA	3,483 (0.2)	814 (-)
E/C USA	144,067 (7.4)	93,729 (4.8)
US GULF	32,606 (1.7)	18,724 (1.0)
S.AMERICA	2,156 (0.1)	- (-)
UNKNOWN	7,650 (0.4)	7,500 (0.4)

2.2 Vessel

Table A-4-3-39 No. of Calling Vessels

	1986	1987	1988
Container	811	926	974
General/Container	212	163	126
General	297	284	297
Bulk Carriers	7	8	7
Car Carriers	143	151	148
Livestock Carriers	18	14	18
Tankers		102	81

3. Port Charges

3.1 Conainer Operations Charges

3.1.1 Loading/Discharging of Containers

	Standard Rate	Volume Discount Rate			
		6,000	10,000	14,000	18,000
Up to 20'					
Loaded	330 Dh	300	270	235	200
Loaded					
Tranship	460	410	370	325	280
Empty	180	170	160	150	140
Empty					
Tranship	310	290	270	250	230
Over 20'					
Loaded	500	450	400	345	290
Loaded					
Tranship	650	590	530	465	400
Empty	250	235	220	210	200
Empty					
Tranship	450	420	390	370	350

Note: 1) Volume Rates

To qualify for Volume Rates, Carriers should submit a letter of guarantee before discount rates can be applied.

2) Additional Volume Discount

When a Line or Consortium has handled 22,000 container moves in a calendar year, there will be a reduction of Dh 20 per move on every move in excess of 22,000.

3) Shortfall on Volume Discount Commitment

When a Line or Consortium fails to achieve the number of moves to which it has committed, the Authority reserves the right to render a supplementary invoice to adjust the rates accordingly.

4) Transshipment containers loaded or empty count as one move only.

3.1.2 Storage of Containers

Rates apply per day and after free time expires.

	20' & Under	Over 20'
IMPORT		
First 20 days	Free	Free
Next 20 days	Dh 15	Dh 30
Next 30 days	20	35
Next 30 days	25	40
Thereafter	35	50
EXPORT, TRANSHIPMENT and EMPTY		
First 20 days	Free	Free
Next 90 days	10	20
Thereafter	20	40

3.1.3 pilotage Charges

Pilotage charges are as follows:-

Vessels up to 2,500 GRT	Dh 100
Vessels from 2,501 to 6,000 GRT	300
Vessels from 6,001 to 12,000 GRT	450
Vessels from 12,001 to 25,000 GRT	650
Vessels from 25,001 to 50,000 GRT	900
Vessels from 50,001 to 120,000 GRT	1,350
Vessels from 120,000 GRT	2,000

4. Documentation

The following documentation shall be delivered to the documentation section at least 48 hours prior to the vessel's arrival:

a) Discharging vessels

Cargo Stowage Plan	3 copies
Cargo Manifest	8 copies
Hatch List	3 copies
Hazadous and Dangerous Cargo Declarations	8 copies
Crew List	3 copies

b) Loading vessels

Customs Endorsed Export Declaration	1 copies
Cargo Stowage Plan	3 copies
Cargo Loading List	3 copies
Hazadous and Dangerous Cargo Declaration	8 copies

On completion of loading, 8 copies of the vessel manifest endorsed by the Ports & Customs must be provided.

5. Others

5.1. Working Hours

The normal working hours from Saturdays to Thursdays inclusive (but excluding Public Holidays) will be 0700 to 1400 hours.

Overtime will be charged for all hours worked outside normal working hours at the discretion of the Authority, and the charges will be as follows and the charges against vessels will be calculated on a per vessel basis and not per gang basis:

Saturday to Thursday, 1400 to Midnight

Dh 150 per hour or part thereof;

Saturday to Thursday, 0001 to 0700 and on Fridays and Public Holidays

Dh 300 per hour or part thereof;

5.2 Sea Air Cargo

Sea Air Services via Dubai are providing a fast but cost effective bridge between manufacturers in Hong Kong, Taiwan, Japan, Korea, India and markets in Europe, Africa and North America. The wide range of Sea Air cargoes includes readymade garments, computers, auto parts, footwear and electronic equipment. In 1988, 16,880,539 kg air cargoes are handled in Port Rashid.

6. Future Development Plan

The 50 hectare terminal will be expanded by 15 hectares right to the port's perimeter fence. Empty container stacking areas will be relocated to improve storage operations and three of the six CFSs will also be repositioned to allow better movement of boxes between the stacking area and quay. The existing delivery grid will be relocated and a second exchange pad of 20 slots will be created to reduce the running time to the Terminal's main quayside container area.

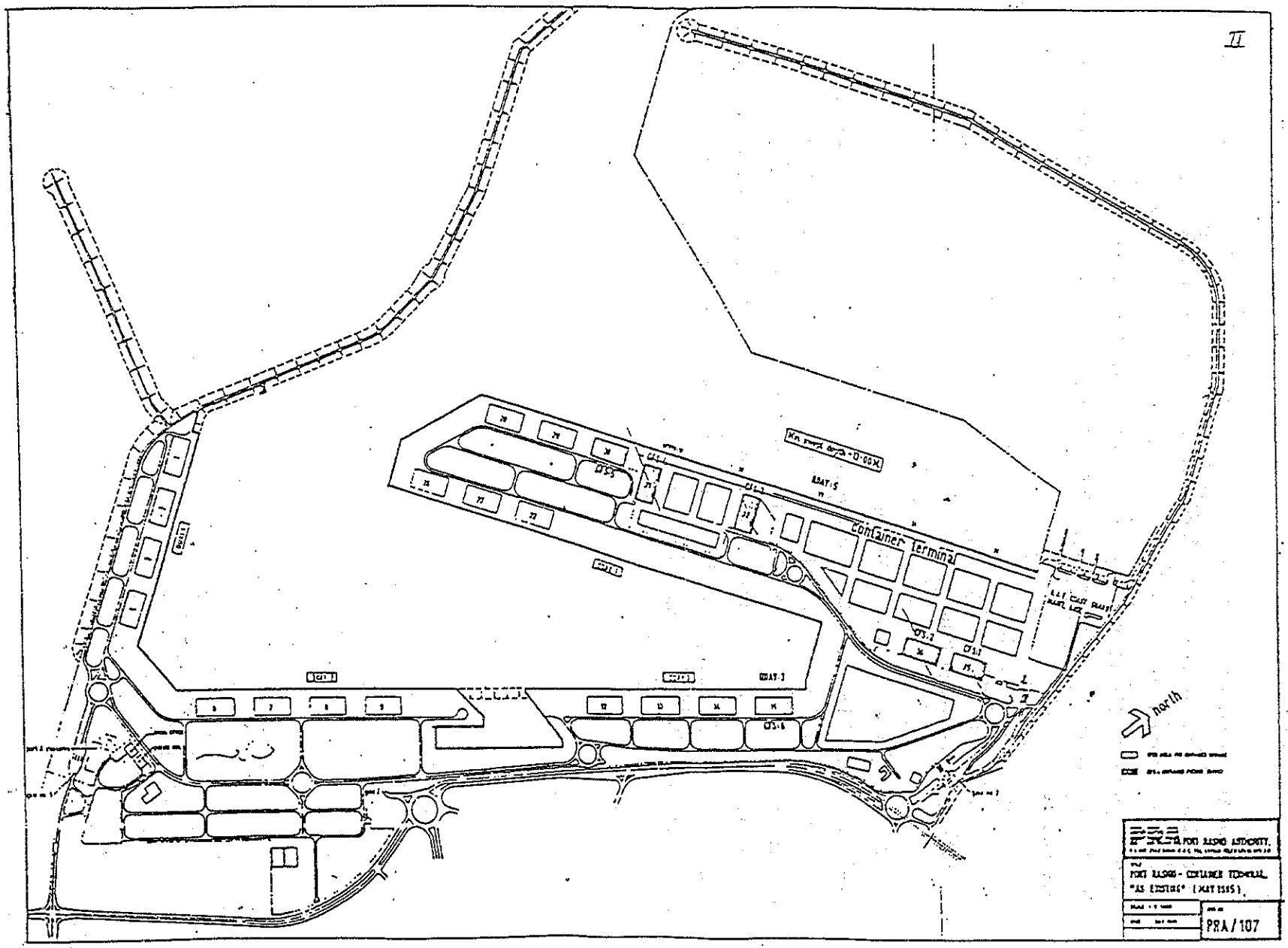


Fig. A-4-3-14 Plan of Port Rashid

II. JEBEL ALI PORT

1. Port Facilities

1.1 Container terminal

Quay Length: 900 meters
Berth: 3
No.15-17: 900 meters (-14.0 meters) served by three 41 ton Mitsubishi and Hitachi gantry cranes (two more will be equipped soon)
Open Storage: 54,000 sq meters (8,000 TEUs)
CFS: 10,000 sq meters
Cool Storage: 4,000 sq meters
Plant:
Top-lift Container Handling Vehicles: 31 tonnes * 7
Reefer Points: 216 plug-in points (380 volt)

1.2 Ro/Ro Terminal

Quay Length: 600 meters
Berth: 3
No.32-34: 600 meters (-11.5 meters) served by two ramps for stern discharging vessels
Open Storage: 105,000 sq meters
Covered Storage: 8,000 sq meters
Cold Storage: Behind No.31 with the capacity of 7,000 tonnes

1.3 General Cargo

Quay Length: 1,400 meters
Berth: 7
No.34: 400 meters (-11.5 meters) Multi-used with Ro/Ro
No.61-66: 1,000 meters (-11.5 meters)
Open Storage: 175,000 sq meters
Transit Shed: 48,000 sq meters (6 Sheds)

1.4 Special Berths

1.4.1 Tanker/LPG Berth No.1

Depth: -15 meters (Available draught 14.25 meters)

1.4.2 Tanker Berth No.2

Depth: -14 meters (Available draught 13.25 meters)

1.4.3 Chemical Tanker Berth No.51

Depth: -11.5 meters (Available draught 10.75 meters)

1.4.4 Star Energy Resources Berths (Product Tanker Berths)

No.8 & 9: Quay Length 255 meters * 2
Depth: -14 meters (Available draught 13.25 meters)

1.4.5 Dubal Terminal (Almina Powder)

No.1: Quay Length 600 meters
Depth: -14 meters (Available draught 13.25 meters)
Unloader: 380 tonnes/hour (by two unloadeds)

1.4.6 Bulk Grain Terminal

No.3.4: Quay Length 600 meters
Depth: -14 meters (Available draught 13.25 meters)
Loader/Unloader: 2 * 800 tonnes/hour
Silo: 120,000 tonnes capacity

2. Port Traffic

2.1 Cargo

Table A-4-3-40 Container Cargo

	1986	1987	1988	1989
Import FRT				
TEU	36,510	20,763	23,196	*** 19,009
Expert FRT				
TEU	38,675	21,808	22,529	*** 14,071
Transshipment				
TEU	70,888	29,900	24,046	*** 33,405
Total FRT	*1,332,685	665,371	505,437	***478,495
TEU	** 146,073	72,471	69,771	*** 66,485
(Restows TEU)	6,635	2,836	1,643	*** 1,014

* Total FRT includes restowed containers
** Total TEU excludes restowed containers
*** January / May

Table A-4-3-41 Other Cargo

	1986	1987	1988	1989
GENERAL CARGO				
Bulk	550,056	643,636	852,199	*** 414,819
General	153,331	147,487	136,823	*** 74,480
TOTAL	703,387	791,123	989,022	*** 489,299
COLD STORE	49,424	47,230	42,042	*** 5,843
PETROLEUM				
Oil	2,840,956	2,378,926	2,222,861	***1,643,348
Gas	718,547	645,321	694,527	*** 297,366
Others	15,726	14,905	21,286	*** 3,955
TOTAL	3,575,229	3,039,152	2,938,674	***1,944,669

*** January / May

2.2 Vessel

Table A-4-3-42 No. of Calling Vessels

	1986	1987	1988	1989
Container	328	168	122	*** 77
Ro/Ro	0	15	19	*** 6
General Cargo	166	153	141	*** 59
Supply Vessels	1,819	1,446	1,896	*** 725
Others	630	624	488	*** 235
Total	2,943	2,405	2,666	***1,102

*** January / May

3. Port Charges

Same as Port Rashid

4. Documentation

Same as Port Rashid

5. Others

Working Hours

The normal working hours from Saturdays to Thursdays inclusive (but excluding Public Holidays) will be 0700 to 1200 hours and 1300 to 1600 hours. Overtime will be charged for all hours worked outside normal working hours, at the discretion of the Authority, and the charges will be as follows:

Saturday to Thursday, 1600 to Midnight
Dh 150 per hour or part thereof;

Saturday to Thursday, 0001 to 0700 and on Fridays and Public Holidays
Dh 300 per hour or part thereof;

6. Future Development Plan

Two gantry cranes have recently been bought from the Port of Singapore and it is planned that two more gantry cranes will be purchased in the near future.

7. Free Zone

The Jebel Ali Free Zone is located in the Emirate of Dubai in the United Arab Emirates. It was created on February 1985. The Free Zone Authority is a government establishment which works under the supervision of the Jebel Ali Free Zone. Its responsibilities include the issuance of administrative rules and licences to companies wishing to operate within the Free Zone.

Incentives for investing in the Free Zone are as follows:

i) 100 % foreign ownership
ii) No recruitment problems
iii) 100 % repatriation of capital and profits
iv) No currency restrictions
v) No corporate taxes for 15 years
vi) No personal income taxes
vii) No import/export duties
viii) Cheap energy

Current investment costs are as follows:

i)	Land rental	U.S.$ 1.47 per sq. meter per year
ii)	Quay rental	Subject to negotiation
iii)	Prebuilt factories	from U.S.$ 43.60 per sq. meter per year
iv)	Office space	from U.S.$ 183.00 per sq. meter per year

v) Prebuilt warehouses	U.S.$ 46,86 per sq. meter per year
vi) Electricity supply	A charge is made for a supply in excess of: 150 KVA per land lease 50 amp per section of warehouse 200 amp per factory unit
vii) Sewerage charges	A sewerage charge of 150 % of the water bill is raised each month
viii) Electricity costs	U.S.$ 0.02 per KWH
xi) Water costs	Domestic U.S.$ 4.09 per 1,000 gallons Industrial U.S.$ 9.91 per 1,000 gallons

8. Re-exports by Country of Destination in Dubai

Table A-4-3-43 Re-exports by Country of Destination in Dubai

Unit: ,000 Dhs

Country	1986	1987	1988
Iran	732,604	1,305,715	691,776
Saudi Arabia	445,029	653,935	487,072
Qatar	226,167	360,432	432,210
Kuwait	169,108	243,272	357,765
West Germany	124,985	230,860	224,866
Baharain	132,242	178,143	193,984
India	176,834	150,709	183,978
United Kingdom	115,449	201,714	183,005
Others	1,339,358	1,965,064	2,331,899
Total	3,461,776	5,239,844	5,086,555

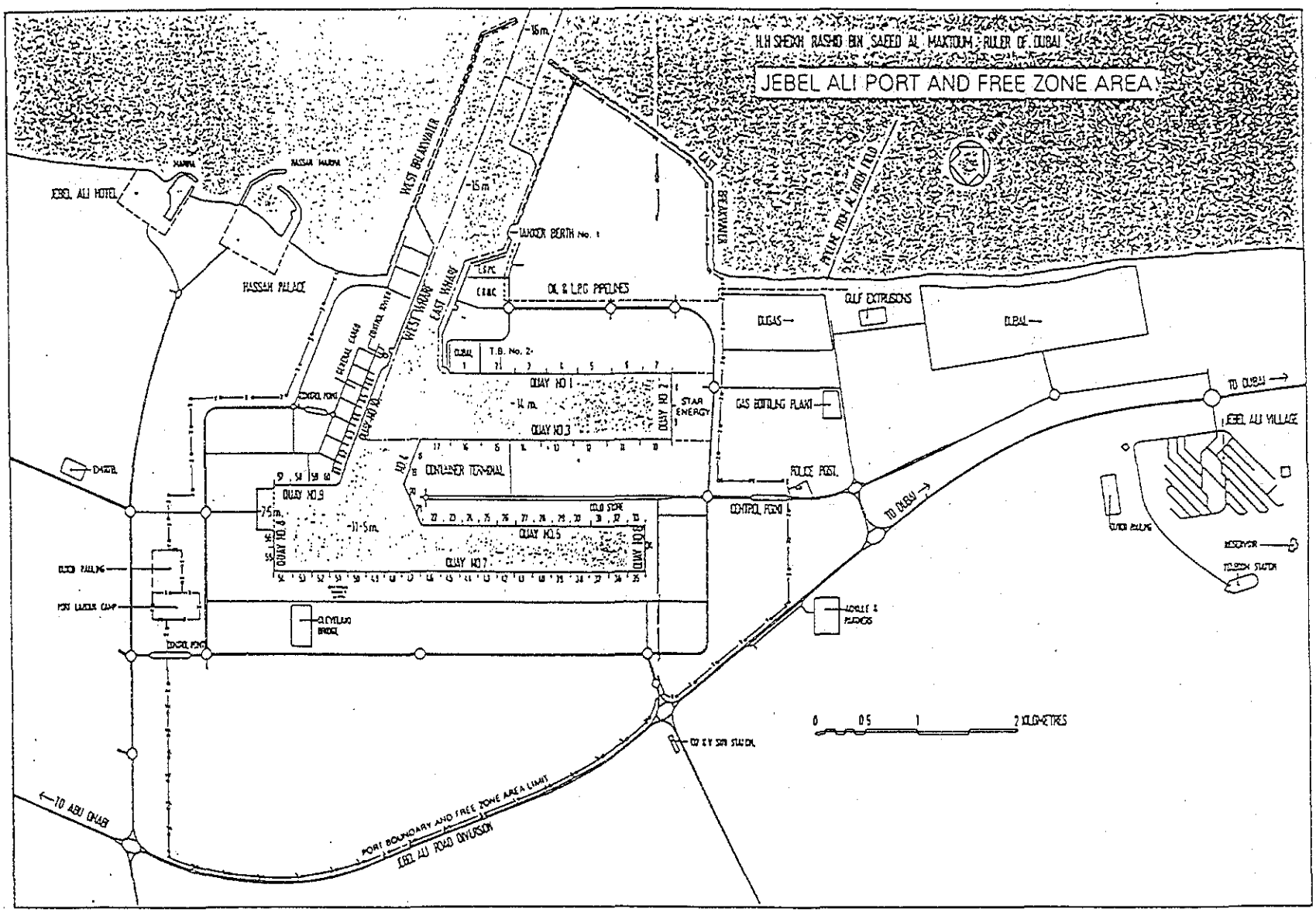


Fig. A-4-3-15 Plan of Jebel Ali Port

III. PORT OF FUJAIRAH

1. Port Facilities

1.1 Container Terminal

Quay Length: 780 meters

Berth: 4

No.1: 175 meters (-12.5 meters draught) served by three
No.2: 220 meters (-12.5) 40 ton IHI gantry
No.3: 200 meters (-12.5) cranes
No.4: 180 meters (-11.0)

Open Storage: 65,000 sq meters (Container/General Cargo), 8,000 TEUs

Plant:

Rubber tyred gantries: 35.6 tonnes (6 row * 4 high) * 5
Top loaders: 40 tonnes * 3
Mobile Jones cranes: 40 tonnes * 2
Terminal Tractors
Trailers
Reefer Points: 120 points (220 volts), 90 points (38 volts)

1.2 General Cargo

Quay Length: 290 meters

Berth: 3

290 meters (-7.0 meters draught)

Shed: 2,500 sq. meters

2. Port Traffic

2.1 Cargo

Table A-4-3-44 Container Cargo

	1986	1987	1988	1989
Import FRT	586,456	877,545	925,404	*1,023,377
TEU	65,034	92,434	101,206	* 106,531
Expert FRT	623,551	773,750	759,101	* 894,126
TEU	73,524	95,695	101,687	* 109,126
Total FRT	1,210,007	1,651,295	1,684,505	*1,917,503
TEU	138,558	188,129	202,893	* 215,657
Transshipment				
TEU	63,831	73,167	74,764	* 88,642
Receipts Unit	5,930	15,429	17,834	* 13,374
Deliveries Unit	1,376	12,807	16,836	* 12,141

* January / October

Table A-4-3-45 Other Cargo

	1986	1987	1988	1989
Container	1,210,007	1,651,295	1,684,505	* 1,917,503
General Cargo	78,056	126,457	143,669	* 91,557
Livestock (Heads)				
Import	410,943	521,337	215,093	* 125,338
Export	180,235	231,864	--	--
Total	591,178	753,201	215,093	* 125,338
Bulk Cargo	771,635	443,301	558,105	* 212,385
Gas/Oil	95,318	186,334	105,714	* 185,554
Offshore Supply	--	36,150	42,336	* 51,483
Total FRT	2,155,016	2,443,537	2,534,329	* 2,458,476

*** January / May

2.2 Vessel

Table A-4-3-46 No. of Calling Vessels

	1986	1987	1988		1989
Container	163	202	254	*	230
Ro/Ro	-	-	4		-
General Cargo	68	36	44	*	25
Livestock Carriers	35	41	11	*	7
Rock Carriers/Barges	74	40	52	*	18
Gas Oil Tankers	17	25	20	*	22
Supply Vessels	173	161	265	*	186
Others	198	208	268	*	334

*** January / October

3. Port Charges

3.1 Container Operations Charges

3.1.1 Loading/Discharging of Containers

	No Guarantee	Annual Guarantee		
		6,000	10,000	14,000
Up to 20'				
Loaded	310 Dh	270	235	200
Transhipment	420	370	325	280
Empty	180	160	150	125
Over 20'				
Loaded	350	325	300	280
Transhipment	500	450	400	350
Empty	200	180	160	140

Note: 1) Guarantee figure does not include restows.
2) Guarantee figure refers to annual container movements either loaded or empty.

3.1.2 Storage of Containers

All containers, both import & export will be allowed 20 days free time from time of receipt into stack or completion of vessel discharge.

Transhipment containers will be allowed 30 days free time from completion of inbound vessel discharge. Thereafter storage will be applied as follows:

Per Day	FCL		Empties	
	20'	40'	20'	40'
Day 21 to Day 30	15Dh	30	10	20
Day 31 to Day 40	20	40	15	30
Day 41 onwards	20	40	20	40
Transhipment				
Day 31 to 40	20	40	15	30
Day 41 onwards	20	40	20	40

3.2 Port Dues

Port dues will be levied on all vessels entering Fujairah Port. The charges will be based on the Net Registered tonnage as follows:

0-7 days	20 fills per N.R.T.
8 days plus	4 fills per N.R.T. per day
Exemption	*After seven calls, in any one year on which Port* Dues have been paid.

3.2 Pilotage Charges

Pilotage charges are as follows:

Coastal to 500 NRT	Dh 200
501-3,000 NRT	350
3,001-6,000 NRT	550
6,001-9,000 NRT	750
9,001-15,000 NRT	850
15,001-25,000 NRT	950
25,001-Plus	1,050
Detention per hour or part thereof	250

4. Documentation

The following documents must be presented by vessel on arrival or by ship's agent earliest prior to arrival of vessel.

Immigration	:	Crew list	2 copies
		Passenger list	
Customs	:	Crew list	
		Passenger list	
		Bonded stores list	
		Cargo manifest	
Port Operations	:	Cargo manifest	
		Stow plans/hatch list	
		Dangerous cargo list	
		Transhipment cargo list	
		Heavy lift list	
		Refrigerated cargo list	

5. Others

5.1 Working Hours

The normal working hours both afloat and ashore from Saturday to Thursday inclusive (but excluding Public Holidays) will be from 0700 to 1200 hours and 1300 to 1600 hours.

The container terminal will be open for the receipt and delivery of containers from 0700 to 1200 hours and 1300 to 1600 hours daily. other than on Fridays and Public Holidays. Containers can be received or delivered at any time outside these hours subject to approval by the Port Operations Manager and in accordance with the port overtime rates.

Over time will be charged per gang for all hours worked outside normal working hours and the charges will be as follows;

a) Saturdays to Thursdays inclusive : Dh 150 per hour or part

thereof when working between 1600 and 0001 hours. Hours worked between 0001 and 0700 hours will be charged at the same rate as for Fridays and Public Holidays.

b) Fridays and Public Holidays : Dh 250 per hour or part thereof

5.2 Sea Air Cargo

Construction began on an airport designed to full international standards. Completed September 1987, the airport provides a virtual adjacent transport facility to the Port. Less than 4 miles from the sea port the airport is already attracting both passengers and cargo airlines. The airport provides the final facility needed to make Fujairah a complete intermodal base for the Middle East and Sub Continent. In 1988, over 16,500 tonnes of sea/air cargo were handled at the sea port.

6. Free Trade Zone

The Free Trade Zone is located adjacent to the port and offers incentives to investors including:

i) 100% foreign ownership
ii) 100% repatriation of profit and capital
iii) No personal or corporate income taxes
iv) No work permit or sponsorship restrictions

Potential investors need only complete a simple application form and submit it to the port authority along with a covering letter.

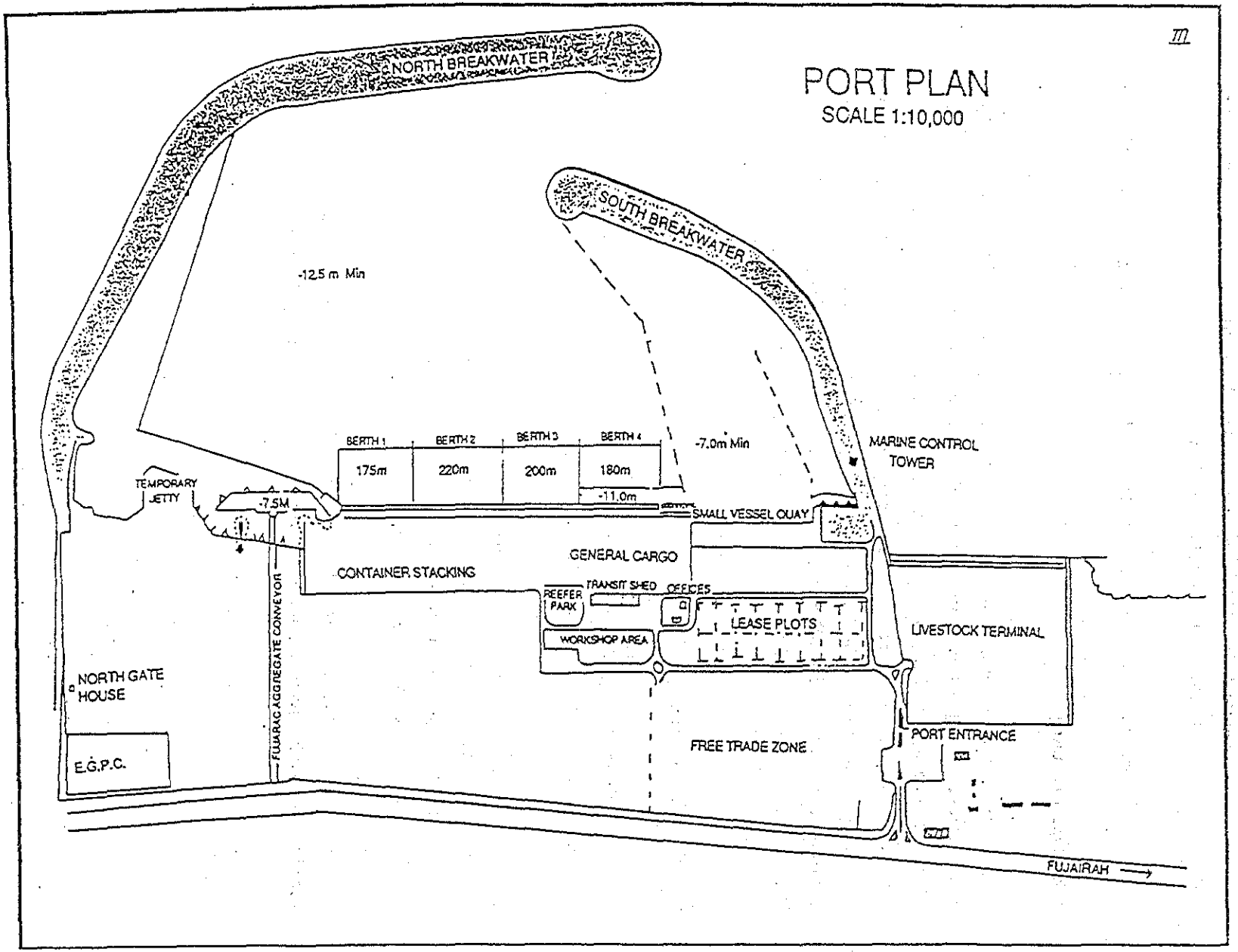


Fig. A-4-3-16 Plan of Port of Fujairah

IV. PORT KHOR FAKKAN

1. Port Facilities

1.1 Container Terminal

Quay Length: 430 meters

Berth: 2

No.1 and 2: 430 meters (Depth of -12.4 meters) served by two 41 ton Mitsubishi gantry cranes

Open Storage: 100,000 sq. meters, Consolidation area of 5,000 sq. meters

Equipment:

Rail-mounted transfer crane * 4

Stacking capacity inside crane leg = 9 across * 5 high

Total stacking capacity = 3,000 TEUs

Tractors

Trailers

Forklifts

Ro-Ro Pontoon: Area, 60*40 meters; Load, Up to 180 tonnes

2. Port traffic

2.1 Cargo

Table A-4-3-47 Container Cargo

	1985	1986	1987	1988
Containr Moves	23,134	111,096	47,796	124,218
Import TEU	NA	NA	NA	18,539
Export TEU	NA	NA	NA	3,663
Transshipment	NA	NA	NA	29,721
M/Ts + Restows	NA	NA	NA	42,574

* 1986 Container figure during U.S.Lines tenure and since 1986, Port has been nearly entirely utilised as a container terminal.

Table A-4-3-48 General / Bulk / RoRo

	1985	1986	1987	1988
General/				
Bulk	85,361 M/T	388	18,965	* 942
Ro/Ro	106 Units	-	595	* 11

* 30th Apr. 1988

2.2 Vessel

Table A-4-3-49 No. of Calling Vessels

	1985	1986	1987	1988
No. of vessels	252	427	512	* 195

* Many vessels also call for fresh water supply only.

Liner Services:

From Europe	D.S.R. LINE ---	12 Days	Hamburg/Antwerp/Rotterdam/ Larnaka
	P.O.L.(Link with D.S.R)		
	SENATOR LINE --	14 Days	N.Europe ports
Fm N. America	SENATOR LINE --	14 Days	N.American ports
Fm Indian Sub-Continent			
	CEYLON SHIPPING CORP. --	10 Days	Colombo
	NORMUDU --	10 Days	Bombay/Cochin/Karachi
Fm the Gulf	C.S.C. --	Weekly	Muscat/Damman/Kuwait
	NORMUDU --	Weekly	- ditto -
	WEST ASIA KONTENNA LINE --	Weekly	- ditto -
Fm The Mediterranean			
	GULF INDIA LINE (A division of BLASCO) --	Fortnightly	Portugal/Spain/Italy/USSR

3. Port Charges

3.1 Container Operations Charges

3.3.1 Loading/Discharging of Containers

	20'	40'
Full Containers	300 Dhs.	450 Dhs.
Empty Containers	150	220
Full Transhipment Containers	450	650
Restowing Containers on Board	100	150
Land and Restow	150	200

Discount Structure

The following discount structure shall apply to contract users only, subject to the following notes:

1. The discount structure shall be based upon moves.
2. All moves qualify for discount earning (full or empty)
3. All transshipment moves qualify for discount earning (full or empty)
4. Discount calculated on monthly move totals.

Discount Schedule	Discount
Upto 1,200 moves per annum	Standard Rate
1,201 to 3,000	10%
3,001 to 9,000	20%
9,001 to 15,000	25%
15,001 to 18,000	30%

When 18,000 moves per annum are achieved, an additional 2.5% discount shall apply on all billings eligible for discount. This discount will apply only after the first 18,000 container moves have been made within the 12 month period. Discount shall apply to charges included under the schedule of charges and LCL cargo.

3.1.2 Storage of Containers

	20'	40'
FULL:		
First 15 days free, thereafter per day	15 Dh	30 Dh
Transshipment:		
First 30 days free, thereafter per day	15	30
Empties:		
First 30 days free, thereafter per day	15	30

3.1.3 Stripping

LCL Cargo (Eligible of Discount)	
Stripping or stuffing to mark	15 Dhs. per freight ton
Removing from warehouse to trailer or reverse	10
LCL sorting to sub mark	5

3.2 Port Dues

0 - 7 days : 22 Fils per NRT
Over 8 days : 5.5 Fils per NRT

3.3 Pilotage Charges

Pilot per operation

NRT	Dhs.	NRT	Dhs.
501-3,000	385	9,001-15,000	935
3,001-6,000	605	15,001-25,000	1,045
6,001-9,000	825	Over 25,000	1,155

4. Documentation

The following documents must be in the possession of the ship's master on arrival, or must be forwarded to the ship's agent prior to arrival.

Immigration:	Crew lists	2 copies
	Passenger lists	2
Customs:	Crew lists	2
	Passenger lists	2
	Cargo manifests	2
	List of alcholic bevarages	2

The following documents should be handed to the Port Operator by the ship's Agent at least 24 hours prior to the vessel's arrival.

Port Operator:	Cargo plan	1
	Discharge list	1
	Transshipment list	1
	Dangerous cargo list	1
	Refrigerated cargo manifest	1

5. Others

Normal working hours are 0600 to 2200 hours from Saturday to Thursday, except public holidays. Overtime worked outside normal working hours including Fridays and Public Holidays are levied Dh. 200 per gantry per hour.

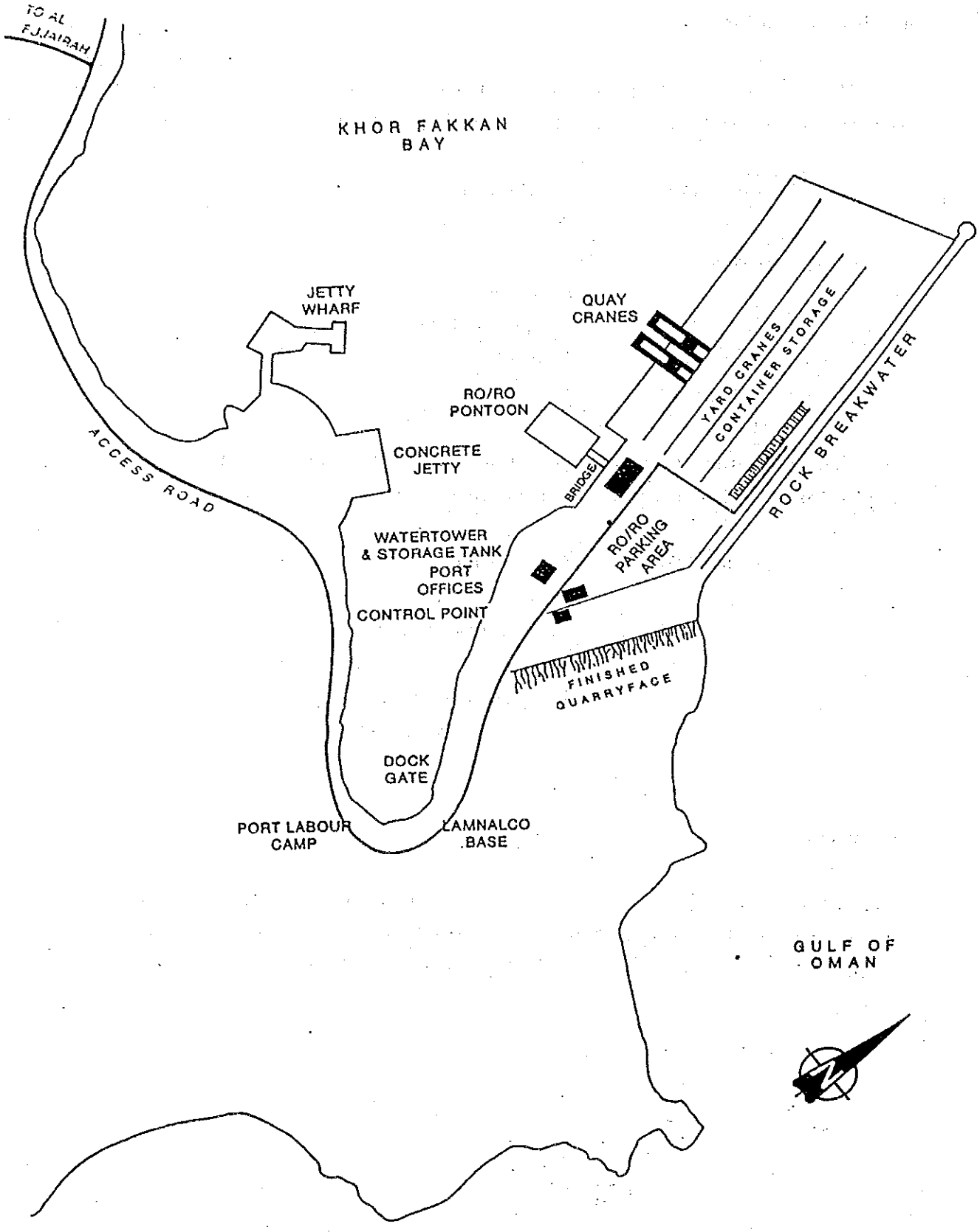


Fig. A-4-3-17 Plan of Port Khor Fakkan

V. PORT KHALID

1. Port Facilities

1.1 Container Terminal

Quay Length: 563 meters
Berth: 3
No.1A: 11.5 m at MLLW served by two Liebherr 35 ton
No.1 & 2: 10.5 m at MLLW gantry cranes
Terminal Area: 150,000 sq. meters
Transit Sheds] 2 * 4,650 sq. meters
Plant:
1 * 40 ton, 1 * 30 ton and 2 * 10 ton Topload Forklifts
2 * 10 ton and 6 * 2 ton forklifts
2 * 30 ton SWL Transtainers
70 * trucks (available on call)
170 * chassis (available on call)
Reefer Points: 44 plug-in points (3 phase 380 volts)

1.2 General Cargo

Quay Length: 1,125 meters
Berth: 6
No.3-6: 725 meters (-8.5 to-9.5 meters at MLLW)
No.10-11: 400 meters (-8.5 to -9.5 meters at MLLW)

1.3 Reefer Cargo

Quay Length; 375 meters
Berth: 2
No.8, 9: 375 meters (-8.5 meters at MLLW)

1.4 Other Facilities

Cold Storage: One public-user cold store with 5,000 ton capacity
One privately dedicated cold store with 3,500 ton capacity

Warehouses: Six each measuring 115 * 40 meters
Five each measuring 120 * 60 meters
One measuring 88,5 * 40,5 meters
Open Storage: 220,200 sq. meters

2. Port Traffic

2.1 Cargo

Table A-4-3-50 Container Cargo

	1985	1986	1987	1988
Import TON	101,853	277,419	270,945	151,017
TEU	10,164	22,909	36,057	20,820
Expert TON	10,330	66,875	154,658	90,899
TEU	9,598	19,748	34,271	19,561
Total TON	112,183	294,294	425,603	241,916
TEU	19,762	42,657	70,328	40,381

Table A-4-3-51 Other Cargo

	1986		1987		1988	
	Import	Export	Import	Export	Import	Export
Vehicles	5.6	1.6	0.8	1.8	3.5	1.2
Bulk Ore	58.9	-	13.2	-	-	-
Cement	-	53.9	-	272.4		
Reefer	159.1	3.2	165.9	4.0	152.8	3.7
Others	103.8	32.7	177.2	46.5	163.8	320.5
Total	327.4	91.4	375.1	320.7	320.1	325.4
Oil	640.1	11.5	801.4	11.7	703.2	-
Grand TTL	967.5	102.9	1.158.5	336.4	1,023.3	325.4

2.2 Vessel

Table A-4-3-52 No. of Calling vessels

	1982	1983	1984	1985	1986	1987
General	387	353	359	326	256	268
Container	139	161	91	88	127	136
Oil	215	180	97	60	63	79
Car	43	47	41	38	33	8

Liner Container Services

From Europe: NORSIA LINE -- 12 days Rotterdam/Hamburg/
Southampton/Valencia/Pireaus

Fm Far East: OASIS (K LINE, MO, NYK, P&OCL, YS)
-- 14 days Kobe/Nagoya/Yokohama/Busan/
Keelung/Hong Kong/Singapore

3. Port Charges

3.1 Container Operations Charges

3.1.1 Loading/Discounts of Containers

(1) Volume Discounts of Containers

FCL or LCL Containers Discharged from Ship		20'	40'
Upto 250 Base	moves per month	Dh. 300	400
251 to 750 Level-1		270	405
751 to 1,250 Level-2		240	360
Over 1,250 Level-3		225	338
Empties			
Upto 250 Base		150	220
251 to 750 Level-1		135	198

751 to 1,250 Level-2	120	198
Over 1,250 Level-3	113	165
Transhipment		
Upto 250 Base	450	650
251 to 750 Level-1	405	585
751 to 1,250 Level-2	360	520
Over 1,250 Level-3	338	488

(2) Annual Over Rider

When 15,000 moves per annum achieved an additional 2.5% retractive discount shall apply on all billing. Discounts shall apply to all handling charges.

3.1.2 Storage of Containers

Import/Full		
Export/Full	20'	40'
First 15 days free		
thereafter per day	15 Dh	30 Dh
Empties/Transhipment		
First 30 days free		
thereafter per day	15	30
LCL cargo		
First 25 days free		
thereafter	5 per freight ton per 10 days period or part thereof	

3.1.3 Stripping or Stuffing

Removing cargo from container and placing in warehouse or reverse	20' - Dh. 200/per container 40' - Dh. 400/per container

3.2 Marine Charges

3.2.1 Port Dues

Port dues will be levied on all vessels entering Port Khalid at the following/rates:

0 - 7 days	18 Fils per N.R.T.
After 7 days	2 Fils per N.R.T. per day (Upto completion of cargo)

Note: i) Vessels calling six or more times in a ninety days period will not be charged for the sixth and subsequent calls.

ii) All vessels/barges loaded in Port Khalid are required to depart from deep water harbour within 2 days of completion of loading. Otherwise, layup charges will apply.

iii) Regular callers may negotiate lump sum rates for marine charges.

3.3 Pilotage Charges

The charges for the services of a pilot are as follows:

N.R.T.	Charge per Movement
Upto 3,000	Dh. 300
3,001 to 10,000	450
Over 10,000	700

3.4 Stevedoring/Shore Handling

a) Contract rates - reduced rates may be negotiated with the Port Authority on the basis of throughput and regularity of vessel calls.

b) V.I.P. programme - reduced rates for Shippers, Shipping lines, Agents and Consignees who qualify under the V.I.P. programme. This programme has been designed to generate and encourage potential new business through Sharjar Ports.

c) A ten percent reduction will be applied on stevedoring for bagged palletised cargo.

d) Transshipment discount rates are applicable subject to negotiation on stevedoring, handling and storage.

4. Documentation

The following documents must be in the possession of the ship's Master on arrival or must be forwarded to ship's agent prior to ship's arrival.

Immigration :	Crew lists	2 copies
	Passenger lists	2
Customs :	Crew lists	2
	Passenger lists	2
	List of alcholic beverrages	2
	Cargo manifests	2
Port Operator :	Cargo manifests	3
	Dangerous goods lists	2
	Stowage plans	2

5. Others

5.1 Working Hours

0600 - 1400	I Shift	- Normal charges
1400 - 2200	II Shift	- Normal charges
2200 - 0600	III Shift	- Overtime Dhs. 200/- per gang per hour
Fridays and Public Holidays		- Overtime Dhs. 200/- per gang per hour

Working hours are subject to change at the discretion of the Port Operator. Requirements for port labour must be submitted by ship's agents to the Port Operator by 1600 hours for work during the first shift on the following day and by 1100 hours on the same days for work during the second and third shift.

5.2 Sea Air Cargo

Sharjah International Airport opened in 1975. In recent years, both passenger and freight throughput at the airport has risen significantly. During 1987, Sharjah handled 163,443 inbound passengers, 164,292 outbound and 401,708 in transit. Freight climbed 52.55 per cent, hitting 19.9 million kilos, against 13.05 million the previous year. In 1986, the airport handled 1,610,975 kilos of sea/air traffic - 22 per cent of all outbound cargo.

6. Free Trade Zone

The first free trade zone among the seven Emirate states are established in 1987. And this concept has since been adopted widely elsewhere in the UAE, attracting remarkable number of small industries. At present, the zone allows duty-free in-bound storage at low cost and is ideal for transshipment-based liner operators. Port Khalid's management is also operated in order to assist customers which will stimulate the development of their business.

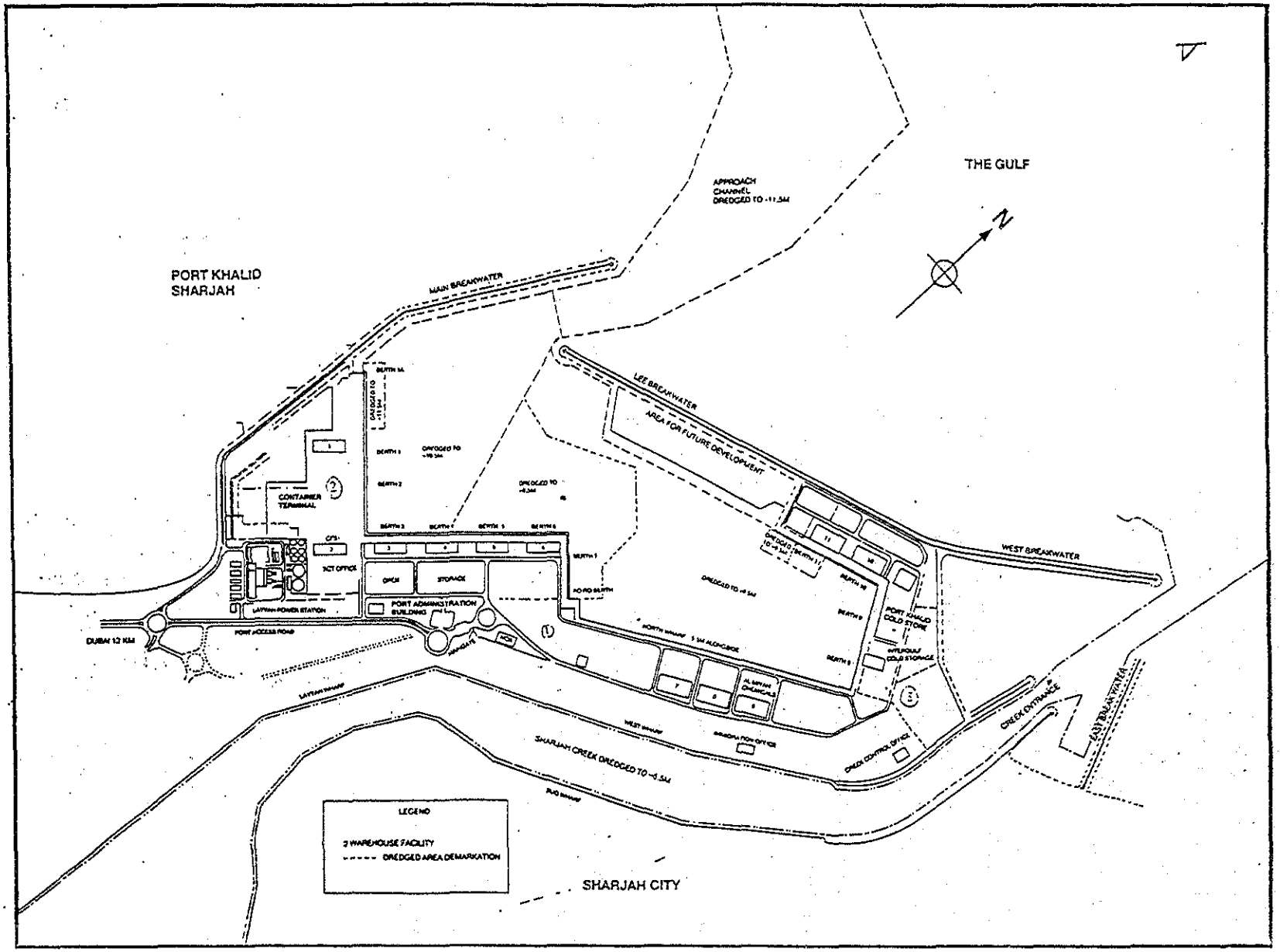


Fig. A-4-3-18 Plan of Port Khalid

Appendix 4-3-8 Fishery Port Function

(1) Characteristics of the Omani Fishery

From the statistics and the report collected during the field survey, the following findings are identified as the characteristics of the fishing industry in Oman:

1) The catches of fish have gradually increased in the past ten years. The total volume of unloaded fish during July 10, 1984 to July 9, 1985 was 100,980 tons, which comprised 20,070 tons of kingfish, 10,410 tons of tuna fish, 4,750 tons of shark, 9,330 tons of large pelagian fish, 35,890 tons of small pelagian fish, 17,750 tons of demersals, 1,800 tons of lobsters, 200 tons of shrimp and 780 tons of cuttlefish. Compared with the total fish of unloaded in Oman, the total volume in the Batinah coast was 29,480 tons, which was 29.2 percent of the total fish of unloaded in Oman. The fish unloaded at the Batinah coast were of various kinds, except lobster and shrimp. Small pelagian fish and tuna fish were rich among the fishes unloaded at the Batinah cost compared with other regions, especially the propotion of small pelagion fish at the Batinah coast, 56 percent of the total unloaded small pelagion fish in Oman.

2) The government of the Sultanate of Oman allowed Korean fishermen to catch fish in the Gulf under the condition of sharing 30% of their catches.

3) The trend of unloaded fish during 4 years was as follows:

Table A-4-3-53 Trend of Unloading Fish Volume

(Unit:tons)

	1985	1986	1987	1988
Traditional	81,525	82,778	104,055	148,167
Korean	9,339	9,791	8,094	10,175
National Fishing Co.	4,029	3,770	2,861	2,766
Total	94,893	96,339	115,010	161,108

4) There are many fishermen in Oman: 11,700 fishermen

5) There are many fishing boats: 9,196 in Oman and 4,968 along Batinah coast; but they are almost small fishing boats such as diesel

powered wooden boats, fiber glass boats, aluminium boats, wooden canoes (Houri), wooden beach (Bedan) and palm frond raft (Shasha). A few modern fishing vessels also are now operating in Oman.

6) The volume of exported frozen fish is gradually increasing. They are exported around the world.

7) The exports of fresh fish vary from year to year. The main destinations are G.C.C. countries. The following table shows fish exports during a recent 4-year period:

Table A-4-3-54 Trend of Export Fish Volume

(Unit:tons)

	1985	1986	1987	1988
Fresh fish	7,144	750	4,375	340
Frozen fish	11,365	17,150	15,310	32,639
Seafood (Prawn, Crabs & Lobsters)	793	480	650	1,138
Others	160	92	259	1,034
Total	19,462	18,472	20,593	35,150
(Korean share	5,960	6,072	5,018	6,306)
(Domestic consumption	69,471	71,795	89,399	119,652)

Note: i)Korean share is 70% of the unloaded volume from Korean Vessels.
ii)Domestic consumption is calculated by subtracting the Korean share volume and exported fish volume from the total unloaded fish volume.

8) There are various types of government support for the fishery sector, such as helping for fishermen buy boats and freezers, but the industry remains a coastal type.

(2) Development Potential of Fishery

The potential exists to expand the fishery sector for the following reasons:

1) The Oman Gulf is abundant in various types of fish. This is very clear from the fact that Korean fishermen operate in the Oman Gulf.

2) Oman's fishing industry remains a traditional coastal fishery. From the fact that the rate of increase of fish catches is not at a high level, it is very clear there exists the possibility of

increasing at a high speed the fish catch volume by introducing a deep sea fishery.

3) Increased frozen fish exports are expected when modern freezing equipment is introduced.

4) There exists the possibility of establishing fish processing plants in the northern part of Oman.

5) From Table A-4-3-54, the annual consumption of fish per person in Oman can be estimated to be about 80kg/person. The per capita consumption in Japan is estimated to be 103 to 124 kg/person in 2000, compared with about 100 kg/person at present. The estimate of fish consumption in Oman is not clear to the Team, but an assumption between 95 kg/person and 100kg/person seems to be reasonable.

6) The population in Oman will be estimated as 2.27 million persons in 2000 and 3.8 million persons in 2015. Accordingly, the required fish volume will be as follows:

	2000	2015	(Unit:tons)
i) 95kg/person	215,000	360,000	
ii)100kg/person	227,000	380,000	

7) *On the other hand, from the survey results from July 10, 1984 to* July 9, 1985, the unloaded fish volume per traditional boat was 5.95tons/boat/year compared with 947.7 tons/vessel/year for modern trawling vessels.

8) Export volume was estimated as follows:

2000	2015
84,000	201,300

9) If the volume of Korean vessels' fish is unchanged, the required total unloading fish volume would be as follows:
in 2000 220,000 + 84,000 - 4,000 = 300,000 tons
in 2015 370,000 + 201,300 - 4,000 = 567,300 tons

10) If this required volume is unloaded by small traditional boats, the required number of boats would be as follows:
in 2000 300,000 / 5.95 = 50,420 boats
in 2015 567,300 / 5.95 = 95,345 boats

11) On the other hand, the required modern trawling vessels would be as follows:

in 2000 300,000 / 947.7 ≈ 317 vessels

in 2015 567,300 / 947.7 ≈ 599 vessels

12) The required number of fishermen from small traditional boats and modern trawling vessels is respectively 1 per boat and 30 per vessel, so the required numbers of fishermen in respective cases are as follows:

All Small Boat Case:	in 2000	50,420	fishermen
	in 2015	95,345	"
All Trawling Vessel Case :	in 2000	9,510	"
	in 2015	17,970	"

13) Presently the proportion of fishermen to the total population is about 0.9%, the proportion for the above cases would be as follows:

All Small Boast Case	in 2000	2.2%
	in 2015	2.5%
All Trawling Vessel Case	in 2000	0.4%
	in 2015	0.47%

14) Accordingly, it seems to be very difficult to unload the required volume of fishes by small boats only, so some modern trawling vessels should be introduced for the fishery sector in Oman.

(3) Measures to Promote Deep Sea Fishery

There are many ways to promote a deep sea fishery, as listed here:

1) The present fishery in Oman is mainly a traditional, small-scale fishery, and the management bodies in this sector are small and not so strong. By the provision of fishery equipment to an individual managerial body, a drastical increase in fish catches cannot be expected. The formulation of fishery cooperatives might be a way of expanding fish catches comparatively quickly.
2) The provision of facilities, such as quay walls, for a deep-sea fishery is a good way of promoting a deep-sea fishery.
3) An area for a fish processing industry should be reserved in the port area.
4) Modern freezing equipment and other necessary facilities should be prepared for a deep-sea fishery.

Appendix 4-3-9 Ship Repairing Facilities in Dubai and Bahrain

(1) Dubai Drydocks

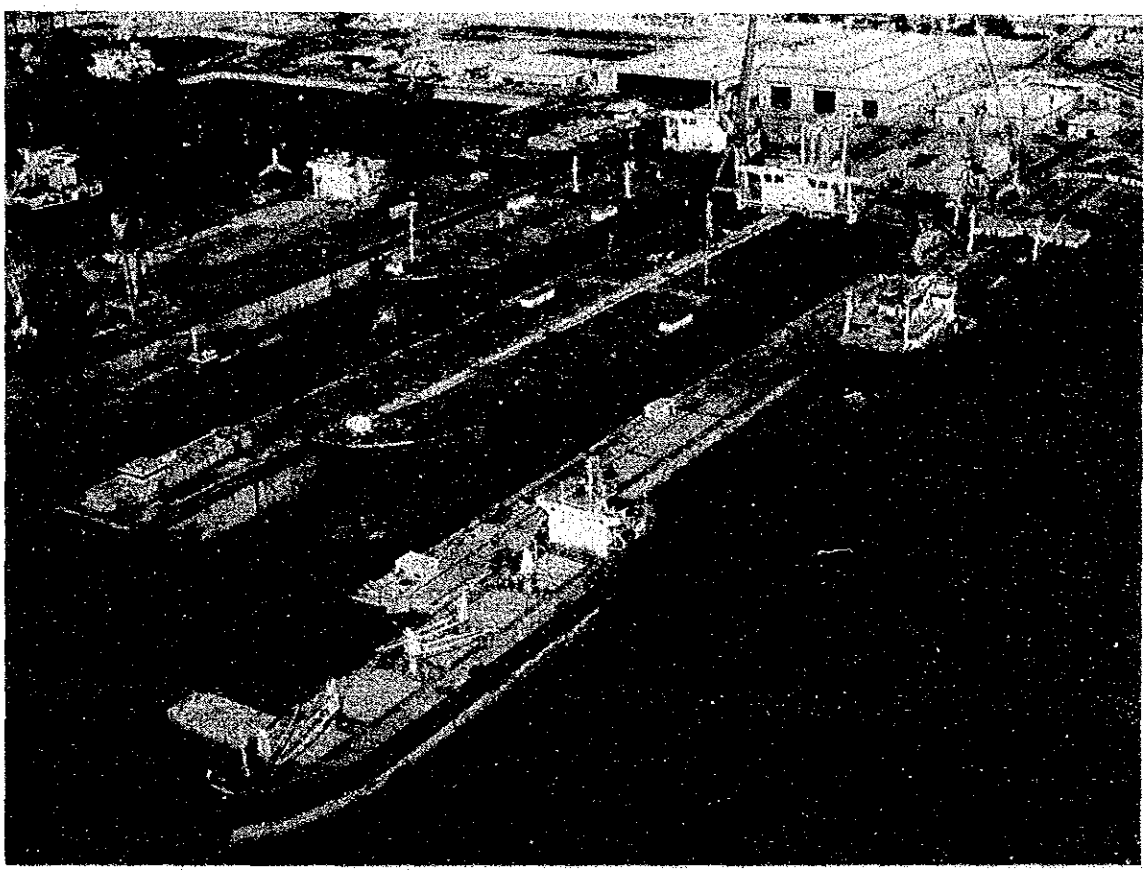
The ship repairing facilities in Dubai include:

Dock No.1 : 370 x 66 x 12 metres

Dock No.2 : 525 x 100 x 12 metres

Dock No.3 : 415 x 80 x 12 metres

Repair berths : 2,900 metres



Source: Handbook of Port Rashid, 1988

Photo. A-4-3-1 Dubai Drydocks

(2) Arab Ship Repair Yard at Bahrain

The large dock, which has the capacity of handling ships up to 500,000 dwt has dimensions of 375 x 75 metres.

III Appendix to Chapter 4-6

Appendix 4-6-1 Detailed Explanation for the Selection of the Site for New Port Development among Alternatives

1. Selection of Several Alternative New Port Development Sites

In selecting alternative new port development site, we must first think about the possibility of obtaining the necessary area for a new port or converting land from its present use to port use. The area required for the new port shall be determined through the analysis of new port development policies. The convertibility from present land use to port use shall be determined by analyzing the degree of difficulty in moving present facilities to other locations.

Judging from our observation along Batinah Coast during the first field survey, the coastal area along Batinah Coast is now highly utilized for residential areas and as orchards for dates and other fruits. It would seen to be very difficult to move an already-existing towns or city. Accordingly, we would like to exclude areas that have already been developed as a town or city from the alternative new port development sites.

We made a reconnaissance on the following parts along Batinah Coast during the first field survey.

Site Name	Reference Map	Open Space Availability
(1) Majis	(Map of Fig.A-4-6-1)	Vast Open Space
(2) Sohar	(Map of Fig.A-4-6-2)	No Open Space
(3) Saham	(Map of Fig.A-4-6-3)	No Open Space
(4) Khaburah A	(Map of Fig.A-4-6-4)	Vast Open Space
(5) Khaburah B	(Map of Fig.A-4-6-4)	Vast Open Space
(6) Suweiq	(Map of Fig.A-4-6-5)	Vast Open Space
(7) Masnaah	(Map of Fig.A-4-6-6)	Vast Open Space
(8) Muraysi	(Map of Fig.A-4-6-7)	Vast Open Space
(9) Haradi	(Map of Fig.A-4-6-7)	Vast Open Space

Among the above alternative sites, we have excluded (2) Sohar and (3)

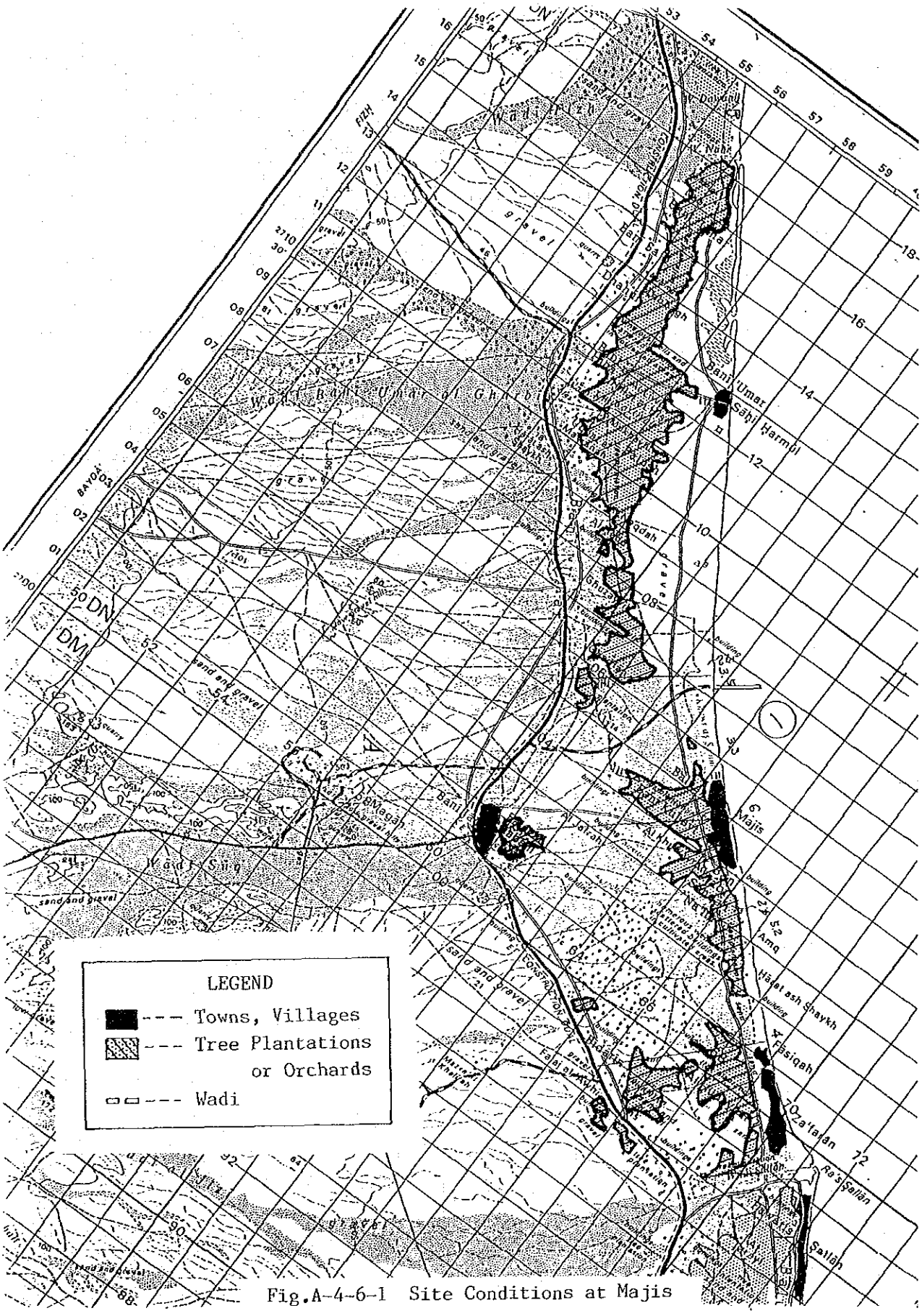


Fig.A-4-6-1 Site Conditions at Majis

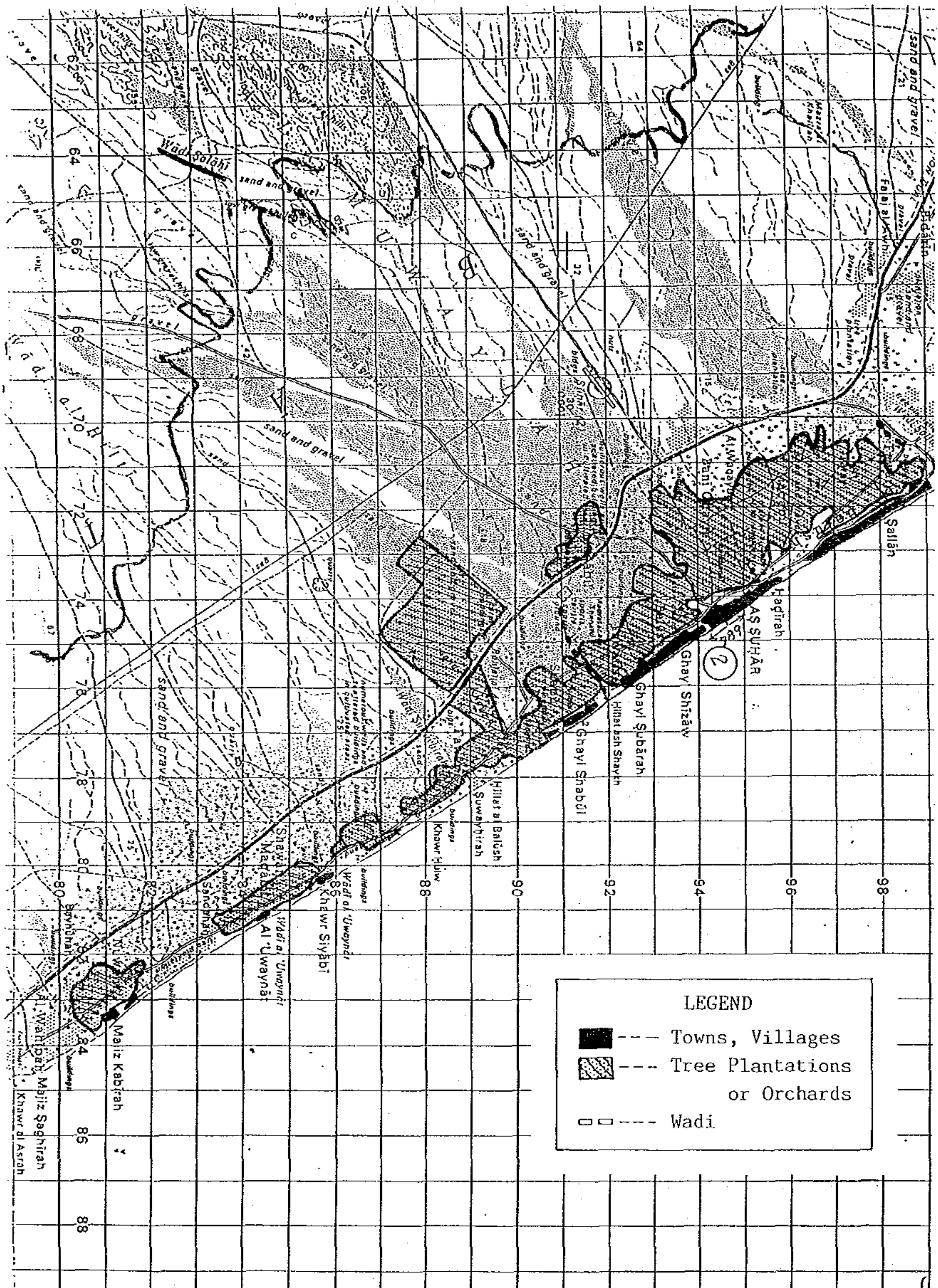


Fig.A-4-6-2 Site Conditions at Sohar

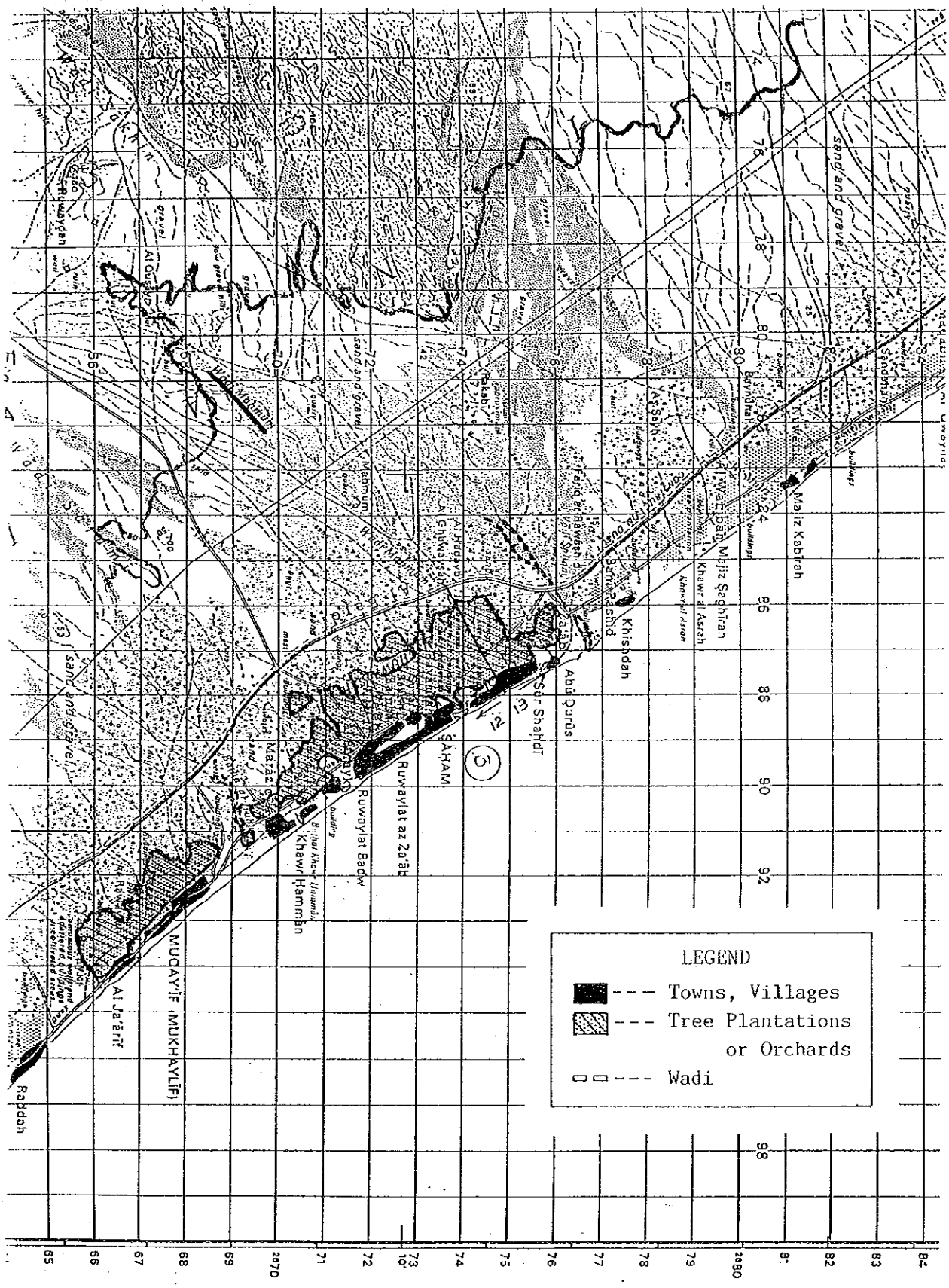


Fig.A-4-6-3 Site Conditions at Saham

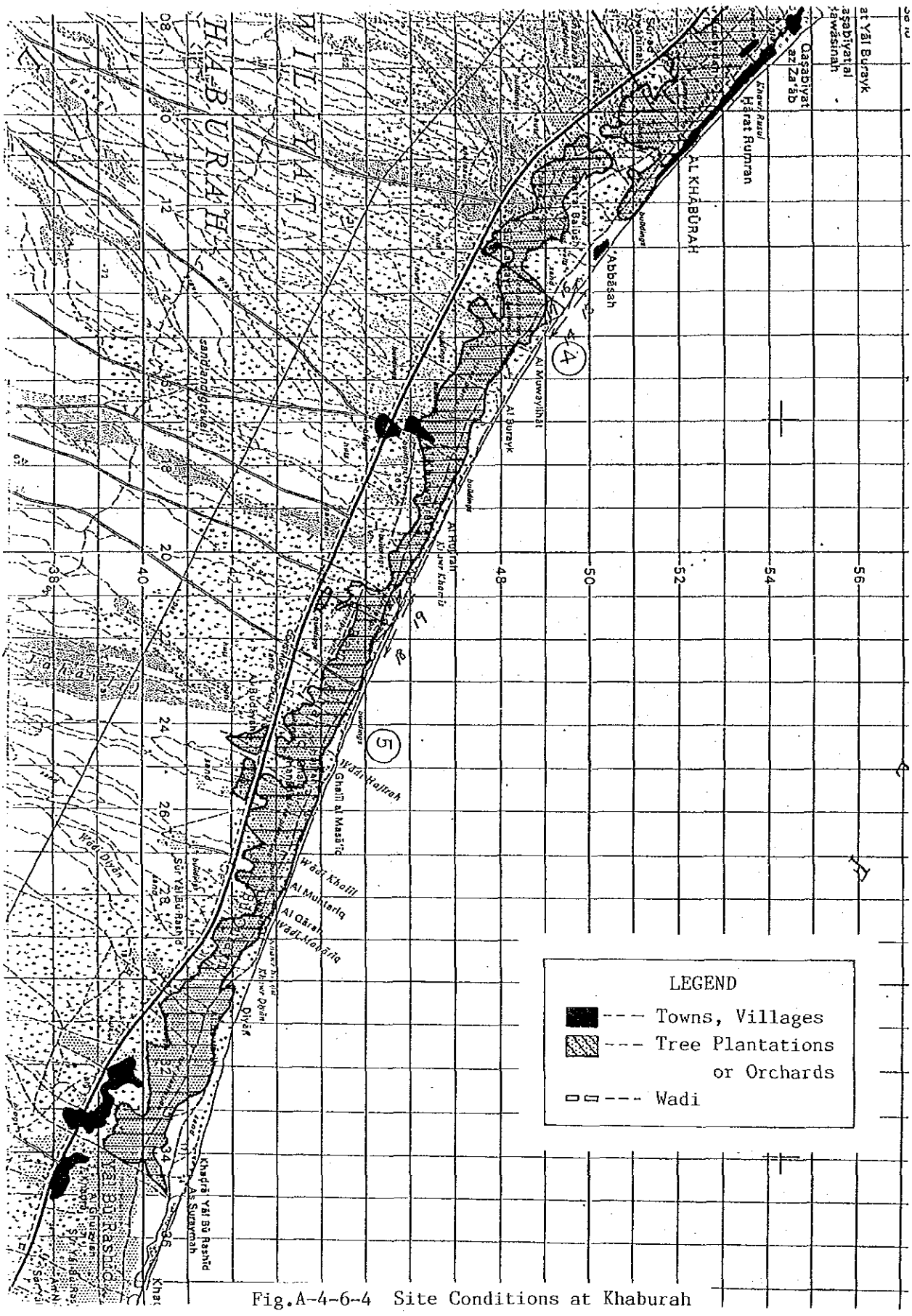


Fig.A-4-6-4 Site Conditions at Khaburah

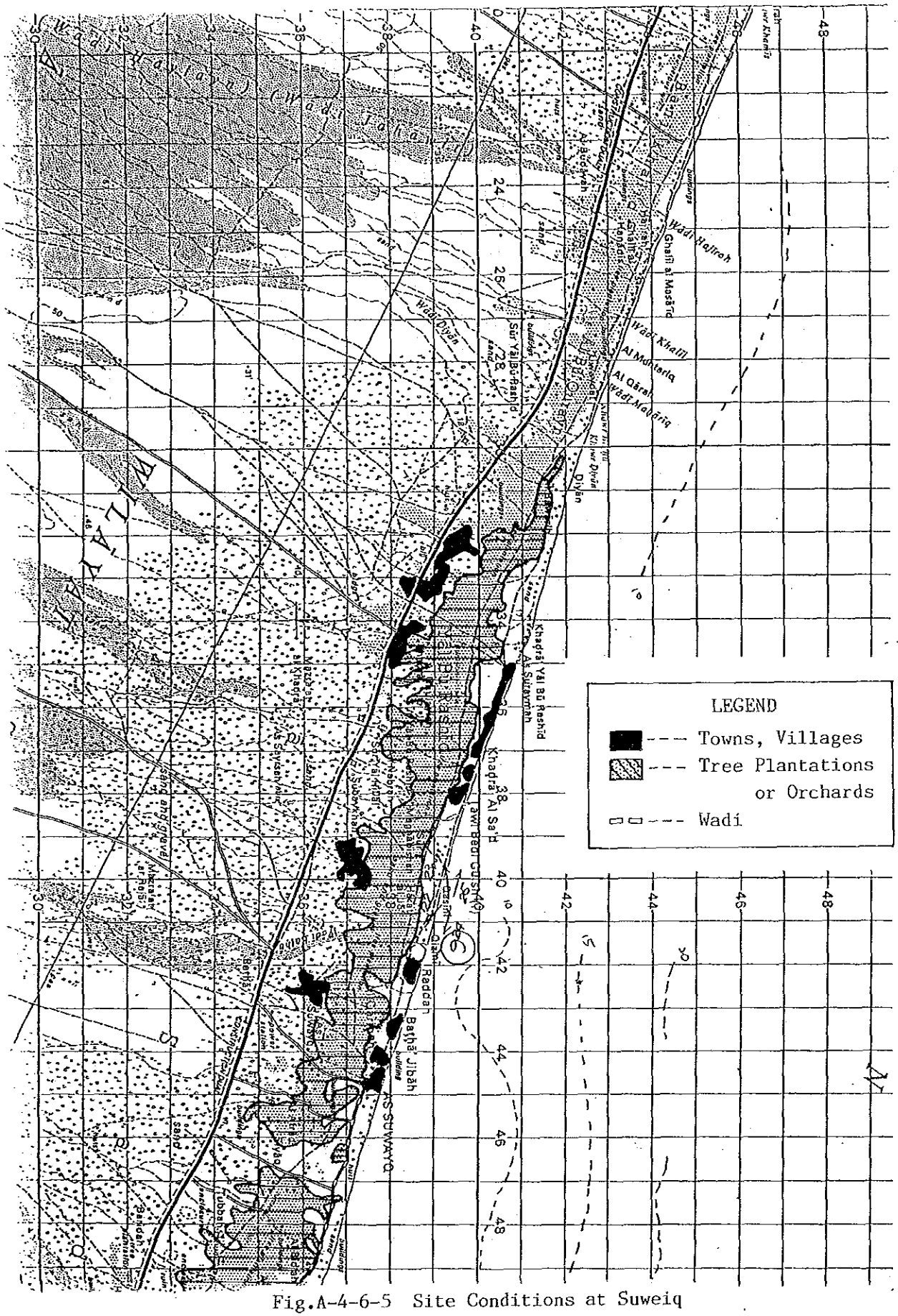


Fig.A-4-6-5 Site Conditions at Suweiq

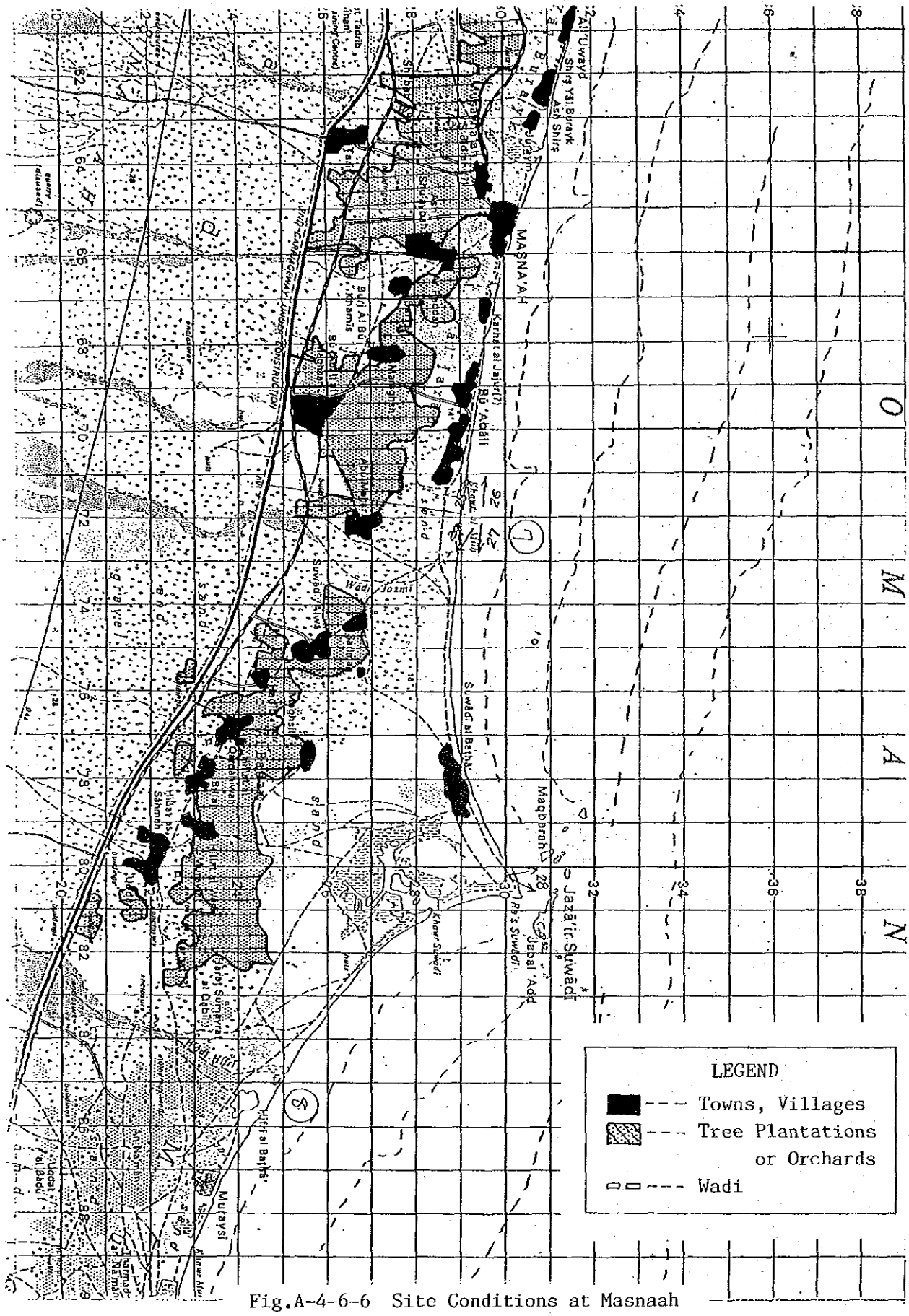


Fig.A-4-6-6 Site Conditions at Masnaah

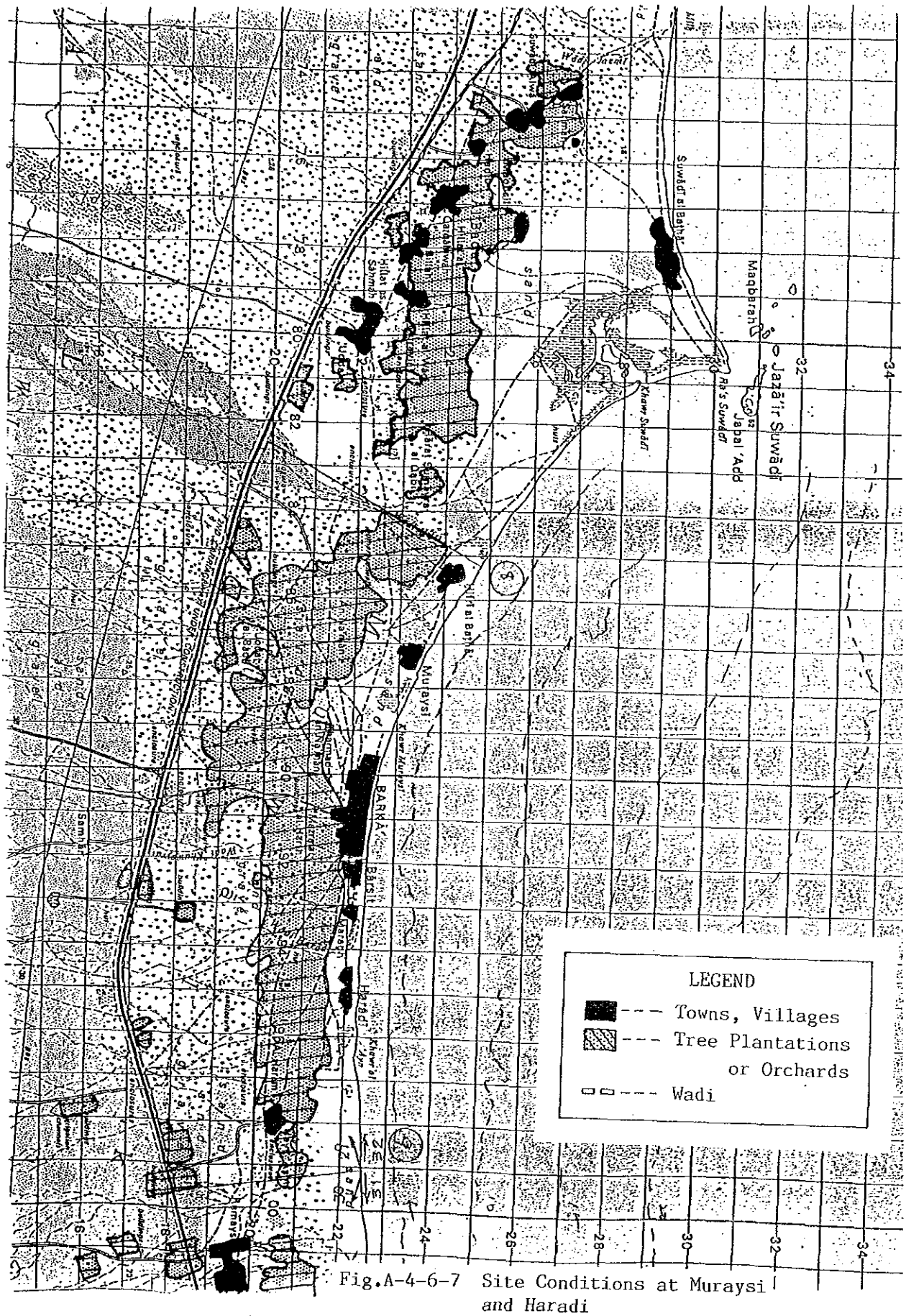


Fig.A-4-6-7 Site Conditions at Muraysi and Haradi

Saham because there is no open space for port development. Therefore we selected the following alternative port development sites:

Alternative Port Development Sites along Batinah Coast: (1) Majis, (4) & (5) Khaburah, (6) Suweiq, (7) Masnaah (8) Muraysi, (9) Haradi.

Note (1) Although there are two other Willayats along the Batinah Coast, viz. Shinas and Liwa, we tentatively do not include Shinas because it is far from Muscat and the UAE border is very close. It shall be treated if it becomes necessary for us to study it more in detail through the selection of the most suitable new port site. We also do not include Liwa, but we will take into account the condition of Liwa on the basis as Majis, as one of the alternative sites. Majis is located on the border between Sohar and Liwa.

(2) We are now considering the coastal area between Majis & Haradi which are shown on the above-mentioned maps. We do not include the Capital Area, tentatively, for the following reasons:

(i) There are no large open spaces in the Capital Area.

(ii) The Capital Area is well-developed and a new port in the Capital Area would not give incentive to regional development.

(iii) A new port in the Capital Area would compete with Mina Qaboos. Nevertheless, if it becomes necessary for us to study and include the Capital Area as an alternative new port site through the selection of the most suitable new port site, we would include areas such as Seeb and Azaiba.

(3) We are not taking into consideration the western part of the northern coastal area, i.e., Quriyat and Sur. The comparison of the most suitable new port site in Batinah Coast with Quriyat / Sur will be done through reviewing a master plan for a proposed new port at Quriyat.

According to our findings so far, there is a serious problem for the site of Quriyat. That is the road condition of route 17, from Quriyat to the mountaintop, such as a steep gradient and two hairpin curves. This defect is very serious for port cargo transportation. The proposed road work cost was estimated at 1,699 Million R.O. by Maunsell Consultants.

2. Comparison of natural conditions of each potential sites

2.1. Sea bottom profile

The sea bottom profiles of potential sites (Majis, Khaburah, Suweiq, Masnaah, Muraysi and Haradi) are shown in Fig-A-4-6-8. The slope of the sea bottom and offshore distances to the level of -5m, -10m, -15m and -20m of water depth for the potential sites are shown in Table-A-4-6-1.

Table-A-4-6-1 Distance from the Shore-line to Each Depth

Water depth	- 5m	- 10m	- 15m	- 20m
	dista slope	dista slope	dista slope	dista slope
Majis	0.9km(1/180)	1.8km(1/180)	2.8km(1/200)	4.4km(1/320)
Khaburah		2.4km(1/240)		6.5km(1/410)
Suweiq	0.9km(1/180)	1.8km(1/180)	3.5km(1/340)	5.6km(1/420)
Masnaah	1.0km(1/200)	2.5km(1/300)	4.3km(1/360)	6.1km(1/360)
Muraysi	1.0km(1/200)	2.5km(1/300)	6.0km(1/700)	9.7km(1/740)
Haradi	0.9km(1/180)	2.3km(1/280)	4.4km(1/420)	6.3km(1/380)

note/ dista: distance form shoreline

2.2. Waves, tides and currents

Table-A-4-6-2 summarizes the values of wave height, high tide level and current velocity at the six sites.

The predicted wave height is obtained from the Majis Jetty report and the current velocity is based on data recorded at Wudam Naval Base in December 1981 and January 1982. For the mean high water level, date is obtained from tide tables.

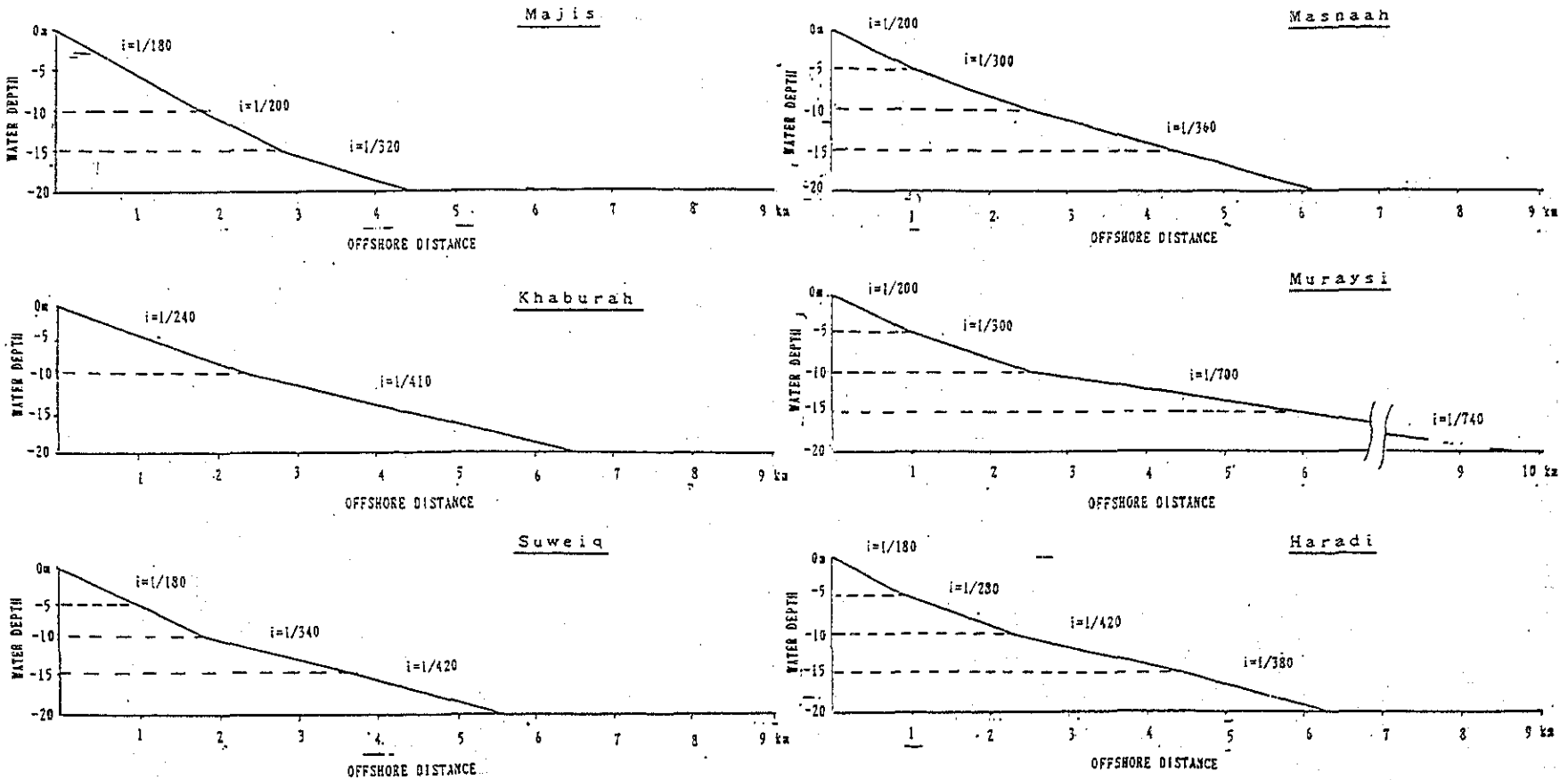


Fig.A-4-6-8 Sea Bottom Profile of Each Potential Site

Table-A-4-6-2 Wave, Tide and Current at Each Site

Site	Majis	Khaburah	Suweiq	Masnaah	Muraysi	Haradi
Wave height	3.7m	3.7m	3.7m	3.7m	3.7m	3.7m
Mean high water level	+2.3m	+2.3m	+2.5m	+2.5m	+2.6m	+2.6m
Maximum tidal current	0.3m	0.3m	0.3m	0.3m	0.3m	0.3m

note/ Wave height: 50 years return period significant wave height

2.3. Sand drift

The direction and the estimated rates of the littoral drift at the six potential sites are obtained from Majis Jetty and Udam Naval Base reports. They are shown on Table-A-4-6-3.

Also it is understood that no dredging maintenance for the channel approach, is required if the water depth ranges between -7.0m to -15.0m.

Table-A-4-6-3 Littoral Drift at Each Site

Site	Majis	Khaburah	Suweiq	Masnaah	Muraysi	Haradi
Direction	northward	northward	northward	northward	northward	northward
Littoral drift rates	12,000m3/y	12,000m3/y	33,000m3/y	33,000m3/y	33,000m3/y	33,000m3/y
Maintenance dredging (-7m - -15m depth)	no	no	no	no	no	no

2.4. Wadi

Below, in Table-A-4-6-4, are listed the names of Wadis and their distance relative to the proposed site location. Locations of wadis are shown in Fig-A-4-6-9.

Table-A-4-6-4 Name and Distance of Wadis at Each Site

Site	Majis	Khaburah	Suweiq	Masnaah	Muraysi	Haradi
Name and distance of Wadis	N:Wadi Bani Umar al Gharb ;6km S:Wadi Suq ;3.5km	N:Wadi Hawasinah ;4.5km S:Wadi Mabrah ;1.5km	S:Wadi al Hawqayn ;1km	N:Wadi Aysh ;1.5km S:Wadi al Abyad ;5km	N:Wadi Hifri ;0.5km	N:Wadi al Ajal ;3km

note/ N:North S:South

2.5. Shoreline conditions

The common feature between the six sites is the presence of fine to medium sand along the shoreline (sandy beach) except in Suweiq, where rock is exposed in some locations. (refer to Table-A-4-6-5)

Table-A-4-6-5 Surface Condition of Each Site

Sites	Majis	Khaburah	Suweiq	Masnaah	Muraysi	Haradi
Surface condition	sandy beach	sandy beach	rock	sandy beach	sandy beach	sandy beach

2.6. Sea bottom material

The sea bottom material at the six sites is composed of fine to medium sand with some shells. The mean grain size diameter (d50) varies between 0.1mm to 0.4mm.

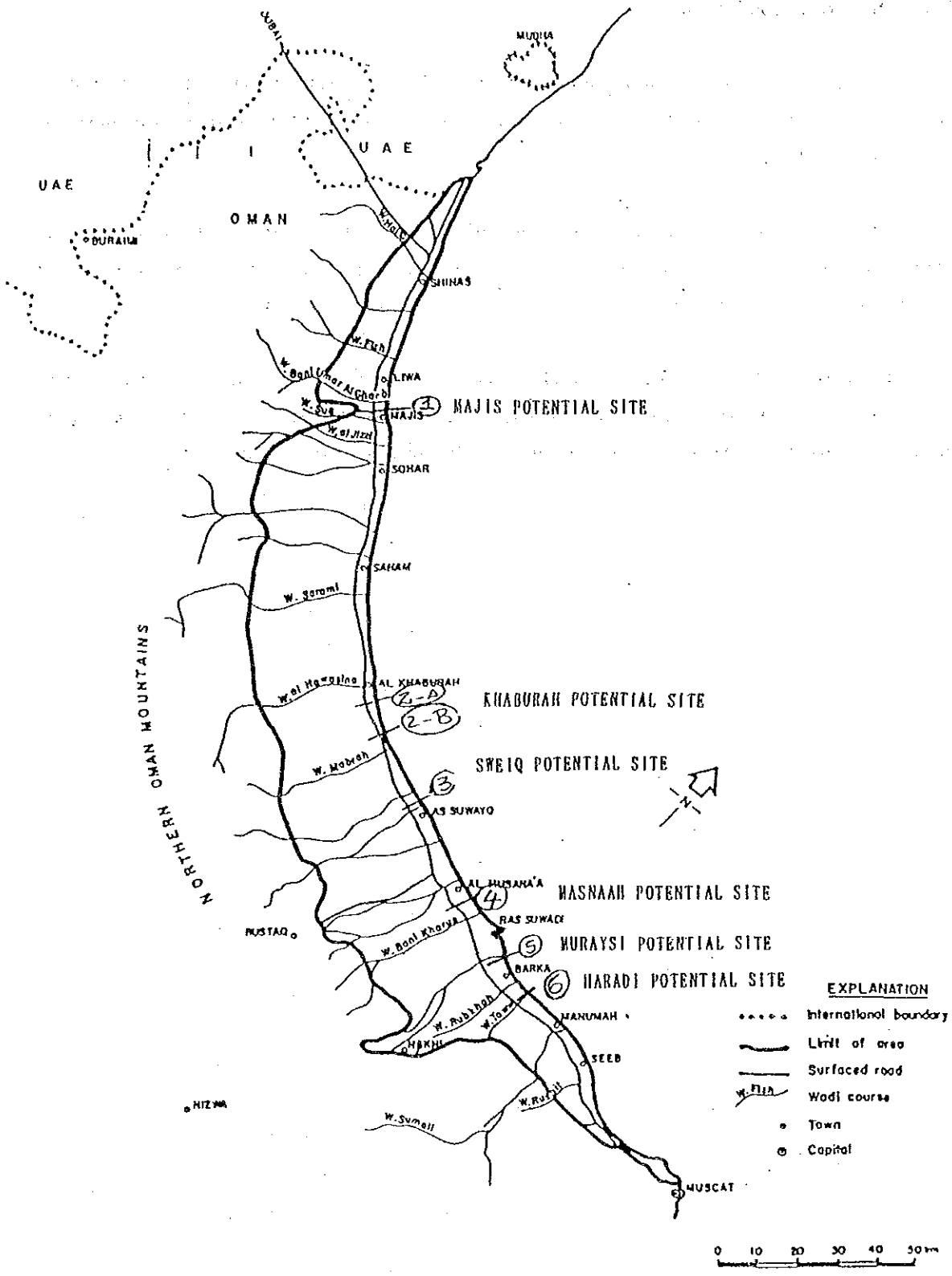


Fig.A-4-6-9 Map Showing Wadi Location

2.7. Subsoil conditions

The subsoil conditions encountered at Majis Jetty could be extended to the other sites location along Batinah Coast (Majis-Khaburah-Suweiq-Masnaah-Haradi).

The material is composed of an intercalation of granular material of noncemented weakly cemented and cemented sand, gravel and silts with some shells and some zones of coral.

In general, the result of N value obtained from the standard penetration test is very low (N<10) above the level of -10m from chart datum and becomes high to very high (N>25) below that level.

3. Comparison of Socio-economic Conditions of Each Alternative Site

3.1. Population

Based upon the present assumed population of 1,500,000 by the Development Council, the population of Batinah Region is calculated at about 366,000 at present, i.e., 24% of the total population in the country compared with that of the Muscat Area (excluding Quriyat), i.e. about 306,000, 20%. Fig.A-4-6-10 shows the percentage of region-wise population (Rustaq, Nakhal and Maawal are included in Other Al-Batinah).

The wilayat-wise population in the Batinah Region is shown in Table A-4-6-6 and Fig. A5-6-11 respectively.

Table A-4-6-6 Wilayat-wise Population in Batinah Region

Wilayat	Population	at Center	%
Shinas	36,703	(4,071)	11.1
Liwa	16,918	(2,147)	12.7
Sohar	68,641	(11,132)	16.2
Saham	52,035	(7,753)	14.9
Khaburah	39,336	(23,425)	59.6
Suweiq	63,438	(16,505)	26.0
Mussanah	36,458	(5,369)	14.7
Barkah	46,124	(12,017)	26.7
Awabi	6,332	(2,683)	42.7
Total	365,985	(85,102)	23.3

Among these 9 wilayats, Sohar has the largest population. Regarding the population of wilayat centers, however, Khaburah Center has the largest population, with more than 23,000, followed by Suweiq with 16,500 and Barka with 12,000. This indicates that the population density around these centers seems to be higher than in other places.

As far as the new port construction site is concerned, densely populated areas should be excluded. On the other hand, it is preferable

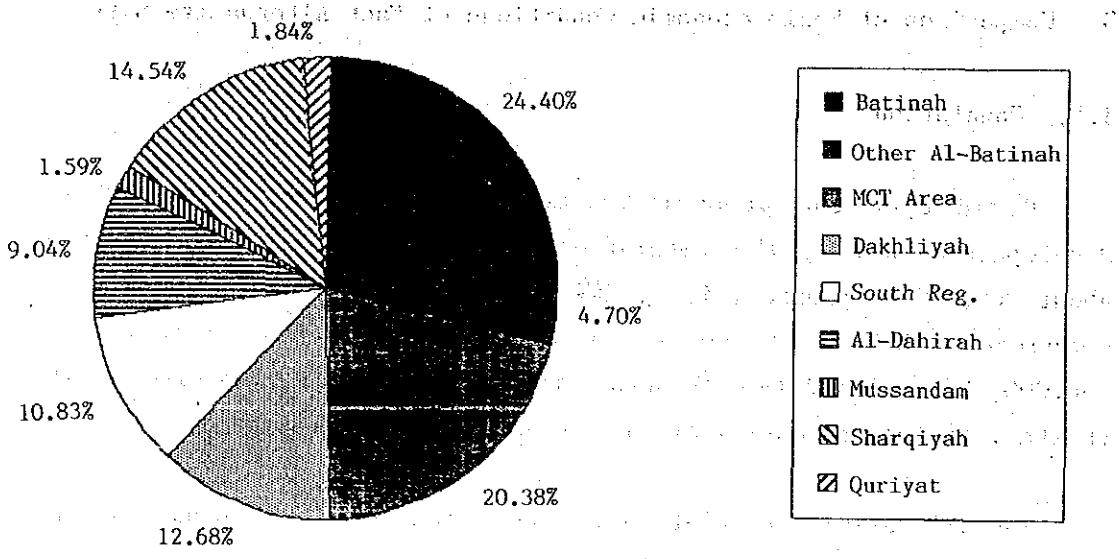


Fig.A-4-6-10 Population in 1989 (Based on 1.5 milion)

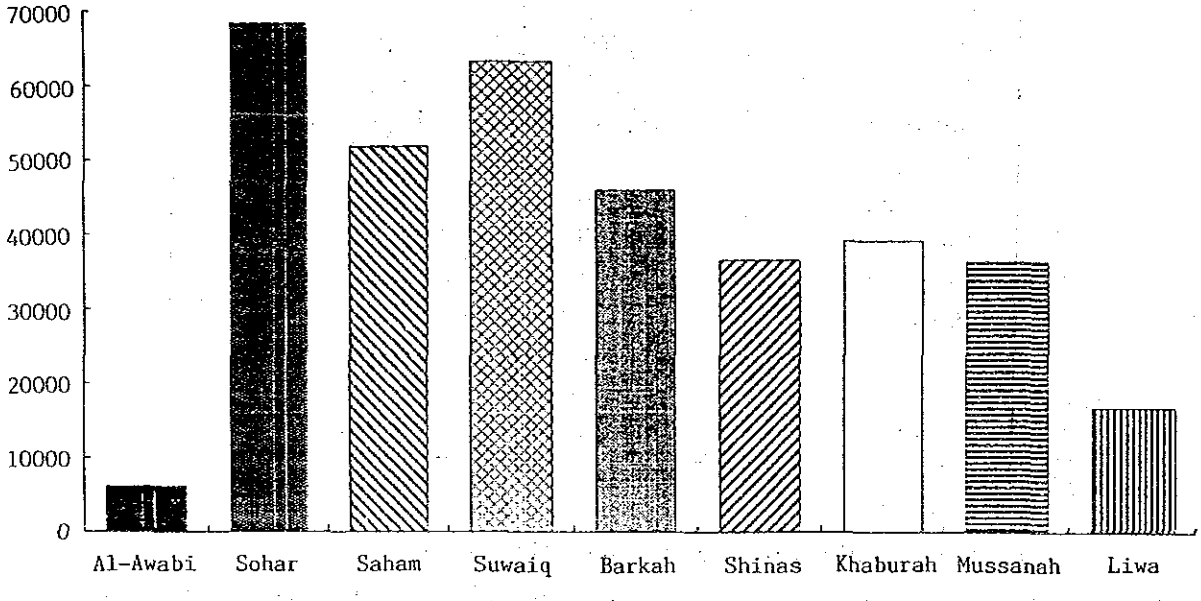


Fig.A-4-6-11 Population of Al-Batinah in 1989

for entire port development project that a densely populated area is located within a relevant distance from the site taking into consideration the future development potential as a hinterland of the port in question.

From the above-mentioned point of view, Sohar (see Fig.A-4-6-2) and Saham (see Fig.A-4-6-3) cannot be recognized as suitable construction sites. And there are some difficulties at Suweiq (see Fig.A-4-6-5) and Mussanah (see Fig.A-4-6-6).

3.2. Location of Urban and Cultivated Area

3.2.1 Majis

There is no densely populated area near the Majis Jetty, which was constructed by the Oman Mining Company, except Majis Town, which is 2 Kms from the jetty. There extends about 12 Km length of vacant shoreline between Majis and Sahi Harmui. The cultivated area around the site is not so wide compared with other sites.

It is said that the cultivated area near the coastline is increasingly salinated due to the pumping-up of ground water for irrigation. And the site survey found some farms no longer under cultivation. However, the existing cultivated area should be taken into account due to the ownership of these farms.

From this point of view, Majis has fewer restrictions than other sites. (see Fig.A-4-6-1)

3.2.2 Khaburah

The site, which is located about 5 to 15 Kms from Khaburah Center, is not surrounded by a densely populated area but the cultivated area extends behind the site. The serious problem of this site seems to be the existence of many wadis, which should be evaluated from the viewpoint of

natural conditions.

3.2.3 Suweiq

The site is surrounded by many towns (see Fig.A-4-6-5) and there is also a wide cultivated area behind the shoreline. There were rocks observed on the shore during the site survey and this problem will be evaluated from the viewpoint of natural conditions.

3.2.4 Mussanah

This site is also surrounded by many towns but there is not a cultivated area widely spread just behind the site. This situation seems to be due to the existence of Wadi Al Abyad (Wadi Jazmi at the lower reaches) in addition to the serious salination of ground water (see Fig.A-4-6-7).

3.2.5 Muraysi

There is a vacant area in the northern part of this site. But the area is very close to Suwadi which has huge potential for tourism development. There is also Wadi Ma Awil (Wadi Hifri at the lower reaches) near the site (see Fig.A-4-6-7).

3.2.6 Haradi

There is not a densely populated area near the site and the cultivated area is not spread out. (see Fig.A-4-6-7).

3.3. Deployment of Industry

There are 180 industrial establishments with capital investment of

more than 150,000 RO in Oman. Among these companies, 131 establishments, i.e. 73%, are located in the capital area. Fig.A-4-6-12 shows the regional distribution of these companies. There are 15 such establishments in the Batinah Region.

In the Batinah Region, there are 6 companies such as Oman Mining Co. in Sohar, 4 in Barkah, 2 in Mussanah and Suweiq respectively and 1 in Khaburah. Table A-4-6-7 shows the name, volume of products and commodity of each company in the region.

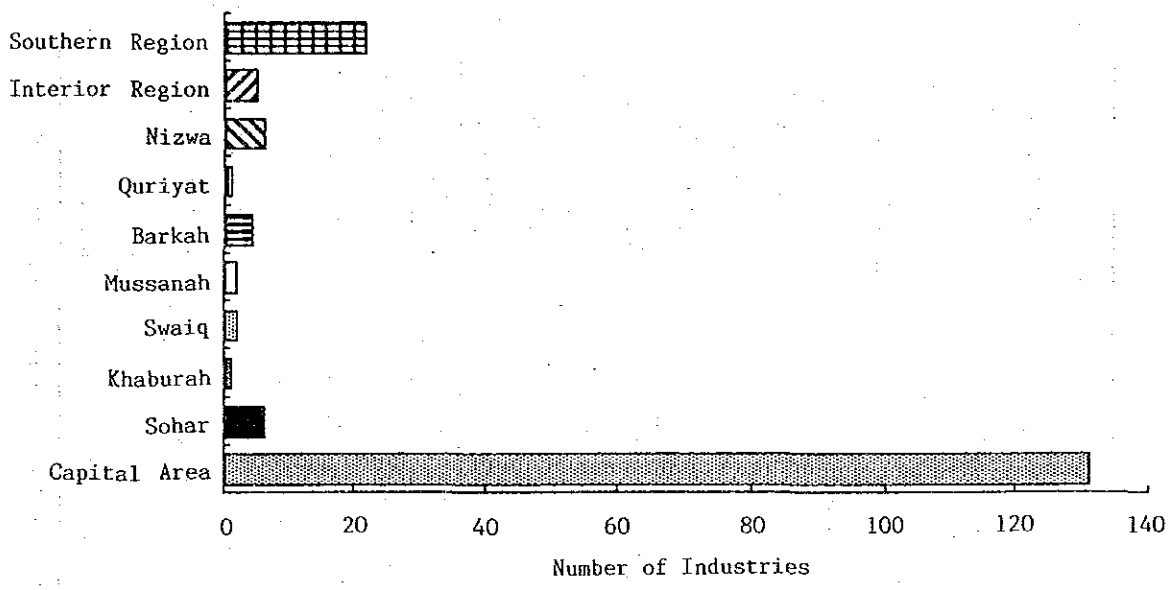


Fig.A-4-6-12 Regional Distribution of Eastablishements

Table A-4-6-7 Industrial Establishment over 150,000 RO in Batinah Coast

Region	Name of Company	Volume of Products	Commodity
Barkah	Al-Manuka Ice Plant	4,000 tonnes	Ice
	Said Salim Said	2,000 c.m.	Sea sand Wash
	Al-turki Cement Products	1,150,000 Tonnes	Aggregate & Sand
	G & B Oman	200,000 Tonnes	Aggregate & Sand
Mussanah	Consolidated Contractors	130,000 Tonnes	Aggregate & Sand
	Al-Bastan Corpo Diary	1,500,000 L	Laban & Yoghurt
		1,200,000 L	Ice Cream
		1,200,000 L	Fruit Juice
Suweiq	Packing Co., Ltd.	2,000 Tonnes	Cardboard
	Al-Nasr Trade & Cont.	25,000 Tonnes	Marble
		15,000 Tonnes	Marble Chips
		31,800 sq.m.	Marble Tiles
Khabrah	Boats Manu. Co., Ltd	300 Nos	Fishing Boats
Sohar	National Gas	8,000 Tonnes	LPG
	Abdullah Ali Al-Kashira	350,000 Tonnes	Aggregate & Sand
	Sohar Trade & Cont. Est.	12,000 Tonnes	Aggregate & Sand
	Al-Salami & Al-Kashry Td.	250,000 Tonnes	Concrete Blocks
	Oman Mining Co.	20,000 Tonnes	Copper Cathodes
		36 Tonnes	Anode Slimes
	Oman Abrasives	60,000 Tonnes	Abrasives

Source: MOCI :Industrial Establishment with Capital Investment more than 150,000 RO, Batinah Coast

3.4. Road Transportation

There is a sophisticated highway system along the Batinah Coast from Muscat to Dubai, UAE, and the access road conditions from the highway to each site should be improved except at Majis. The distance from the highway to each site is as follows;

Majis	----------	4.3 Km
Khaburah	----------	2.1 Km
Suweiq	----------	3.2 Km
Mussanah	----------	4.5 Km
Muraysi	----------	5.5 Km
Haradi	----------	4.2 Km

There is also a single carriageway from near Sohar to Buraimi. This road is connected by the highway system to Abu Dhabi (see Fig.A-4-6-13). Table A-4-6-8 shows the road distance form the alternative sites to the major cities.

Table A-4-6-8 Road Distance

Unit:Km

Possible Site	Fm Muscat	Fm Dubai	Fm Abu Dhabi	Fm Fujairah	Fm Khor Fakkan
Majis	240	229	233	89	107
Sohar	230	239	243	99	117
Saham	205	264	268	124	142
Khaburah A	170	299	303	159	177
Khaburah B	160	309	313	169	187
Suweiq	140	329	333	189	207
Mussanah	110	359	363	219	237
Muraysi	90	379	383	239	257
Haradi	75	394	394	254	272
Quriyat	94	563	567	423	441

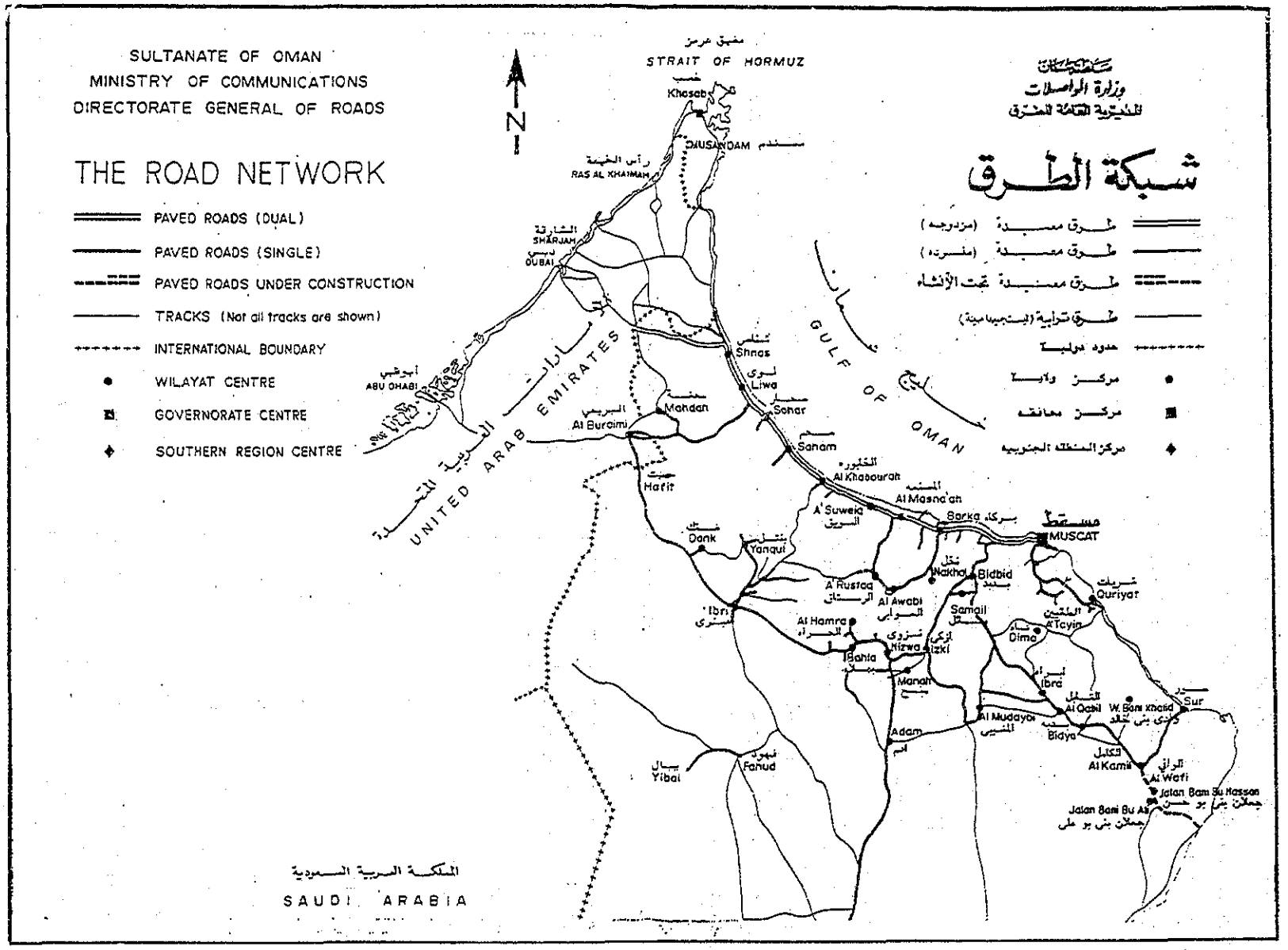


Fig.A-4-6-13 The Road Network

3.5. Power Supply

The present situation of power supply in Batinah Region is shown in Fig.A-4-6-14. The Sultanate of Oman has decided to utilize natural gas resources for power supply. A second pipeline is planned to be constructed for some 300 m parallel to the existing line.

4. Evaluation of Selected Sites for New Port Development

4.1. Potential Functions for New Port Development and Assumption of New Port Scale

The progress report (I) that was submitted in December 1989 presents the provisional demand forecasts for Mina Qaboos and a new port. The cargo volume for Mina Qaboos and a new port will be some 3.7 million tonnes in 2000 and some 6.8 million tons in 2015, according to the report. The cargo volume was calculated by import, export and transshipment. Although the capacity of Mina Qaboos has not yet been finalized, Mina Qaboos seems unable to handle such a big volume of cargoes in 2015, even after development. It is not still clear whether Mina Qaboos can handle the cargo volume in 2000. More detailed analysis must be done to see whether Mina Qaboos can be developed in Shutaify Bay in future on a feasible cost basis, but it seems to be very difficult to implement Scheme II, which was proposed by CES in the long term.

Accordingly, a port supplementary to Mina Qaboos must be taken into consideration before 2015.

The cargoes that are now handled at Mina Qaboos are import and export cargoes to/from the hinterland and transshipment cargoes. In considering the potential functions of a new port, we can take up the following 2 functions of a port supplementary to Mina Qaboos:

(1) Import / export cargo handling which will surpass the capacity of Mina Qaboos.

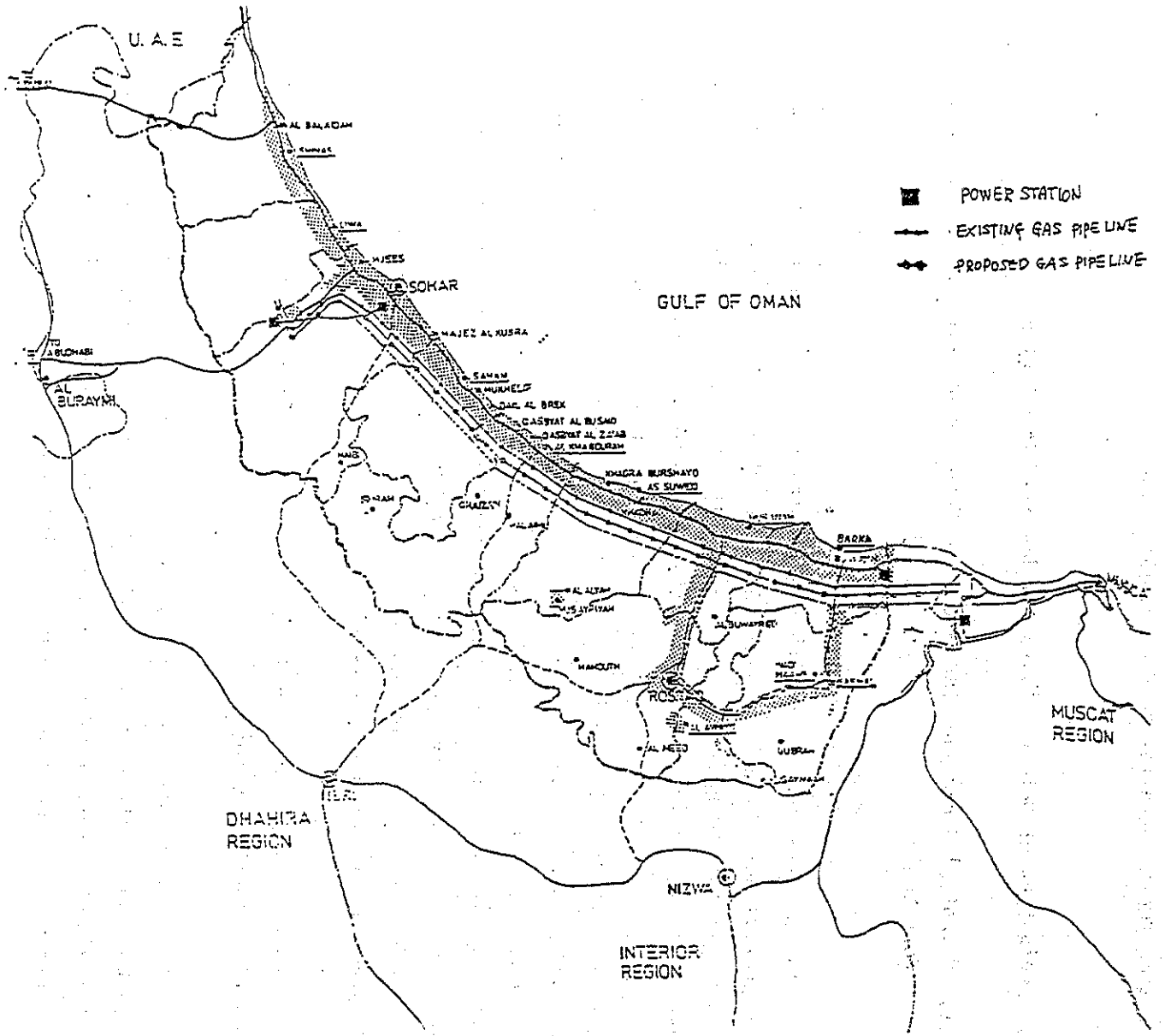


Fig.A-4-6-14 Power Supply

(2) Transshipment Port.

One of the major reasons for developing a new port is to provide a core infrastructure for industrial development in general. By preparing waterfront areas for import / export oriented industries, we can give incentives for such industries to invest in factories in the waterfront areas. By preparing the land areas for related industries, we expect the development of industrial zones along the coastal area. There are many coastal industrial regions in Japan. In these regions, heavy, glass, iron and heavy machine industries can be often be seen. Accordingly, the third function is as follows:

(3) Industrial Port

There are many free zones connected to ports around the world. Free trade zones are useful in terms of diversifying the regional economy. We have not yet analyzed the possibility of introducing free trade zones to Oman, but this will be taken into consideration as one of the possible functions of a new port. So the fourth function is as follows:

(4) Free Trade Zones

Fishing is one of the major industries on the Batinah Coast. There are over 4,000 fishermen who are now engaged in inshore fisheries along the Batinah Coast. There are no deep-sea fisheries, despite facing the Oman Gulf, which abounds in various types of fish. So the fifth function is as follows:

(5) Fishery Port

We will expect other port functions, e.g. ship repairing, passenger traffic, small recreational boats and so on, to be carried out as well.

(6) Other Functions

In selecting the most suitable new port site among several new port development sites, the port scale must be analyzed in accordance with the

above-mentioned potential functions. But the scale of the new port cannot be clarified at the moment, because the new port will have one major function as a supplementary port of Mina Qaboos, and the capacity of Mina Qaboos has not yet finalized. Accordingly, we will suppose one possible scale of a new port and compare the conditions of respective alternative sites. The supposed scale of the new port does not mean the master plan that will be formulated after the plan of Mina Qaboos is finalized. It is not useful to estimate the scale of port facilities in detail, because the detailed analysis will be implemented when formulating the master plan of the new port, but the fundamental scale must be estimated. The estimated scale of the new port for site selection is as follows:

(1) Quay Size

Depth : -14m

Length : 3,100m

If we think about the introduction of container berths, the acceptable vessel size will be 40,000 DWT (2,4000TEU Type Full Container Vessel). If we think about the introduction of general cargo vessels, the acceptable vessel size will be 50,000 DWT. Acceptable tankers will be 50,000 DWT and LPG carriers will be 30,000 GRT.

The required berth length for the respective vessels is as follows;

Type of Vessels	Reqyured Berth Length
40,000 DWT Full Container Vessels	300m
50,000 DWT General Cargo Vessels	280m
50,000 DWT Oil Tankers	280m
30,000 GRT LPG Carriers	260m

So when use the quay for container vessels 10 berths can be facilitated. The required length shall be calculated in accordance with the demand forecast in the later stage, but we assume the above length in site selection.

(2) Water Area.

(1) Channel
Depth : -15m
Width : 250m
(2) Turning Basin
Depth : -14m
Width : 500m
(3) Basin
Depth : -14m
Width : 400m

If we suppose the above-mentioned scale of quay wall, the maximum overall length will be determined by the overall length of container vessels, viz. 250m. The width of a channel is then estimated to be 250m. The depth of the channel is supposed to be -15m, taking into consideration the moving effects of vessels. The shape of the turning basin will be a circle, but is assumed to be a square for simplification. The width is estimated at 500m, considering 2 times of vessel length. The shape of basin is assumed to be a trapezium or a rectangle and the width is estimated to be 400m, considering 1.5 times of vessel length and the availability of a berth at the end of the basin.

(3) Breakwater : Up to -7.5m depth

Judging from the expected wave height and the result of interviews regarding littoral drift, it seems unnecessary to construct a confined channel thoroughly. The depth at which sea bottom sands are most movable is between -3m and -5m. It seems to be enough to extend breakwaters up to the depth of -7.5m.

The scale of other facilities is assumed to be same at all the alternative sites.

4.2. Evaluation Criteria in Site Selection

It is possible for us to choose various kinds of criteria in selecting the most suitable site for port development. For example, the considerable criteria are as follows:

(1) Coastal Topography

(2) Hydrography

(3) Available space

(4) Accessibility

(5) Ease of facility maintenance

(6) Construction Cost

(7) Available resources

(8) Available public utilities

(9) Available infrastructures

(10) Location

(11) Growth potential of hinterland related to port functions.

These criteria can be classified into the negative factors and the positive factors to develop a new port. For example, coastal topography has a close relation to port construction cost. Available infrastructures and public utilities have a close relation to the growth potential of the hinterland related to port functions.

The negative factors can be represented by the cost of construction and maintenance. The positive factors can be represented by the growth potential of hinterland related to port functions.

4.3. Comparison of Cost in Site Selection

(1) Premises

As stated in 4.1, we assumed that the new port scale shall be as follows in future:

(1) Quay Size (Depth: -14m, Length:3,100m)
(2) Channel (Depth: -15m, Width: 250m)
(3) Turning Basin (Depth: -14m, Width : 500m)
(4) Basin (Depth: -14m, Width: 400m)
(5) Breakwater up to the depth of -7.5m
(6) Other Cost Constants

The conceptual plan using the above scale is shown in Figure A-4-6-15.

As stated in 2.5, rock is exposed at some locations on the beach in Suweiq. The construction cost of the port in Suweiq would be very high compared with other sites. So we have excluded Suweiq from the alternative port development sites.

(2) Cost Comparison

Table A-4-6-9 shows the cost comparision of each alternative site. According to this table, Majis is the most suitable site, followed by Haradi.

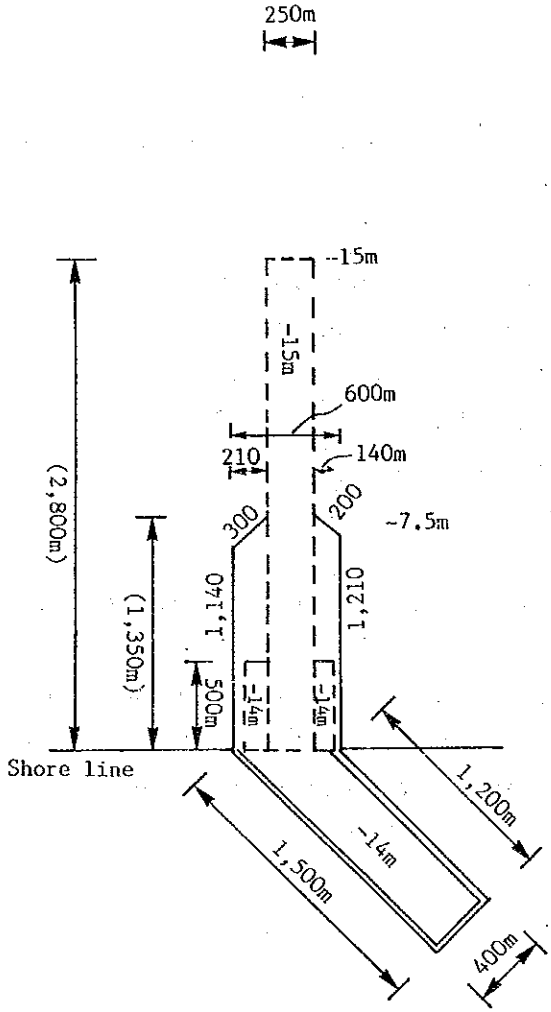


Fig. A-4-6-15 Conceptual Plan for Site Selection

Table A-4-6-9 Comparison of Volume & Cost on Each Alternative Site

Unit: Million RO

Description	Majis	Mussanah	Khaburah	Murayashi	Haradi
a. Aproach Channel					
0 to -15m					
Length (m)	2,800	4,350	4,500	6,000	4,300
Dredging Volume					
(million q.m.)	5.13	7.09	7.31	8.13	6.63
b. Berth					
Land Area	1.35	1.35	1.35	1.35	1.35
Underwater	7.56	7.56	7.56	7.56	7.56
Turning Basin	1.70	1.72	1.75	1.72	1.70
c. Total Volume	15.74	17.72	17.97	18.75	17.24
I. Total Cost (a+b)	26.36	29.69	30.10	31.41	28.87
d. Quay					
-14m 3,100m	-ditto-	-ditto-	-ditto-	-ditto-	-ditto-
II. Total Cost (d)	46.50	46.50	46.50	46.50	46.50
e. Breawater					
Total Length(m)	2,800	3,650	3,750	3,650	3,300
0 to -2m	720	800	960	800	720
-2 to -4m	720	800	960	800	720
-4 to -6m	720	1,000	960	1,000	900
-6 to -7.5m	690	1,050	870	1,050	960
Const. Cost					
0 to -2m	3.60	4.00	4.80	4.00	3.60
-2 to -4m	6.30	7.00	8.40	7.00	6.30
-4 to -6m	9.00	12.50	12.00	12.50	11.25
-6 to -7.5m	12.94	19.69	16.31	19.69	18.00
III. Total Cost(e)	31.84	43.19	41.51	43.19	39.15
f. Access Road					
Length (Km)	0	4.5	2.1	5.5	4.2
IV. Total Cost (f)	0.00	2.25	1.05	2.75	2.10
Grand Total	104.70	121.62	119.16	123.85	116.62

4.4. Comparision of the Growth Potential of Hinterland Related to Port Functions.

At present, the Batinah Coast region seems to be in the hinterland of Mina Qaboos. Because of the non-availability of E/I entries, the quantitative volume of cargo flow by each origin and destination could not be obtained. According to the results of interviews conducted by Weidleplan, people in the north of the Batinah Region down to Saham obtain principal goods mainly from the U.A.E. On the other hand, people from the willayats of Musanah to Barka tend to go mainly to Muscat. Judging from these results, they estimated that the influential limitation of Muscat is up to Saham and the influential limitation of the U.A.E. is down to Suweiq.

From the foreign trade statistics, one-fifth of the total import cargoes comes from the U.A.E by road and three-fifths of the total import cargoes comes through Mina Qaboos.

By taking into account the above information, the hinterland of Mina Qaboos seems to be mainly up to Saham.

From the viewpoint of this function, the potential of the alternative new port development sites relate greatly to the distance form Mina Qaboos and Dubai and the distribution of final destinations and origins. The export cargoes are far fewer than the import cargoes except for the huge expansion of the export-oriented industry. So in this section, the import cargo handling potential shall be taken into consideration.

If we locate a new port between Suweiq and Haradi, the hinterland of the new port will overlap the hinterland of Mina Qaboos. Competition with U.A.E ports will not be successful.

If we locate a new port between Saham and Suweiq. the competition with U.A.E ports will be more successful than the above location.

If we locate a new port on the west side of Saham, viz. Sohar or Majis, the competition with U.A.E ports will be the most successful.

On the other hand, the more the distance form Muscat increases, the

more the transportation cost increases. So the functional allocation of the new port and Mina Qaboos must be taken into consideration. If we take measures to make Sohar a regional center in the future and envisage the role of the new port as the import port for the Batinah Region, the potential of Majis will increase.

(2) Transshipment Port

Mina Qaboos is located at a good site in terms of being a transshipment port of Gulf Countries. From the viewpoint of ship-operating corporations which are controlling and delivering their own mother vessels in Gulf Countries, the closest alternative new port development site to Mina Qaboos seems to be the best. Even thought Majis is the remotest site from Mina Qaboos, it is better than Dubai from the viewpoint of location for mother vessels. Accordingly, the competitive conditions with U.A.E. ports must be taken into consideration.

Dubai has advantages in terms of transshipment to Gulf Countries and Iran as follows:

a. There are many basic import cargoes in addition to the transshipment cargoes.

b. There are many soft infrastructures like banks, trading agencies and insurance agencies.

c. There are sufficient berths and support facilities.

d. Easy clearance and document procedure

Ship-operation corporations are interested in getting sufficient cargo volume by introducing additional mother vessels to some regular lines.

There is not much difference between Majis and Haradi for Gulf and Subcontinent feeder vessels, because the site of Batinah Coast is on the feeder service route. Accordingly, the closer location is to Mina Qaboos, the better from the viewpoint of ship-operating corporations in general.

But when the good conditions which Dubai now has can be provided around the Sohar area and Sohar can become competitive with U.A.E ports, the site of Majis might be attractive to the ship-operating corporations.

(3) Industrial Port

Most industries are now located in the Capital Area, while few industries are located in the Batinah Coast region. If the trend of investment continues along the same lines, the potential of industrial development in Capital Area will be higher than on the Batinah Coast.

If a policy at making industrial development play the role of regional development in the Batinah Coast region outside the Capital Area is adopted, the potential for industrial development in the Batinah Coast region will be higher than in the Capital Area.

The conditions of public utilities, such as electricity, gas and water, do not vary much form site to site in the Batinah Coast region.

Sohar is expect to play the role of regional center on the Batinah Coast and the promotion of regional center development is preferable from the viewpoint of equivalent national land utilization. Taking into consideration this point, the potential of industrial development in the vicinity of Sohar, as a regional center, will be higher than other sites in the Batinah Coast region.

In the hinterland of Sohar, the Oman Copper Mining Corporation is now operating and a Petro Chemical Industry Plant is now being planned. On the other hand, there is no clear plan of industrial development on the sites on the Batinah Coast. Taking this point into consideration, the potential of industrial development in the vicinity of Sohar will be higher than at other remote sites. Moreover, there is one jetty which extends up to -7.5m in Majis and the utilization of this jetty gives it an advantage as a new port.

Accordingly, if we take into account the regional center in Sohar, a site near Sohar is preferable.

(4) Free Trade Zone

In considering a FTZ located in the vicinity of a new port, there is not much difference between the alternative sites on the Batinah Coast.

(5) Fishery Port

In considering the potential for a deep-sea fishery, the following factors must be taken into consideration:

a. Present distribution of fishermen

b. Distance to marketplaces, viz. Muscat, City of U.A.E and other countries.

Other functions do not have much influence in selecting a new port site.

As a conclusion, we can summarise as follows:

a. Majis has high potential for new port development as an aggressive case to UAE.

b. Haradi has high potential for new port development as a trend case.

We would like to recommend the aggressive case to UAE.