16. Engineering Design

16.1 Design structure

16.1.1 Design Criteria

The design criteria necessary for designing the port facilities is tabulated in Table 16.1.1.

Table 16.1.1 Design Criteria

Tidal levels	M.H.H.W +1.68m
	M.S.L +1.30m
	M.L.L.W +0.60m
Seismic disturbance	0.1W (W : Weight of structure)
Wave height for design of breakwater	7.0m
Vessel of design(max)	Container vessel 90,000DWT
Water depth of berth(max)	M.L.L.W-18m
Surcharge load of berth	Load condition 3.0t/m^2
Berthing velocity of ship	0.15m/sec
Design lifetime	50 years

16.1.2 Structural Design

These are several structural design possibilities. Typical example of breakwater , quaywall, and revetment are shown in the following figures.

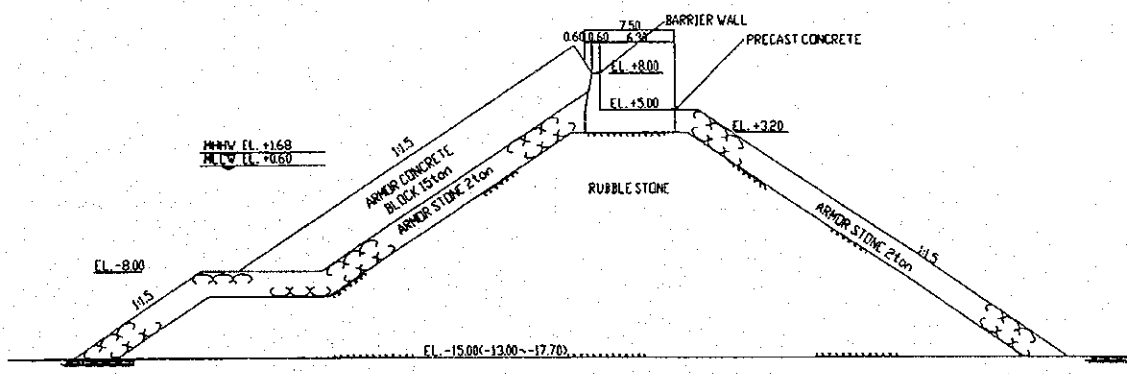
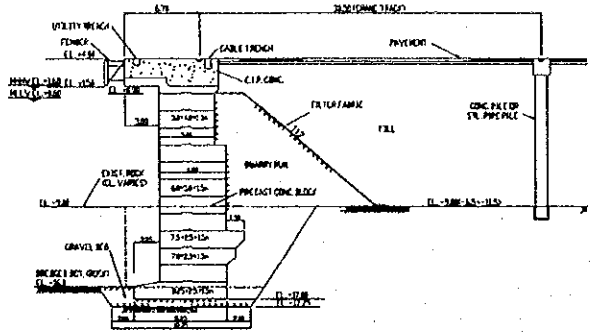
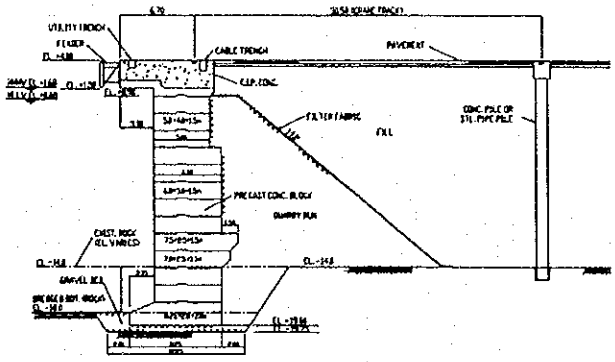


Figure 16.1.1 Breakwater



-16m Berths



-18m Berths

Figure 16.1.2 Container Warf

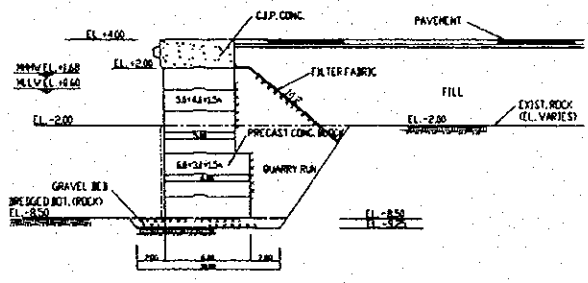


Figure 16.1.3 Government Warf

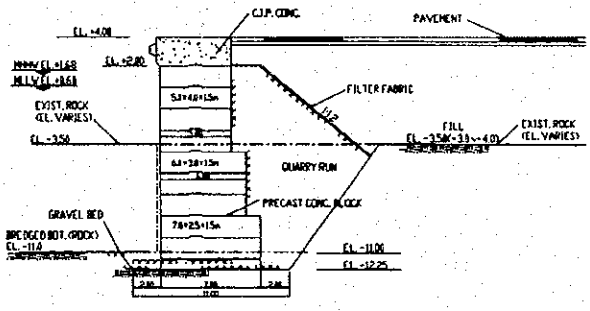


Figure 16.1.4 Passenger Warf

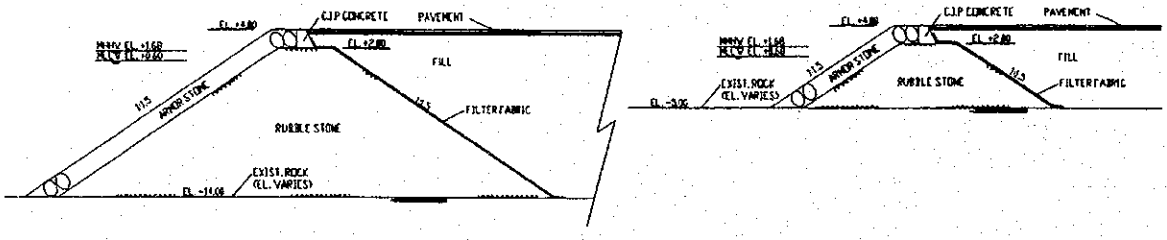


Figure 16.1.5 Revetment

16.2 Implementation Plan

16.2.1 JICA PLAN A

The implementation plan of JICA PLAN A is shown in Figure 16.2.1.

16.2.2 JICA PLAN B

The implementation plan of JICA PLAN B is shown in Figure 16.2.2.

16.3 Cost Estimation

16.3.1 Basic Condition for Cost Estimate

(1) The construction cost has been estimated based on the result of material survey cost on Jan.2000 at Salalah.
(2) Exchange rate of currency is fixed as follows:
US Dollar 1.0=OR 0.385
(3) Physical contingency is estimated at 10%.
(4) Engineering services fee is estimated at 5%.
(5) Indirect cost is estimated at 15%: contractors overhead and profit.
(6) Price escalation is not included for construction, equipment and engineering cost.
(7) The direct cost of construction is classified into the foreign and local currency components. The percentage distribution of the major items of construction materials, equipment and labor between the foreign and local currency components is shown in Table 16.3.1.

Table 16.3.1 Distribution of Construction Cost

No	Item	Foreign	Local
1	Breakwater	30%	70%
2	Dredging	90	10
3	Wharf	30	70
4	Bridge	70	30
5	Building	10	90
6	Mechanical	90	10
7	Electrical	90	10
8	Water Supply & Drainage	90	10
9	Cargo Handing Equipment	100	0

	No.	Description	Quantity	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Short Term I	1	Preparatory Work																					
	2	Breakwater	1,200m																				
	3	Dredging	13,778,975m^3																				
	4	Wharf	700m −16m 2Berth																				
	5	Government Berth	850m −8.5m																				
	6	Bridge	350m																				
	7	Building																					
	8	Erectrical																					
	9	Mechanical																					
	10	Cargo Handling Equipment	Container Crane 18lines 6Nos ,etc 36Nos.																				
	11	Miscellaneous Work																					
	12	Engineering Services																					
Long Term II −1	1	Preparatory Work																					
	1	Breakwater	1,350m																				
	2	Dredging	3,614,150m^3																				
	3	Wharf	1,050m −18m 3Berth																				
	4	Building																					
	5	Erectrical																					
	6	Mechanical																					
	7	Cargo Handling Equipment	Container Crane 22lines 9Nos ,etc 54Nos.																				
	8	Miscellaneous Work																					
	9	Engineering Services																					
II −2	1	Preparatory Work																					
	2	Wharf	1,050m −16m 3Berth																				
	3	Building																					
	4	Erectrical																					
	5	Mechanical																					
	6	Cargo Handling Equipment	Container Crane 18lines 9Nos ,etc 54Nos.																				
	7	Miscellaneous Work																					
	8	Bulk Terminal crane	800t/h																				
	9	Engineering Services																					
II −3	1	Preparatory Work																					
	2	Dredging	96,850 m^3																				
	3	Passenger Berth	350m −11.0m																				
	4	Building etc																					
	5	Gunge Way	2Nos																				
	6	Miscellaneous Work																					
	7	Engineering Services																					

Figure 16.2.1. Construction Schedule of JICA PLAN A

	No.	Description	Quantity	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Short Term I	1	Preparatory Work																					
	2	Breakwater	2,550m																				
	3	Dredging	7,003,146m^3																				
	4	Wharf	1,050m -18m 3Berth																				
	5	Government Berth	850m -8.5m																				
	6	Bridge	350m																				
	7	Building																					
	8	Erectrical																					
	9	Mechanical																					
	10	Cargo Handling Equipment	Container Crane 22lines 9Nos ,etc 54Nos.																				
	11	Miscellaneous Work																					
	12	Engineering Services																					
Long Term II-1	1	Preparatory Work																					
	2	Dredging	10,801,725m^3																				
	3	Wharf	700m -16m 2Berth																				
	4	Building																					
	5	Erectrical																					
	6	Mechanical																					
	7	Cargo Handling Equipment	Container Crane 18lines 6Nos ,etc 36Nos.																				
	8	Miscellaneous Work																					
	9	Engineering Services																					
II-2	1	Preparatory Work																					
	2	Wharf	1,050m -16m 3Berth																				
	3	Building																					
	4	Erectrical																					
	5	Mechanical																					
	6	Cargo Handling Equipment	Container Crane 18lines 9Nos ,etc 54Nos.																				
	7	Miscellaneous Work																					
	8	Bulk Terminal crane	800t/h																				
	9	Engineering Services																					
II-3	1	Preparatory Work																					
	2	Dredging	96,850 m^3																				
	3	Passenger Berth	350m -11.0m																				
	4	Building etc																					
	5	Gunge Way	2Nos																				
	6	Miscellaneous Work																					
	7	Engineering Services																					

Figure 16.2.2. Construction Schedule of JICA PLAN B

16.3.2 JICA PLAN A

Summary of the construction cost for JICA PLAN A is shown in Table 16.3.2.

(1) Short Term
The cost estimation of short term for JICA PLAN A is shown in Table 16.3.3.

(2) Long Term
The cost estimation of long term for JICA PLAN A is shown in Table.16.3.4.

(3) Future Term
The cost estimation of future term for JICA PLAN A is shown in Table 16.3.5.

(4) Disbursement schedule for the short term
The disbursement schedule for the short term for JICA PLAN A is shown in Table 16.3.6.

(5) Disbursement schedule for the long term
The disbursement schedule for the long term for JICA PLAN A is shown in Table 16.3.7.

16.3.3 JICA Plan B

Summary of the construction cost for JICA PLAN B is shown in Table 16.3.8.

(1) Short Term
The cost estimation of short term for JICA PLAN B is shown in Table 16.3.9.

(2) Long Term
The cost estimation of long term for JICA PLAN B is shown in Table.16.3.10.

(3) Future Term
The cost estimation of future term for JICA PLAN B is shown in Table 16.3.11.

(6) Disbursement schedule for the short term
The disbursement schedule for the short term for JICA PLAN B is shown in Table 16.3.12.

(7) Disbursement schedule for the long term
The disbursement schedule for the long term for JICA PLAN B is shown in Table 16.3.13.

Table 16.3.2 Summary of the Construction Cost (PLAN A)

(Unit:1,000O.R)

Principal Items	Facilities and Handling Equipment	Dimension and Quantity	Short Term	Long Term	Short + Long	Future
Container Terminal	18m draft berth	1,050m	—	21,831	21,831	—
	16m draft berth	1,750m	13,727	19,716	33,443	—
	Cargo handling equipment	24 gantry cranes	14,667	49,503	64,170	—
		48 RTGs	5,056	15,167	20,223	—
		96yard tractors	308	923	1,231	—
Government berth		800m	7,128	—	7,128	—
Bridge		350m、400m	5,288	—	5,288	6,045
Passenger berth		350m	—	3,017	3,017	—
	Equipment	2 gangways	—	407	407	—
12m Draft berth etc			—	—	—	26,898
Breakwater		2,550m	20,918	30,837	51,755	—
Dredging		17,725,000m^3	41,201	11,095	52,296	14,846
Reclamation		22,455,000m^3				
Conventional Terminal	Cargo handling equipment	1 bulk crane	—	2,444	2,444	—
Building etc			10,098	31,833	41,931	—
TOTAL	—	—	118,391	186,773	305,164	47,789

Table 16.3.3 Breakdown of Project Cost(JICA PLAN-A)

(SHORT TERM DEVELOPMENT 2005)

Unit : 1,000 OR

No.	Work Item		Remarks	Unit	Quantity	Construction Cost		
						Foreign	Local	Total
I -1	Civil Work							
I -1-1	Breakwater	Breakwater Demolition	Existing	m	410	-	1,087	1,087
I -1-2		New Breakwater	-13.0m to-17.7m	m	1,200	4,501	10,502	15,003
I -1-3	Dredging	Harbour Area①	-16.0m	m^3	10,028,350	21,060	2,006	23,066
I -1-4		Harbour Area②	-8.5m	m^3	197,000	414	39	453
I -1-5		Approach Channel	-16.5m	m^3	3,553,625	7,463	711	8,174
I -1-6	Reclamation	Container Terminal B	+4.0m	m^3	2,425,725	-	-	-
I -1-7		Government Berths	+4.0m	m^3	634,148	-	-	-
I -1-8	Container Terminal B	Quay wall	-16m , 2Berths	m	700	1,711	3,991	5,702
I -1-9		Sea wall	-8.5m to-16.0m	m	50	102	239	341
I -1-10		Revetment	+4.0m	m	450	117	1,049	1,166
I -1-11		Pavement		m^2	335,000	-	3,350	3,350
I -1-12	Government Berths	Quay wall	-8.5m	m	850	849	1,981	2,830
I -1-13		Revetment	+4.0m	m	1,420	138	1,240	1,378
I -1-14		Pavement		m^2	127,500	-	1,275	1,275
I -1-15	Bridge			m	350	2,848	1,220	4,068
I -1-16	Sub Total					39,203	28,690	67,893
I -1-17	Physical Contingency	10%of Sub total				3,920	2,869	6,789
I -1-18	Indirect Cost	15%of Sub total				5,880	4,304	10,184
I -1-19	Engineering Service	5%of Sub total				1,960	1,435	3,395
I -1-20	Total					50,963	37,298	88,261
I -2	Building, Electric, and Water Supply							
I -2-1	Building			L.S.	1	123	1,120	1,243
I -2-2	Electrical			L.S.	1	2,703	300	3,003
I -2-3	Mechanical			L.S.	1	949	106	1,055
I -2-4	Miscellaneous			L.S.	1	1,727	740	2,467
I -2-5	Sub Total					5,502	2,266	7,768
I -2-6	Physical Contingency	10%of Sub total				550	227	777
I -2-7	Indirect Cost	15%of Sub total				825	340	1,165
I -2-8	Engineering Service	5%of Sub total				275	113	388
I -2-9	Total					7,152	2,946	10,098
I -3	Cargo Handling Equipment							
I -3-1	Container Crane	18lines	3No. × 2Berths	Nos	6	13,334	-	13,334
I -3-2	RTG			Nos	12	4,598	-	4,596
I -3-3	Yard Tractor			Nos	24	280	-	280
I -3-4	Sub Total					18,210	-	18,210
I -3-5	Physical Contingency	5%of Sub total				911	-	911
I -3-6	Engineering Service	5%of Sub total				911	-	911
I -3-7	Total					20,032	-	20,032
I -4	Grand Total					78,147	40,244	118,391

Table 16.3.4 Breakdown of Project Cost(JICA PLAN-A)

(LONG TERM DEVELOPMENT 2020)

Unit : 1,000 OR

No.	Work Item		Remarks	Unit	Quantity	Construction Cost		
						Foreign	Local	Total
Ⅱ-1	Civil Work							
Ⅱ-1-1	Breakwater	New Breakwater		m	1,350	7,116	16,605	23,721
Ⅱ-1-2	Dredging	Harbour Area	-18.0m	m^3	1,467,900	3,083	294	3,377
Ⅱ-1-3		Approach Channel	-18.5m	m^3	2,146,250	4,507	429	4,936
Ⅱ-1-4		Harbour Area B	-11.0m	m^3	96,850	203	19	222
Ⅱ-1-5	Reclamation	Container Terminal A	+4.0m	m^3	6,752,902	-	-	-
Ⅱ-1-6		Container Terminal C	+4.0m	m^3	5,551,248	-	-	-
Ⅱ-1-7	Reclamation	Passenger Berths	+4.0m	m^3	185,875	-	-	-
Ⅱ-1-8	Container Terminal A	Quay wall	-18m , 3Berths	m	1,050	2,882	6,725	9,607
Ⅱ-1-9		Sea wall	-16.0m to-18.0m	m	50	114	267	381
Ⅱ-1-10		Revetment	+4.0m	m	400	250	2,255	2,505
Ⅱ-1-11		Pavement		m^2	430,000	-	4,300	4,300
Ⅱ-1-12	Container Terminal C	Quay wall	-16m , 3Berths	m	1,050	2,566	5,986	8,552
Ⅱ-1-13		Revetment	+4.0m	m	400	250	2,255	2,505
Ⅱ-1-14		Pavement		m^2	410,900	-	4,109	4,109
Ⅱ-1-15	Passenger Berths	Quay wall	-11.0m	m	350	469	1,095	1,564
Ⅱ-1-16		Revetment	+4.0m	m	350	42	382	424
Ⅱ-1-17		Pavement		m^2	33,250	-	333	333
Ⅱ-1-18	Sub Total					21,482	45,054	66,536
Ⅱ-1-19	Physical Contingency	10%of Sub total				2,148	4,505	6,653
Ⅱ-1-20	Indirect Cost	15%of Sub total				3,222	6,758	9,980
Ⅱ-1-21	Engineering Service	5%of Sub total				1,074	2,253	3,327
Ⅱ-1-22	Total					27,926	58,570	86,496
Ⅱ-2	Building, Electric, and Water Supply							
Ⅱ-2-1	Building			L.S.	1	369	3,360	3,729
Ⅱ-2-2	Electrical			L.S.	1	8,108	900	9,008
Ⅱ-2-3	Mechanical			L.S.	1	2,846	318	3,164
Ⅱ-2-4	Miscellaneous①			L.S.	1	5,181	2,220	7,401
Ⅱ-2-5	Miscellaneous②	Passenger Berths		L.S.	1	445	-	445
Ⅱ-2-6	Passenger Tarminal		2,000m^2	L.S.	1	-	740	740
Ⅱ-2-7	Sub Total					16,949	7,538	24,487
Ⅱ-2-8	Physical Contingency	10%of Sub total				1,695	754	2,449
Ⅱ-2-9	Indirect Cost	15%of Sub total				2,542	1,131	3,673
Ⅱ-2-10	Engineering Service	5%of Sub total				847	377	1,224
Ⅱ-2-11	Total					22,033	9,800	31,833
Ⅱ-3	Cargo Handling Equipment							
Ⅱ-3-1	Container Crane	18lines	3No.×3Berths	Nos	9	20,001	-	20,001
Ⅱ-3-2	Container Crane	22lines	3No.×3Berths	Nos	9	25,002	-	25,002
Ⅱ-3-3	RTG			Nos	36	13,788	-	13,788
Ⅱ-3-4	Yard Tractor			Nos	72	839	-	839
Ⅱ-3-5	Gunge Way	Passenger Berth		Nos	2	370	-	370
Ⅱ-3-6	Bulk Crane	Bulk Terminal	800t/h	Nos	1	2,222		2,222
Ⅱ-3-7	Sub Total					62,222	-	62,222
Ⅱ-3-8	Physical Contingency	5%of Sub total				3,111	-	3,111
Ⅱ-3-9	Engineering Service	5%of Sub total				3,111	-	3,111
Ⅱ-3-10	Total					68,444	-	68,444
Ⅱ-4	Grand Total					118,403	68,370	186,773

Table 16.3.5 Breakdown of Project Cost(JICA PLAN-A)

(FUTURE DEVELOPMENT)

Unit : 1,000 OR

No.	Work Item		Remarks	Unit	Quantity	Construction Cost		
						Foreign	Local	Total
Ⅲ-1	Civil Work							
Ⅲ-1-1	Dredging	Harbour Area A	-12.0m	m^3	234,617	493	47	540
Ⅲ-1-4		Future Expansion A	+4.0m	m^3	1,883,722	-	-	-
Ⅲ-1-5		Future Expansion B	+4.0m	m^3	1,396,875	-	-	-
Ⅲ-1-6		Future Expansion C	+4.0m	m^3	3,804,550	-	-	-
Ⅲ-1-10	Future Expansion A	Quay wall	-12m	m	980	1,497	3,494	4,991
Ⅲ-1-11		Sea wall	-11.0m to-12.0m		142	217	506	723
Ⅲ-1-12		Revetment	+4.0m	m	200	70	626	696
Ⅲ-1-13		Revetment	+4.0m	m	1,080	239	2,150	2,389
Ⅲ-1-14		Pavement		m^2	205,500	-	2,055	2,055
Ⅲ-1-15	Future Expansion B	Revetment	+4.0m	m	1,160	140	1,267	1,407
Ⅲ-1-16		Pavement		m^2	257,000	-	2,570	2,570
Ⅲ-1-17	Future Expansion C	Sea wall	-10.0m	m	900	1,038	2,422	3,460
Ⅲ-1-18		Pavement		m^2	240,000	-	2,400	2,400
Ⅲ-1-19	Bridge			m	400	3,255	1,395	4,650
Ⅲ-1-20	Dredging			m^3	4,730,453	9,934	946	10,880
Ⅲ-1-21	Sub Total					16,883	19,878	36,761
Ⅲ-1-22	Physical Contingency	10%of Sub total				1,688	1,988	3,676
Ⅲ-1-23	Indirect Cost	15%of Sub total				2,532	2,982	5,514
Ⅲ-1-24	Engineering Service	5%of Sub total				844	994	1,838
Ⅲ-1-25	Total					21,947	25,842	47,789
Ⅲ-2	Building, Electric, and Water Supply							
Ⅲ-2-1	Building					-	-	-
Ⅲ-2-2	Electrical					-	-	-
Ⅲ-2-3	Mechanical					-	-	-
Ⅲ-2-4	Miscellaneous					-	-	-
Ⅲ-2-5	Sub Total					-	-	-
Ⅲ-2-6	Physical Contingency	10%of Sub total				-	-	-
Ⅲ-2-7	Indirect Cost	15%of Sub total				-	-	-
Ⅲ-2-8	Engineering Service	5%of Sub total				-	-	-
Ⅲ-2-9	Total					-	-	-
Ⅲ-3	Cargo Handling Equipment							
Ⅲ-3-1	Sub Total					-	-	-
Ⅲ-3-2	Physical Contingency	5%of Sub total				-	-	-
Ⅲ-3-3	Engineering Service	5%of Sub total				-	-	-
Ⅲ-3-4	Total					-	-	-
Ⅲ-4	Grand Total					21,947	25,842	47,789

Table 16.3.6. Disbursement Schedule for Short Term Project 2005 (JICA PLAN A)

Unit : 1,000 OR

No.	Description	Remarks	Amount Total Construction Cost			2001 1st Year			2002 2nd Year			2003 3rd Year			2004 4th Year			2005 5th Year		
			Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total
I	Civil Work																			
	1.1 Breakwater	1,200m	4,501	11,589	16,090				3,600	9,271	12,871	901	2,318	3,219						
	1.2 Dredging & Reclamation	Harbour & Approach Channel	28,937	2,756	31,693				20,770	1,969	22,739	8,167	787	8,954						
	1.3 Wharf	700m, -16m : 2Berths	1,930	8,629	10,559				965	4,315	5,280	965	4,314	5,279						
	1.4 Government Berth	850m	987	4,496	5,483							987	4,496	5,483						
	1.5 Bridge	350m	2,848	1,220	4,068							1,899	813	2,712	949	407	1,356			
	1.6 Physical Contingency	10%	3,920	2,869	6,789				2,533	1,556	4,089	1,292	1,273	2,565	95	40	135			
	1.7 Indirect Cost	15%	5,880	4,304	10,184				3,800	2,333	6,133	1,938	1,909	3,847	142	61	203			
	1.8 Engineering Services	5%	1,960	1,435	3,395	392	288	680	1,013	622	1,635	517	509	1,026	38	16	54			
	Total of Item 1		50,963	37,298	88,261	392	288	680	32,681	20,066	52,747	16,666	16,419	33,085	1,224	524	1,748			
II	Building, Electric, etc																			
	2.1 Building		123	1,120	1,243							62	448	510	61	672	733			
	2.2 Erectrical		2,703	300	3,003							1,081	120	1,201	1,622	180	1,802			
	2.3 Mechanical		949	106	1,055							380	42	422	569	64	633			
	2.4 Miscellaneous		1,727	740	2,467							690	296	986	1,037	444	1,481			
	2.5 Physical Contingency	10%	550	227	777							221	91	312	329	136	465			
	2.6 Indirect Cost	15%	825	340	1,165							332	136	468	493	204	697			
	2.7 Engineering Services	5%	275	113	388	27	11	38	27	12	39	89	36	125	132	54	186			
	Total of Item 2		7,152	2,946	10,098	27	11	38	27	12	39	2,855	1,169	4,024	4,243	1,754	5,997			
III	Cargo Handling Equipment																			
	3.1 Container Crane	18lines 6No	13,334	-	13,334							5,334		5,334	8,000		8,000			
	3.2 Yard Crane, etc	RTG 12No, Yard Tracter 24No	4,876	-	4,876							1,950		1,950	2,926		2,926			
	3.3 Physical Contingency	5%	911	-	911							365		365	546		546			
	3.4 Engineering Services	5%	911	-	911							365		365	546		546			
	Total of Item 3		20,032	-	20,032							8,014		8,014	12,018		12,018			
	Grand Total		78,147	40,244	118,391	419	299	718	32,708	20,078	52,786	27,535	17,588	45,123	17,485	2,278	19,763			

Table 16.3.7. Disbursement Schedule for long Term Project 2020 (JICA PLAN A)

Unit : 1,000 OR

No.	Description	Remarks	Amount Total Construction Cost			2004 1st Year			2005 2nd Year			2006 3rd Year			2009 6th Year			2011 8th Year			2012 9th Year			2013 10th Year			2014 11th Year			2015 12th Year			2016 13th Year		
			Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total
I	Civil Work																																	
	1.1 Breakwater	1,350m	7,116	16,605	23,721				5,930	13,838	19,768	1,186	2,767	3,953																				
	1.2 Dredging & Reclamation	-18m, Harbour & Approach Channe	7,590	723	8,313				7,590	723	8,313	-	-	-																				
	1.3 Dredging & Reclamation	-11m, Harbour	203	19	222																								203	19	222			
	1.5 Wharf①	1,050m, -18m : 3Berths	3,246	13,547	16,793				1,475	6,158	7,633	1,771	7,389	9,160																				
	1.6 Wharf②	1,050m, -18m : 3Berths	2,816	12,350	15,166																1,280	5,614	6,894	1,536	6,736	8,272								
	1.7 Wharf③	350m, -11m	511	1,810	2,321																								511	1,810	2,321			
	1.4 Physical Contingency	10%	2,148	4,505	6,653				1,500	2,072	3,572	296	1,016	1,312							128	561	689	153	673	826				71	183	254			
	1.5 Indirect Cost	15%	3,222	6,758	9,980				2,249	3,108	5,357	444	1,524	1,968							192	842	1,034	230	1,010	1,240				107	274	381			
	1.6 Engineering Service	5%	1,074	2,253	3,327	180	309	489	600	829	1,429	118	406	524				28	124	152	51	225	276	62	269	331	6	18	24	29	73	102			
	Total of Item 1		27,926	58,570	86,496	180	309	489	19,344	26,728	46,072	3,815	13,102	16,917				28	124	152	1,651	7,242	8,893	1,981	8,688	10,669	6	18	24	921	2,359	3,280			
II	Building, Electric, etc																																	
	2.1 Building		369	3,360	3,729							185	1,680	1,865										184	1,680	1,864								
	2.2 Erectrical		8,108	900	9,008							4,054	450	4,504										4,054	450	4,504								
	2.3 Mechanical		2,846	318	3,164							1,423	159	1,582										1,423	159	1,582								
	2.4 Miscellaneous		5,626	2,220	7,846							2,591	1,110	3,701										2,590	1,110	3,700						445	-	445
	2.5 Passenger Terminal		-	740	740																											-	740	740
	2.6 Physical Contingency	10%	1,695	754	2,449							825	340	1,165										825	340	1,165						45	74	119
	2.7 Indirect Cost	15%	2,542	1,131	3,673							1,238	510	1,748										1,238	510	1,748						66	111	177
	2.8 Engineering Services	5%	847	377	1,224	41	17	58	41	17	58	331	136	467				41	17	58	41	17	58	330	136	466	2	4	6	2	4	6	18	29	47
	Total of Item 2		22,033	9,800	31,833	41	17	58	41	17	58	10,647	4,385	15,032				41	17	58	41	17	58	10,644	4,385	15,029	2	4	6	2	4	6	574	954	1,528
III	Cargo Handling Equipment																																	
	3.1 Container Crane	22lines 9Nos	25,002	-	25,002							25,002	-	25,002																				
	3.2 Yard Crane, etc	RTG 18Nos, Yard Tracter 36Nos	7,314	-	7,314							7,314	-	7,314																				
	3.3 Container Crane	18lines 9Nos	20,001	-	20,001																			20,001	-	20,001								
	3.4 Yard Crane, etc	RTG 18Nos, Yard Tracter 36Nos	7,313	-	7,313																			7,313	-	7,313								
	3.5 Gyang Way	Passenger Berth 2Nos	370	-	370																									370	-	370			
	3.6 Bulk Crane	Bulk Terminal 800t/h	2,222	-	2,222										2,222	-	2,222																		
	3.7 Physical Contingency	5%	3,111	-	3,111							1,616	-	1,616										1,366	-	1,366				129	-	129			
	3.8 Engineering Services	5%	3,111	-	3,111							1,616	-	1,616										1,366	-	1,366				129	-	129			
	Total of Item 3		68,444	-	68,444							35,548	-	35,548										30,046	-	30,046				628	-	628			
IV																																		
	Grand Total		118,403	68,370	186,773	221	326	547	19,385	26,745	46,130	50,010	17,487	67,497	2,222	-	2,222	69	141	210	1,692	7,259	8,951	42,671	13,073	55,744	8	22	30	1,551	2,363	3,914	574	954	1,528

Table 16.3.8 Summary of the Construction Cost (PLAN B)

(Unit:1,000O.R)

Principal Items	Facilities and Handling Equipment	Dimension and Quantity	Short Term	Long Term	Short + Long	Future
Container Terminal	18m draft berth	1,050m	28,260	—	28,260	—
	16m draft berth	1,750m	—	31,928	31,928	—
	Cargo handling equipment	24 gantry cranes	27,502	36,668	64,170	—
		48 RTGs	7,584	12,639	20,223	—
		96yard tractors	461	769	1,230	—
Government berth		800m	7,505	—	7,505	—
Bridge		350m、400m	5,288	—	5,288	6,045
Passenger berth		350m	—	3,017	3,017	—
	Equipment	2 gangways	—	407	407	—
12m Draft berth etc			—	—	—	26,898
Breakwater		2,550m	51,755	—	51,755	—
Dredging		17,725,000m^3	20,941	31,355	52,296	14,481
Reclamation		22,332,000m^3				
Conventional Terminal	Cargo handling equipment	1 bulk crane	—	2,444	2,444	—
Building etc			15,148	26,787	41,935	—
TOTAL	—	—	164,444	146,014	310,458	47,424

Table 16.3.9. Breakdown of Project Cost(JICA PLAN-B)

(SHORT TERM DEVELOPMENT 2005)

Unit : 1,000 OR

No.	Work Item		Remarks	Unit	Quantity	Construction Cost		
						Foreign	Local	Total
I-1	Civil Work							
I-1-1	Breakwater	Breakwater Demolition	Existing	m	410	-	1,087	1,087
I-1-2		New Breakwater	-13.0m to-20.0m	m	2,550	11,618	27,107	38,724
I-1-3	Dredging	Harbour Area①	-18.0m	m^3	1,467,900	3,083	294	3,376
I-1-4		Harbour Area②	-8.5m	m^3	2,847,000	5,979	569	6,548
I-1-5		Approach Channel	-18.5m	m^3	2,402,000	5,044	480	5,525
I-1-6		Approach Channel	-9.0m	m^3	5,000	11	1	12
I-1-7	Reclamation	Container Terminal A	+4.0m	m^3	6,377,798	-	-	-
I-1-8		Government Berths	+4.0m	m^3	625,348	-	-	-
I-1-9	Container Terminal A	Quay wall	-18m , 3Berths	m	1,050	2,882	6,725	9,608
I-1-10		Sea wall	-16.0m to-18.0m	m	50	114	267	381
I-1-11		Revetment	+4.0m	m	400	251	2,255	2,506
I-1-12		Revetment	+4.0m	m	1,100	495	4,448	4,943
I-1-13		Pavement		m^2	430,000	-	4,300	4,300
I-1-14	Government Berths	Quay wall	-8.5m	m	850	849	1,981	2,830
I-1-15		Revetment	+4.0m	m	1,420	138	1,240	1,377
I-1-16		Revetment	+4.0m	m	400	29	262	291
I-1-17		Pavement		m^2	127,500	-	1,275	1,275
I-1-18	Bridge			m	350	2,848	1,220	4,068
I-1-19	Dredging	from Long Term		m^3	281,246	591	56	647
I-1-20	Sub Total					33,932	53,567	87,498
I-1-21	Physical Contingency	10%of Sub total				3,393	5,357	8,750
I-1-22	Indirect Cost	15%of Sub total				5,090	8,035	13,125
I-1-23	Engineering Service	5%of Sub total				1,697	2,678	4,375
I-1-24	Total					44,112	69,637	113,749
I-2	Building, Electric, and Water Supply							
I-2-1	Building			L.S.	1	185	1,680	1,865
I-2-2	Electrical			L.S.	1	4,054	450	4,504
I-2-3	Mechanical			L.S.	1	1,423	159	1,582
I-2-4	Miscellaneous			L.S.	1	2,591	1,110	3,701
I-2-5	Sub Total					8,253	3,399	11,652
I-2-6	Physical Contingency	10%of Sub total				825	340	1,165
I-2-7	Indirect Cost	15%of Sub total				1,238	510	1,748
I-2-8	Engineering Service	5%of Sub total				413	170	583
I-2-9	Total					10,729	4,419	15,148
I-3	Cargo Handling Equipment							
I-3-1	Container Crane	22lines	3No.×3Berths	Nos	9	25,002	-	25,002
I-3-2	RTG			Nos	18	6,894	-	6,894
I-3-3	Yard Tractor			Nos	36	419	-	419
I-3-4	Sub Total					32,315	-	32,315
I-3-5	Physical Contingency	5%of Sub total				1,616	-	1,616
I-3-6	Engineering Service	5%of Sub total				1,616	-	1,616
	Total					35,547	-	35,547
I-4	Grand Total					90,388	74,056	164,444

Table 16.3.10. Breakdown of Project Cost(JICA PLAN-B)

(LONG TERM DEVELOPMENT 2020)

Unit : 1,000 OR

No.	Work Item		Remarks	Unit	Quantity	Construction Cost		
						Foreign	Local	Total
Ⅱ-1	Civil Work							
Ⅱ-1-1	Dredging	Harbour Area	-16.0m	m^3	7,378,350	15,495	1,478	16,970
Ⅱ-1-2		Harbour Area B	-11.0m	m^3	96,850	203	19	222
Ⅱ-1-3		Approach Channel	-16.5m	m^3	3,292,875	6,915	659	7,574
Ⅱ-1-4	Reclamation	Container Terminal B	+4.0m	m^3	2,459,325	-	-	-
Ⅱ-1-5		Container Terminal C	+4.0m	m^3	5,599,248	-	-	-
Ⅱ-1-6	Reclamation	Passenger Berths	+4.0m	m^3	185,875	-	-	-
Ⅱ-1-7	Container Terminal B	Quay wall	-16m , 2Berths	m	700	1,711	3,991	5,702
Ⅱ-1-8		Sea wall	-8.5m to-16.0m	m	50	102	239	341
Ⅱ-1-9		Pavement		m^2	335,000	-	3,350	3,350
Ⅱ-1-10	Container Terminal C	Quay wall	-16m , 3Berths	m	1,050	2,566	5,986	8,552
Ⅱ-1-11		Revetment	+4.0m	m	400	250	2,255	2,506
Ⅱ-1-12		Pavement		m^2	410,900	-	4,109	4,109
Ⅱ-1-13	Passenger Berths	Quay wall	-11.0m	m	350	469	1,095	1,564
Ⅱ-1-14		Revetment	+4.0m	m	350	42	382	424
Ⅱ-1-15		Pavement		m^2	33,250	-	333	333
Ⅱ-1-16	Dredging			m^3	-281,246	-591	-56	-647
Ⅱ-1-17	Sub Total					27,162	23,838	51,000
Ⅱ-1-18	Physical Contingency	10%of Sub total				2,716	2,384	5,100
Ⅱ-1-19	Indirect Cost	15%of Sub total				4,074	3,576	7,650
Ⅱ-1-20	Engineering Service	5%of Sub total				1,358	1,192	2,550
Ⅱ-1-21	Total					35,310	30,990	66,300
Ⅱ-2	Building, Electric, and Water Supply							
Ⅱ-2-1	Building			L.S.	1	308	2,800	3,108
Ⅱ-2-2	Electrical			L.S.	1	6,757	750	7,507
Ⅱ-2-3	Mechanical			L.S.	1	2,372	265	2,637
Ⅱ-2-4	Miscellaneous①			L.S.	1	4,318	1,850	6,168
Ⅱ-2-5	Miscellaneous②	Passenger Berths		L.S.	1	445	-	445
Ⅱ-2-6	Passenger Terminal		2,000m^2	L.S.	1	-	740	740
Ⅱ-2-7	Sub Total					14,200	6,405	20,605
Ⅱ-2-8	Physical Contingency	10%of Sub total				1,420	641	2,061
Ⅱ-2-9	Indirect Cost	15%of Sub total				2,130	961	3,091
Ⅱ-2-10	Engineering Service	5%of Sub total				710	320	1,030
Ⅱ-2-11	Total					18,460	8,327	26,787
Ⅱ-3	Cargo Handling Equipment							
Ⅱ-3-1	Container Crane	18lines	3No.×5Berths	Nos	15	33,335	-	33,335
Ⅱ-3-2	RTG			Nos	30	11,490	-	11,490
Ⅱ-3-3	Yard Tractor			Nos	60	699	-	699
Ⅱ-3-4	Gunge Way	Passenger Berth		Nos	2	370	-	370
Ⅱ-3-5	Bulk Crane	Bulk Terminal	800t/h	Nos	1	2,222		2,222
Ⅱ-3-6	Sub Total					48,116	-	48,116
Ⅱ-3-7	Physical Contingency	5%of Sub total				2,406	-	2,406
Ⅱ-3-8	Engineering Service	5%of Sub total				2,406	-	2,406
	Total					52,927	-	52,927
Ⅱ-4	Grand Total					106,697	39,317	146,014

Table 16.3.11. Breakdown of Project Cost(JICA PLAN-B)

(FUTURE DEVELOPMENT)

Unit : 1,000 OR

No.	Work Item		Remarks	Unit	Quantity	Construction Cost		
						Foreign	Local	Total
Ⅲ-1	Civil Work							
Ⅲ-1-1	Dredging	Harbour Area A	-12.0m	m^3	234,617	493	47	540
Ⅲ-1-4		Future Expansion A	+4.0m	m^3	1,883,722	-	-	-
Ⅲ-1-5		Future Expansion B	+4.0m	m^3	1,396,875	-	-	-
Ⅲ-1-6		Future Expansion C	+4.0m	m^3	3,804,550	-	-	-
Ⅲ-1-10	Future Expansion A	Quay wall	-12m	m	980	1,497	3,494	4,991
Ⅲ-1-11		Sea wall	-11.0m to-12.0m		142	217	506	723
Ⅲ-1-12		Revetment	+4.0m	m	200	70	626	696
Ⅲ-1-13		Revetment	+4.0m	m	1,080	239	2,150	2,389
Ⅲ-1-14		Pavement		m^2	205,500	-	2,055	2,055
Ⅲ-1-15	Future Expansion B	Revetment	+4.0m	m	1,160	140	1,267	1,407
Ⅲ-1-16		Pavement		m^2	257,000	-	2,570	2,570
Ⅲ-1-17	Future Expansion C	Sea wall	-10.0m	m	900	1,038	2,422	3,460
Ⅲ-1-18		Pavement		m^2	240,000	-	2,400	2,400
Ⅲ-1-19	Bridge			m	400	3,255	1,395	4,650
Ⅲ-1-20	Dredging			m^3	4,608,149	9,677	922	10,599
Ⅲ-1-21	Sub Total					**16,626**	**19,854**	**36,480**
Ⅲ-1-22	Physical Contingency	10%of Sub total				1,663	1,985	3,648
Ⅲ-1-23	Indirect Cost	15%of Sub total				2,494	2,978	5,472
Ⅲ-1-24	Engineering Service	5%of Sub total				831	993	1,824
Ⅲ-1-25	Total					**21,614**	**25,810**	**47,424**
Ⅲ-2	Building, Electric, and Water Supply							
Ⅲ-2-1	Building					-	-	-
Ⅲ-2-2	Electrical					-	-	-
Ⅲ-2-3	Mechanical					-	-	-
Ⅲ-2-4	Miscellaneous					-	-	-
Ⅲ-2-5	Sub Total					-	-	-
Ⅲ-2-6	Physical Contingency	10%of Sub total				-	-	-
Ⅲ-2-7	Indirect Cost	15%of Sub total				-	-	-
Ⅲ-2-8	Engineering Service	5%of Sub total				-	-	-
Ⅲ-2-9	Total					-	-	-
Ⅲ-3	Cargo Handling Equipment							
Ⅲ-3-1	Sub Total					-	-	-
Ⅲ-3-2	Physical Contingency	5%of Sub total				-	-	-
Ⅲ-3-3	Engineering Service	5%of Sub total				-	-	-
Ⅲ-3-4	Total					-	-	-
Ⅲ-4	Grand Total					**21,614**	**25,810**	**47,424**

Table 16.3.12. Disbursement Schedule for Short Term Project 2005 (JICA PLAN B)

Unit : 1,000 OR

No.	Description	Remarks	Amount Total Construction Cost			2001 1st Year			2002 2nd Year			2003 3rd Year			2004 4th Year			2005 5th Year		
			Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total
I	Civil Work																			
	1.1 Breakwater	2,550m	11,618	28,194	39,812				5,228	12,687	17,915	6,390	15,507	21,897						
	1.2 Dredging & Reclamation	Harbour & Approach Channel	14,708	1,400	16,108				14,708	1,400	16,108									
	1.3 Wharf	1,050m, -18m : 3Berths	3,742	17,995	21,737				1,700	8,180	9,880	2,042	9,815	11,857						
	1.4 Government Berth	850m	1,016	4,758	5,774							1,016	4,758	5,774						
	1.5 Bridge	350m	2,848	1,220	4,068							1,899	813	2,712	949	407	1,356			
	1.6 Physical Contingency	10%	3,393	5,357	8,750				2,163	2,227	4,390	1,135	3,089	4,224	95	41	136			
	1.7 Indirect Cost	15%	5,090	8,035	13,125				3,245	3,340	6,585	1,703	4,634	6,337	142	61	203			
	1.8 Engineering Services	5%	1,697	2,678	4,375	340	535	875	865	891	1,756	454	1,236	1,690	38	16	54			
	Total of Item 1		44,112	69,637	113,749	340	535	875	27,909	28,725	56,634	14,639	39,852	54,491	1,224	525	1,749			
II	Building, Electric, etc																			
	2.1 Building		185	1,680	1,865							106.0	960	1,066.0	79.0	720	799.0			
	2.2 Erectrical		4,054	450	4,504							2,027	225	2,252	2,027	225	2,252			
	2.3 Mechanical		1,423	159	1,582							712	80	792	711	79	790			
	2.4 Miscellaneous		2,591	1,110	3,701							1,296	555	1,851	1,295	555	1,850			
	2.5 Physical Contingency	10%	825	340	1,165							414	182	596	411	158	569			
	2.6 Indirect Cost	15%	1,238	510	1,748							621	273	894	617	237	854			
	2.7 Engineering Services	5%	413	170	583	41	17	58	42	17	59	166	73	239	164	63	227			
	Total of Item 2		10,729	4,419	15,148	41	17	58	42	17	59	5,342	2,348	7,690	5,304	2,037	7,341			
III	Cargo Handling Equipment																			
	3.1 Container Crane	22lines 9No	25,002	-	25,002							12,501		12,501	12,501		12,501			
	3.2 Yard Crane, etc	RTG 18No, Yard Tracter 36No	7,313	-	7,313							3,657		3,657	3,656		3,656			
	3.3 Physical Contingency	5%	1,616	-	1,616							808		808	808		808			
	3.4 Engineering Services	5%	1,616	-	1,616							808		808	808		808			
	Total of Item 3		35,547	-	35,547							17,774		17,774	17,773		17,773			
	Grand Total		90,388	74,056	164,444	381	552	933	27,951	28,742	56,693	37,755	42,200	79,955	24,301	2,562	26,863			

Table 16.3.13. Disbursement Schedule for long Term Project 2020 (JICA PLAN B)

Unit : 1,000 OR

No.	Description	Remarks	Amount Total Construction Cost			2005 1st Year			2006 2nd Year			2007 3rd Year			2009 5th Year			2011 7th Year			2012 8th Year			2013 9th Year			2014 10th Year			2015 11th Year			2016 12th Year		
			Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total
I	Civil Work																																	
	1.1 Dredging & Reclamation	-16m, Harbour & Approach Channe	21,819	2,079	23,898				13,637	1,300	14,937	8,182	779	8,961																				
	1.2 Dredging & Reclamation	-11m, Harbour	203	19	222																								203	19	222			
	1.3 Wharf①	1,050m, -16m : 2Berths	1,813	7,580	9,393				906	3,790	4,696	907	3,790	4,697																				
	1.4 Wharf②	1,050m, -16m : 3Berths	2,816	12,350	15,166																1,408	6,175	7,583	1,408	6,175	7,583								
	1.5 Wharf③	350m, -11m	511	1,810	2,321																								511	1,810	2,321			
	1.6 Physical Contingency	10%	2,716	2,384	5,100				1,454	509	1,963	909	457	1,366							141	618	759	141	618	759				71	182	253			
	1.7 Indirect Cost	15%	4,074	3,576	7,650				2,182	784	2,946	1,363	686	2,049							211	926	1,137	211	926	1,137				107	274	381			
	1.8 Engineering Service	5%	1,358	1,192	2,550	237	96	333	582	204	786	364	183	547				28	124	152	56	247	303	56	247	303	6	18	24	29	73	102			
	Total of Item 1		35,310	30,990	66,300	237	96	333	18,761	6,567	25,328	11,725	5,895	17,620				28	124	152	1,816	7,966	9,782	1,816	7,966	9,782	6	18	24	921	2,358	3,279			
II	Building, Electric, etc																																	
	2.1 Building		308	2,800	3,108							123	1,120	1,243										185	1,680	1,865								
	2.2 Erectrical		6,757	750	7,507							2,703	300	3,003										4,054	450	4,504								
	2.3 Mechanical		2,372	265	2,637							945	106	1,051										1,427	159	1,586								
	2.4 Miscellaneous		4,763	1,850	6,613							1,727	740	2,467										2,591	1,110	3,701							445		445
	2.5 Passenger Terminal		-	740	740																												-	740	740
	2.6 Physical Contingency	10%	1,420	641	2,061							549	227	776										826	340	1,166							45	74	119
	2.7 Indirect Cost	15%	2,130	961	3,091							824	340	1,164										1,239	510	1,749							67	111	178
	2.8 Engineering Services	5%	710	320	1,030	27	11	38	27	11	38	220	91	311				41	17	58	41	17	58	331	136	467	2	4	6	2	4	6	19	29	48
	Total of Item 2		18,460	8,327	26,787	27	11	38	27	11	38	7,091	2,924	10,015				41	17	58	41	17	58	10,653	4,385	15,038	2	4	6	2	4	6	576	954	1,530
III	Cargo Handling Equipment																																	
	3.1 Container Crane	18lines 6Nos	13,334	-	13,334							13,334	-	13,334																				
	3.2 Yard Crane, etc	RTG 12Nos, Yard Tracter 24Nos	4,875	-	4,875							4,875	-	4,875																				
	3.3 Container Crane	18lines 9Nos	20,001	-	20,001																			20,001	-	20,001								
	3.4 Yard Crane, etc	RTG 18Nos, Yard Tracter 36Nos	7,313	-	7,313																			7,313	-	7,313								
	3.5 Gunge Way	Passenger Berth 2Nos	370	-	370																									370	-	370			
	3.6 Bulk Crane	Bulk Terminal 800t/h	2,222	-	2,222										2,222	-	2,222																		
	3.7 Physical Contingency	5%	2,406	-	2,406							911	-	911										1,366	-	1,366				129	-	129			
	3.8 Engineering Services	5%	2,406	-	2,406							911	-	911										1,366	-	1,366				129	-	129			
	Total of Item 3		52,927	-	52,927							20,031	-	20,031										30,046	-	30,046				628	-	628			
IV																																		
	Grand Total		106,697	39,317	146,014	264	107	371	18,788	6,578	25,366	38,847	8,819	47,666	2,222	-	2,222	69	141	210	1,857	7,983	9,840	42,515	12,351	54,866	8	22	30	1,551	2,362	3,913	576	954	1,530

17. Hinterland Development Plan for 2020

17.1 Industrial Development Plan for 2020

Definition and assumption

The hinterland of Salalah Port is defined as the area from the Salalah Port to the Salalah Airport according to the Study Scope. Despite the above, this section uses the definition in the more broad term that the area directly and significantly affected by the development of Port Salalah and the Industrial Development Scenario.

Among the long-term fundamental goal set as the basis of economic and social strategy in the Sultanate[1], this Industrial Development Plan for 2020 assumes particularly of the following for future development consideration:

1) Enhancing the proportion of investments directed towards income generating projects, with particular emphasis on industry, mining, agriculture and fisheries.

   Namely, the encouragement of local production will be emphasized in this plan, besides promotion of redistribution and related businesses.

2) Concentrating on the development and upgrading of local human resources thus enabling them to fulfill their role in the Omani economy.

   The plan is necessary to take into account the possibility to provide job opportunity, which will be available through the planned development, for the local people.

3) Completing the basis of establishing a national economy based on private sector activity in a competitive market with loan provision for vital projects in accordance with resources available to the state.

   The Government function is assumed only in promotional and supporting areas. The Government will not be involved directly to production and commercial projects.

The following Development Plan does not indicate the detailed category of the industries, which will be prospective in view of Salalah's position[2], since the government will not launch any investment on specific production and trade projects. Also, the Government does not assume provision of any preferential conditions to specific industries or products. The

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[1] Page 7, Ministry of Development, "The Fifth Five-Year Development Plan (1996-2000)". Underlined by the Study Team.

[2] The prospective industries to be attracted in Salalah were discussed in 12.2.2., together with projection of value and volume of the local production and export/ re-export.

preferential provisions, if any, will be applicable to all the industries or products.

The Industrial Development Plan of the Hinterland for 2020

The Study proposes the Industrial Development Plan as follows:

Development Concept

Development of the hinterland area as the regional center of redistribution businesses, taking advantage of its geographic location, and among others, the advantage of the area as the hinterland of international trunk line port of container, where the network of feeder lines are also developed so that the Salalah Port has easy access to the countries in the region.

Development of the regional redistribution center, which was networked and further enhanced by the linkages with other zones, which are specially designed for trade, production and distribution, including Mazuyunah Free Trade Zone, Salalah Airport, Raysute Industrial Estate, and JAFZ and other Free Zones in the peripheral countries.

Development of area as a center encouraging local production, with promotion of the local production for establishing the basis of sustainable growth of economy in Salalah, taking advantage, not only of, the development of the area as the redistribution center of the region, but also of:

1) Natural resources available in Salalah and peripheral areas
2) Industrial experiences in Oman
3) Port of international container lines accessible to the world-wide potential markets

Projected Development Size

As a result of the analysis of prospective markets accessible from Salalah, and the possible change in a competitive position of Salalah with the current exporting, importing and distributing countries, the Study prepared two levels of development sizes, namely, Scenario (1) and Scenario (2).

1) Scenario (1) assumes the markets, for which the access from Salalah will be definitely advantageous compared with the access from Dubai, as the major markets to be covered by redistribution through Salalah. The scenario also assumes the use of available resources as a basis for promotion of local production. Since this scenario entails relatively low risks, the Study Team proposes that it should be used as a planning basis of the master plan. However, aggressive promotion will be needed to realize this scenario, as Dubai has already established its firm business base.
2) Scenario (2) assumes an overwhelming advantageous position of Salalah over the competitors (particularly Dubai). Salalah is assumed to be the leading redistribution center in the region, though this scenario still assumes existence of many redistribution centers in the region. This scenario is recommended to be used to figure out the area which needs to

be reserved for future considerations in expectation of fully achieved potentials. The size should be reviewed time to time taking into account the change in competitive position of Salalah among the competitors in the region.

The projected development sizes are shown in Table 17.1.1.

Actions needed for realization of the Plan

The actions to be taken by the government required for realization of the Plan can be categorized into the following, and detailed in the succeeding sections:

1) Phased provision of sufficient industrial infrastructure that can support the development of industries with development sizes indicated in the above (for detail, see 17.4)
2) Provision of favorable investment conditions and business environment sufficient to attract the investment, both local or foreign (for detail, see 17.2)
3) Provision of support for local and foreign investors to launch the local production (for detail, see 17.2)
4) Due consideration on environmental protection (for detail, see 23.)
5) Provision of support for the local people to take the opportunity to get job available by the development (for detail, see 17.2)

Table 17.1.1 Projection of Local Production, Export, and Re-export in Salalah

	1,000 Tons			Million RO		
	2003	2010	2020	2003	2010	2020
Case-Without						
Local Production	970	1,263	1,704	163	187	229
Export	486	675	919	125	145	178
Re-export	12	15	20	28	34	46
Projection Scenario (1)						
Local Production	970	1,726	2,304	163	310	472
Export	486	1,734	2,310	125	256	397
Re-export	521	627	767	334	408	564
Projection Scenario (2)						
Local Production	970	1,726	2,304	163	310	472
Export	486	1,734	2,310	125	256	397
Re-export	1,075	1,309	1,730	692	849	1,220

Notes:

Local Production: Local production on the Study area.

Export: Including the goods produced outside of the Study area in Oman.

Local Production and Export are the same for all the Projection Scenarios.

Source: Projection by the Study Team

17.2 Industrial Promotion Strategy

The major promotion strategy for the industrial development in Salalah, targeting the development plan for 2020 described in 17.1, can be enumerated as follows:

1) Provision of favorable investment conditions and business environment sufficient to attract the investment, both for local and foreign investors,
2) Provision of special conditions for formulating the linked operation in handling cargoes particularly among Salalah Port Free Zone, Raysute Industrial Estate, Mazuyunah Free Trade Zone, Salalah Airport, and Free Zones in the neighboring countries particularly JAFZ,
3) Encourage local and foreign investors to launch the local production, and

17.2.1 Provision of favorable investment conditions and business environment

The industrial development assumed in the plan proposed in above is not only giant in scale of development, but also necessary to capitalize on potential foreign firms operating in a world scale, to make the redistribution business in Salalah to cover wide range of regional and international sources and destinations. Therefore, it will be essential to provide favorable conditions, attractive for the potential foreign investors worldwide, and promote the fact that Salalah is advantageous for their business operation.

The industrial development activities to be taken by the Government, however, should be limited to promotion. It is the established policy of the Government that no activity targeting development of specific industries and products can be assumed. All the policy measures to be provided for the purpose of supporting the industries will be those applicable to all the industries without exception. The promotion strategy discussed in the following paragraphs, is focusing on the activities to be taken by the Government with the above standpoints.

(1) Provision of favorable investment conditions and business environment

In order for the proposed redistribution business to be established in Salalah, in competition with those in Dubai, Aden and other potential sites for the similar operation, Salalah has to provide a favorable conditions to investors to attract them to Salalah. These include:

1) Legislative preparation for improvement of foreign investment conditions
2) Improvement of business environment (measures and systems ensuring and supporting business operation and removal of impediment factors if any)
3) Provision of industrial infrastructure (land, buildings, utility supplies, and other infrastructures to make their establishment and operation easy)

These will be materialized basically through (1) establishment of free zone, and (2) continuous

development of the existing industrial estate, according to the current Government policy.

The following discusses the detail for required provision for investment promotion and business environment with a view that these will be provided basically through establishment and operation of free zone (SPFZ), while necessary consideration in addition to the SPFZ will be discussed later. The support required in promoting local production will be discussed in 17.2.3. The needs for development of industrial infrastructure will be discussed in 17.4.

(2) Free Zone

The basic concept of the Free Zone is to create a special zone which accommodates entities or establishments engaged in manufacturing or processing of products for exports, re-packing of imported commodities for re-export, storing and redistribution of imported products, or relevant trade or services. The Free Zone should be developed within a boundary separating it from industrial estates or other industrial or business zones, and should be well established with adequate industrial/ business infrastructure, common service facilities and residential facilities for managers and workers, according to needs.

Entities/ establishments to be located in the Free Zone

Entities or establishments to be located in the Free Zone are those incorporated with foreign and/ or domestic capital to undertake (a) the manufacturing, processing and/ or packaging of products mainly for exports, (b) re-packing of imported commodities for re-export, (c) offshore trades or logistic operations, or (d) relevant trade and services.

Facilities to be developed

Facilities to be developed in the Free Zone are enumerated below.

a) Land for office and factory buildings for individual establishments
b) Standard buildings to be leased as offices by some locators
c) Administration office for the authority of Free Zone
d) Common service facilities
   i) Exhibition and convention rooms
   ii) Banks and a post office
   iii) Custom office
   iv) Common warehouses
   v) Centralized container yard including container loading/ unloading facilities, which enable locators to handle containers and custom clearance directly inside the Zone.
e) Infrastructure
   i) Internal roads and access roads
   ii) Electricity supply system
   iii) Water supply system
   iv) Fuel supply system

v) Telecommunication system
vi) Sewage, drainage and wastewater treatment and disposal system
vii) Solid disposal system

f) Residential facilities (the residential facilities are assumed to be provided out of the Free Zone, since the residential areas in the city area or vicinity of the city area can be made available because of the proximity of Study areas to the existing city areas)

Services to be provided

Provision of services through one-stop shop type operation of the relevant Government agencies and organizations:

a) Supporting services by the Free Zone Authority office for locators to comply with the government's administrative procedures
b) Custom clearance
c) Banking, insurance and postal services
d) First aid and clinic services
e) Forwarding and shipping arrangements by appointed forwarders and shipping agencies having offices in the Free Zone
f) Inspection services by internationally authorized inspection institutions
g) Maintenance and repair services by appointed contractors

Privileges to be granted to establishments in the Free Zone

In general, Oman's investment conditions are favorable for foreign investment. Nevertheless, there are some areas in which additional conditions are required when considering the requirements for the proposed development of the redistribution business center.

The proposed industrial development strategy calls for the promotion of manufacturing industry for exports and re-packing industry for re-export which could foster the development of packaging industry as well as packaging materials manufacturing industry in Oman.

These industries involve external trade business for the import of materials and semi-processed products for final processing, goods to be packed for re-export, and the export of the thus processed and/ or packed goods, and therefore this industry would require assurance of free operation of those import/ export business duty free.

The following sections compare the foreign investment conditions of Dubai/ JAFZ and Oman.

1) Restriction on business activities by foreign national or entity

These two nations legislate similar restrictions on business activities to be carried out by foreign national or entity, permitting them to conduct business activities only by means of commercial entities with equity participation of nationals. It is also required that this be registered in the respective nation and also, secure a business license issued by the relevant ministry of the respective government. Foreign ownership in those commercial entities is allowed by the

Sultanate to the extent of 65% foreign majority, whereas in UAE, only minority share of up to 49% is allowed.

However, for special entities operating at Jebel Ali Free Zone, the UAE has a special legislation on business activities, which permit 100% foreign ownership, although FZEs' business activities are limited to those inside the Free Zone.

2) Assurance on foreign ownership

The two nations stand on entirely same conditions with regard to the national assurance given to foreign ownership. The government has never taken any intervention on authorized foreign ownership, and also, 100% repatriation of capital and profits is allowed in the absence of foreign exchange control, although there is no legislation explicitly stipulating legal assurance on foreign ownership and repatriation of capital and profits.

3) Tax incentives

There is a substantial difference in taxation between the two nations. In Oman business activities are subject to income tax imposed under the Tax Law, although the entities engaged in industry may be granted tax holiday for initial five years and another five years subject to the sanction by the relevant ministry. As a procedure, however, the tax holiday is granted on a case-to-case basis against application submitted by entities. In UAE, although the decrees covering corporate tax exists, only tax assessment on oil and/ or gas producing companies and branches of foreign banks is practiced.

FZEs are assured with exemption from corporate tax for 15 years, which may be extended for another 15 years.

The two nations have import duties although there is a slight difference in the rates of duties. In Oman the import duties are generally set at 5% of CIF value, while in UAE the duties range between 1% and 4% but most commodities are currently charged at 4%. In Oman, the entities engaged in industry, especially for the manufacturing of products for exports may be granted exemption from import duties to be imposed on imports of machinery and equipment required for production, and also on imports of raw materials and semi-processed goods used for production for the initial five years and subsequent years subject to the sanction by the relevant ministry. However, it is granted on a case-to-case basis against application submitted by entities. In UAE, there is no legislation granting such import duty exemption to the entities operating outside the Free Zone.

The imports into the Free Zone are duty free and subject to normal rates of import duty to be imposed on those subsequently resold in UAE.

4) Employment regulations

The two nations have no virtual restriction on employment of expatriates. In Oman, however, the entities engaged in industry are required to contribute costs for the vocational training programs implemented by the government, as well as in conducting training of Omani workers employed. These entities are also required to employ at least 25% Omani workers from its total work force, this being a prerequisite for applying industrial incentives as well as financial support provided by the government.

5) Ownership and undertaking of trade and service

At the same time, many of foreign operators being interested in such operation in Oman may prefer undertaking with full ownership since those undertakings should be a part of their overseas operation.

The Foreign Investment and Business Law limits the maximum ownership of non-Omani capital up to 65%, and also prohibits the undertaking of trade and service by non-Omani capital. Although the Law for Organization and Encouragement of Industry provides for tax incentives to be granted to industrial establishments satisfying certain conditions which include exemption from import duty on imports of machinery, equipment and spare-parts used for production and also on imports of raw materials and semi-processed inputs required for production for the first five years of operation extended subject to sanctions by the Ministry of Commerce and Industry, these provisions seem insufficient to attract foreign investors to set up their operation bases for export processing or re-packing for re-export in Oman.

Need for provision of explicit legal basis

Foreign investors require a legal basis explicitly stipulating legal assurance on foreign investment and also incentives and privileges to be provided. For intensive promotion of foreign investment, it is recommended to examine the set-up of an omnibus legislation for foreign investment promotion, which includes:

1) Statement of the national policy and objective of pursuing foreign investment promotion;
2) Definition of industrial fields to be promoted and vice versa restricted for foreign investment;
3) Regulations on foreign investment and administrative procedures for application to be filed and license to be granted on foreign investment;
4) Provisions for legal status and legal assurance on ownership and property held by foreign capital, and also assurance of repatriation of invested capital and profits generated there from; and
5) Provisions for tax incentives and any other fiscal incentive privileges to foreign investment.

The Foreign Investment and Business Law (Royal Decree No. 4/74) was promulgated in 1974. This law provides the regulations concerning the foreign investment and business undertaking by foreign capital in Oman, which regulates the business fields allowed for foreign capital, maximum limit of foreign ownership and procedure for application to be filed and license to be granted with the government authorization for foreign investment or business undertaking with foreign capital in the country. But there is no stipulation the provision of legal assurance and incentives to be provided for foreign investment that serve as the fundamentals for foreign investment promotion.

Also, the Government has provided several incentives for investment in industry under the Law for the Organization and Encouragement of Industry promulgated in 1978, which are applied to foreign investment as well as domestic investment. For foreign investors, however, this law is implicit on whether those incentives are applied to foreign investment and, also as to what extent the incentives are provided.

Procedural improvement need for deliberation

In comparing the provision in other countries, which will compete with Salalah in attracting foreign investors, there are some areas in which improvement would be necessary in order to make the environment more attractive.

1) Legal assurance on foreign ownership

Foreign investors require legal assurance on foreign ownership, as well as repatriation of invested capital and profits. To meet these requirements, it would be effective to lay down legislation to assure foreign investors with ownership in Oman, and their repatriation of invested capital and profits generated wherefrom.

2) Alteration of licensing system

a) Issuance of a single license incorporating an entity for industrial undertaking as well as set-up of industrial establishment with foreign investment

Under the present legislation, foreign investors wishing to carry out industrial undertaking in Oman will have to obtain a licensee for foreign investment, and then a license for industrial undertaking separately, since these two licenses are issued under the two different governing laws, the Foreign Investment and Business Law and the Law for Organization and Encouragement of Industry. These procedures may discourage foreign investors because it involves duplication of project preparation and documentation for applications which often causes delay in project implementation and increases in project costs. It is recommended to examine legislation for issuing a single license authorizing both foreign investment and industrial undertaking. In this case an alternative system is to issue a provisional license in accordance with a simplified application form, prior to the

issuance of final license, so that foreign investors can proceed with detailed project feasibility study and project preparation with confidence that the project as well as foreign investment will be approved, provided it meets the conditions as indicated in the provisional license.

b) Set-up of different status of license

If a single license may be issued for foreign investment and industrial undertaking, it is recommended that such a license be issued in different status for granting tax incentives as discussed in the subsequent section. The status may be classified into the following three:

1. Special license for export industry
2. Special license for pioneer industry
3. Normal license

The special license for export industry shall be issued to industrial establishments which undertake manufacturing, processing and/ or packaging of products for exports including re-packing of imported commodities for re-export, provided that those establishments are obliged to export all or overwhelming majority of those products or commodities as indicated in the applicable law. The special license for pioneer industry shall be issued to industrial establishments, which are engaged in new import-substitution industry, or any other fields of industry promoted by the government. The normal license shall be issued to industrial establishments, which are engaged in industrial undertaking in the field other than the above two. These definitions must be stipulated in details in the applicable law.

c) Issuance of special license for business undertaking inside the Free Zone

For implementation of the Free Zone relevant legislation should be laid down, under which another special license should be issued for business undertaking inside the Free Zone.

3) Alteration of systems for granting exemption from income tax and import duties

The Law for Organization and Encouragement of Industry stipulates the provisions for exemptions from income tax and import duties to be granted to the entities engaged in industry as follows:

a. Exemption from income tax for the initial five years, which may be extended for subsequent five years subject to the sanction by MCI
b. Exemption from import duties imposed on imports of machinery and equipment to be used for production
c. Exemption from import duties imposed on imports of raw materials and semi-processed goods used for production for the initial five years, which may be extended subject to the sanction by MCI

These incentives are applied to the entities, which have industrial license and also employ Omani workers at least 25% of total work force, and MCI sanctions to grant the incentives on a case-to-case basis after the investigation of application submitted by the entities. Hence, entities are unable to make sure in advance that the incentives will be given to them. Foreign investors often desire to ensure the provision of incentives prior to making an investment decision, and therefore, the present system may discourage investment decision by foreign investors. It is recommended to alter the system so that the incentives may be granted to all eligible entities without individual applications. An alternative system for granting incentives is based on the issuance of different status of license as discussed in the previous section. In this event, entities holding special license for export industry may be entitled to import duty free raw materials, and semi-processed goods used for production as well as commodities re-exported with re-packing; provided that import duties should be paid for those re-sold in the domestic markets or used in the products for domestic sales.

4) Reduction of income tax for entities employing Omani workers by categories

In order to promote the employment of Omani workers, it would be effective to give some reduction of income tax for entities employing Omani workers varying reduction rates by category of workers employed.

Need for provision of special conditions to the entities established in Free Zone

a) Permit to establish 100% foreign-owned entities as special legal entities named Free Zone Entities (FZEs); provided that FZEs inside the Free Zone be restricted to undertake business activities such as, the manufacturing of products solely for exports, re-packing of imported commodities solely for re-export, or offshore trades.
b) Exemption from income tax for FZEs for a certain period, and reduction of income tax varying the scale of net export earnings, employment of Omani workers and utilization of local made products. (This provision may also be applied to entities holding special license for export industry.)
c) Duty free importation into the Free Zone, with import duties imposed only to those resold in Oman or used for production for domestic sales.
d) Establishments set up in the Free Zone by entities holding other licenses are treated as those established outside the Zone.

17.2.2 Provision of special conditions for supporting the linkages with other zones designed specially for export processing and regional redistribution

In order for the redistribution function of Salalah to be expanded widely either in regional and internationally, the establishment of linkages among the areas operated for regional redistribution, will be essential, since the linkage will strengthen the position of Salalah with expanding the coverage of markets capitalizing the regional distribution function as well as

other special functions of these areas. Salalah will have the advantage over the areas, regarding direct connection with international trunk line of containers, and thus, can function as one of the international redistribution center.

The major peripheral distribution functions to be linked include:

1) Mazuyunah Free Trade Zone, which functions the windows accessible to Yemen, and has advantage to locate close to the Yemeni Market.
2) Salalah Airport, which is expected to function as the port for sea-air link in close linkage with the Salalah port
3) Raysute Industrial Estate, which will function as the production base, where the locators will produce export goods in addition to the goods for local market
4) JAFZ, which will remain another major regional redistribution center, even if the function of international redistribution center will be somewhat reduced with emergence of Salalah Port Free Zone.

In-between these zones and SPFZ, there will be various types of cargo movement. The major types will be as follows:

1) To Mazuyunah FTZ (MFTZ): (1) Goods imported in a container, stored and repacked/ subdivided into small lots as required in the SPFZ, and send to MFTZ for trade with traders in Yemen, (2) Goods imported and processed in the SPFZ, and sent to MFTZ for trade, (3) Goods imported in a container, transported directly to MFTZ for storage and trade (in this case no passage in SPFZ).
2) To Salalah Airport: (1) Goods imported in a container, transshipped to air container, and exported from the Airport (no passage in SPFZ), (2) Goods imported in a container, stored in SPFZ, loaded partly to air container and exported from the airport.
3) To and from Raysute Industrial Estate (RIE): (1) Goods imported in a container, stored and subdivided, and sent to RIE for export processing, (2) Goods imported and processed at RIE, and transferred to SPFZ for export trade, or stored and exported
4) To and from JAFZ: Goods imported in a container, stored and subdivided into small lots as required in the SPFZ, and sent to JAFZ for store and redistribute, and vice versa

The coordination with the neighboring FZ, even if it is in a competing position with Salalah, will enhance the function of SPFZ. One of the features of regional distribution center is availability of various goods, so that the distribution center can meet every needs of traders visiting the FZ. However, a certain type of goods may be difficult to be imported directly in Salalah in an economically viable size due to the limited size of the demand there. In this case, the re-distributors in Salalah may obtain the goods from the neighboring FZ and meet the demand of their customers. It will also applicable to the local manufacturing/processing using raw materials, which are too small to import at the economically viable size.

In such way, the counterpart FZ may function as the sub-distribution center of Salalah, while Salalah may function as the main distribution center of another, or vice versa. Thus, they will

supplement the functions each other.

The simplified, established and transparent procedures should be provided for these cargo movements, so that the procedure does not reduce the merits of redistribution functions in and among these zones. The possible measures for this aim will be:

1) Cargo, which is officially sealed and moved to one zone to another, should be exempted from import duty
2) The above exemption shall be applied to specific senders, who establish their entity in the zones from where the cargo is sent, and registered to the competent authority
3) The senders other than the above, should pay duty and be refunded after the cargo is confirmed to be sent to the destination without breaking the seal
4) Those who are entitled to the above 2), but failed to obey the provision, will lose their qualification and have to follow the procedure 3) thereafter, in addition to the penalty
5) Establishment of unified computerized control system of the above procedures among the relevant zones

17.2.3 Provision of Support for Local Production

As observed in JAFZ, the most of locators are interested in redistribution businesses, but not in local production. The potential locators will take advantage of warehousing and trade in the redistribution center, rather than launching to the local production. However, encouragement of conversion to local production will be important to make the development sustainable with enabling Salalah to accumulate industrialization know-how.

In general, Oman's investment conditions are favorable for foreign investors, as discussed before. However, there are some points to be improved for attracting the investors for local production, in addition to the conditions discussed for free zone locators. These are:

1) Competitive utility costs
2) Supporting facilities for local production
3) Ease of employment regulation of Omani labors according to practical availability of labors

Regarding the supporting facilities for industry varies depending on the industry to be located. These facilities can be categorized into the following:

1) Facilities to be used in operation, but expensive if it is installed with the individual enterprises of small scale operation
   - A part of facilities, which the small scale operation have to procure materials and parts after finishing
   - Facilities to be used for improve efficiency of their operation
   - Facilities indispensable but better to construct it jointly among the enterprises
2) Testing and certification functions to be operated from the position of third party

3) Facilities to support research and development works, or maintenance, including the supporting services

Assuming that the industries described in 12.1 will be established, the following facilities should be considered:

1. Provision of spaces for port-side silos of grains and oil crops in bond, together with loading and unloading facilities, and refining and processing facilities
2. Development of industry supporting facilities which have functions of material testing, and maintenance support service for machineries
3. Establishment of industrial estates specialized for garments manufacturing, which have functions of assistance facilities for receiving orders, designing, pattern-making, and cutting, etc., facility for textile material testing and product quality testing, and maintenance support of machineries
4. Provision of spaces catering for Dhow ship trade, including exhibition and trading space, warehouse, financial organ, loading and unloading space, etc.
5. Establishment of commercial complex targeting tourists and visitors on business

17.3 Land use plan

17.3.1 Study Area

The land use plan in this study will be employed to conduct zoning and a rough estimation of the number of workers in the hinterland of Salalah Port in the target years(2010 and 2020). The hinterland will consist mainly of the free trade zone (FTZ) and the industrial which is expected to grow in line with development of Salalah Porrt. In this study, only the industrial are and the free trade zone are estimated.

The study area, which falls within the study area of the Salalah Structure Plan, is from Salalah air port in the east to Al Mughsail in the west. (Figure 17-3-1)

17.3.2 Outline of Salalah Structure Plan

Salalah Structure Plan is a land use plan of Salalah which includes a development strategy, sectoral studies, final structure plan and zoning regulations. The target year of the Structure Plan is 2015.

－Study Area

The study area of the Structure Plan is from Al Mughsail in the west including the Adownid plateau and Raysut to Khawli Sawli in the east. The study area is stretches over a length of more than 60 km while the depth available from the coastline varies from 6 to 14 km. Total study area measures 620.50 sq. km.

－Principal Parameter

The principal parameter of the Structure Plan is population. The population projection in Salalah is shown in Table 17-3-1.

－Land Use

Table 17.3.2 and Figure 17.3.2 (taken from the Salalah Structure Plan) show the current of land distribution.

Three alternative land use plans based on the following different development strategies were examined in the Salalah Structure Plan: Strategy 1: Disjointed Incremental Development Strategy, Strategy 2: Linear Development Strategy and Strategy 3: Appropriation Strategy. Strategy1 was adopted because it best suitable disjointed fashion of the existing development axis which move in the east and west direction.

Table 17.3.1 Population Projection in Salalah

(Unit:1,000 Person)

Year	Population		
	Omani	Non-Omani	Total
1993	67.0	49.1	116.1
1995	73.4	51.7	125.1
2000	93.8	65.9	159.7
2005	119.7	74.6	194.3
2010	152.7	69.2	221.9
2015	194.9	51.6	246.5

Source: Revision of Salalah Structure Plan, Phase 5

The required area of each sector in the target year(2015) was determined in the Structure Plan. (See Table 17.3.3.)
Figure 17.3.3 shows the land use plan in the target years which is based on the required area of each sector and development Strategy 1.

Table 17.3.2 Existing land-use situation (1995)

Land Use Category	Land Use Area (ha)	Share in Total Developed Area(%)
Residential	1,18033	8.30
Commercial	67.90	0.50
Industrial	810.29	5.70
Public & Semi-public Facilities	979.49	6.90
Transportation	3,784.83	26.60
Open Spaces	128.45	0.90
Special Uses	3,917.70	27.60
Agriculture	2,513.66	17.70
Wadi, Khawrs, Environmental/ Historical Sites	831.00	5.80
Total Development Area	14,214.65	100.00
Vacant Land Developable/ Undevelopable, Designated / Undesignated	48,885.35	
Total Study Area	63,100.75	

Source: Revision of SALALAH STRUCTURE PLAN (1995-2015), PHASE 5, FINAL STRUCTUREPLAN

Table 17.3.3 Proposed Land Use Composition(2015)

No.	Land Use Category Designation	Gross Area (ha)	Share in % of Sub total(A)
A1.	Residential	5,722.60	18.20
A2	Residential-Agricultural	1,102.20	3.50
A3	Commercial	650.8	2.10
A4	Industrial	3,053.40	9.70
A5	Public & Semi-public Facilities	2,383.00	7.60
A6	Open Spaces	129.40	0.40
A7	Special Uses	5,168.60	16.40
A8	Agriculture	1,056.70	3.40
A9	Transportation	6,461.00	20.60
A10	Environmental	5,072.30	18.10
A	**Sub Total**	**31,430.00**	**100.00** **50.65% of E**
B	Rural Settlements	2,435.10	3.90% of E
C	Long Term Reserve for Residential	1,941.80	3.15% of E
D	Vacant Developable and Undevelopable	26,243.00	42.30% of E
E	**Grand Total**	**62,050.00**	**100.00**

17.3.3 Condition of Industrial Area and Number of Workers of Industry in The Study Area in The Target Years

－Industrial area in the target year

The required areas of the free trade zone, heavy material industry such as cement and gypsum, Industries with potentially negative impacts on the environment and other general industry are calculated by the unit area per gross output of each industry given in section 17.1 of this report and based on the existing use plan (situation and commitment in 1995) in the Salalah Structure Plan. The result of the calculation is shown in Table 17.3.4.

－Number of industrial workers by commodity

The number of required industrial workers in the target years by each major commodity is calculated using the gross output of each industry in section 17,1 in this report.

Table 17.3.4 Total Industrial Area and Free Trade Zone (Unit:ha)

Year	General industry area	Heavy material industry	Industries with potentially negative inspects on the environment	Free Trade Zone	Total
2003	569.5	238.8	2	367.1	1,177.4
2010	608.5	254.7	14.2	437.7	1,315.2
2020	685.3	254.7	14.2	595.1	1,549.3

Table 17.3.5 Number of Employees by Industrial Type
(Unit: Persons)

	Number of Employees		
	2003	2010	2020
Free Trade Zone	21.1	25.3	34.3
General Industry	2.1	6.7	12.4
Heavy Material Industry	1.1	1.6	2.1
Industries with potentially negative inpacts on the environment	6.5	9.7	12.9
Total	30.8	43.3	61.7

17.3.4 Rough Zoning in the Study Area

－Basic philosophy of Zoning

Rough zoning by each sector namely, the free trade zone, heavy material industry, environmentally hazardous industry and other general industry is carried out based on the following the basic policies.

1) The zoning in this study basically is to follow the land use plan in the Salalah Structure Plan.
2) The zoning is conducted in the study area considering the different target years, construction of FTZ, required industrial area, existing industrial condition, environmental condition of residential area, the different

number of workers by sector.

3) Zoning east side of Qaftawt Road will not be drastically changed from that in the Salalah Structure Plan.

—The road network being planned for activities of the FTZ and the industrial area in the hinterland of Salalah Port is shown in Figure 17.3.6.

—Alternative 1 (Figure 17.3.4)

Industrial Area: Industrial area in this study are arranged in the North and North West of Salalah Port namely, industrial areas are arranged along Qaftawt Road and the north-west side of the proposed by-pass road(Area A), along Qaftawt Road between the proposed by-pass road and As.Sultan Qaboos Street(Area B, C, D and E) , the south side of As.Sultan Qaboos Street(Area F) and the west side of the air port(Area G).

The industries which have possibility to spray air pollution, water pollution and offensive odor(hereafter, referred to as Industrial with potentially negative inpacts on the environment) such as fertilizer are arranged along Qaftawt Road and the north-west side of the proposed by-pass road(Area A), considering the wind's direction. The heavy material industry of which materials or manufactured goods are heavy such as locks are arranged Area B. In Areas C, D, E and G, other general industries are arranged.

Light and expensive goods such as I.C. (Integrated Circuit) are processing inside the air port area if the demand of the light and expensive goods is occurred after the target year of the master plan.

After the target year(2020) of the master plan, if the expansion of industrial area is necessary, Area A and Area E should be expanded.

＊Residential Area: The residential area in the east side from Qatawa Road is almost followed in the Salalah Structure Plan.

In the Salalah Structure Plan, the north, the south and the east sides of the residential area (Area J) which is surrounding Qaftawt Road, As.Sultan Qaboos St. and the proposed by-pass has potentially to happen an environmental problems in future because the location of the area is near industrial areas namely Area B and D. The existing military firing range area(Area E) which is located in the west side of this area is suitable areas for industry because the topography of the area is almost flat and the distance between the port and the area is not so long.

Therefore, residential areas in Area J and Area E(existing military firing range area) in the Salalah Structure Plan should be moved to the east side of Wadi Qaftawt.
But, existing actual residential area which is located along side As.Sultan Quaboos St. in the west side of Qaftawt Road will be not move because the many people is living in this area.

* FTZ(Free trade zone): Free trade zone is arranged in the west side of the port area(Area F).

* Others: The areas without above items in the west side of Qaftawt Road and almost areas except residential areas in the east side of Qaftawt Road will not be changed. In the Salalah Structure plan, there is a reserved airport area in the west end of the study area. Existing airport will be moved to the reserved air port area when the moving of the existing airport is necessary for increasing of passenger/cargo volume.

－Alternative 2 (Figure 17.3.5)

* Industrial area: The zoning of industrial area is basically same as the Alternative 1.
It is the different of the Alternatives 1 and 2 that the industrial area at the area E in the Alternative 1 is not arranged in the Alternative 2. In the Alternative 2, a residential area is arranged at the area E. The industrial area which is the replacement of the industrial area at the area E in the Alternative 1is arranged the west side of the FTZ(Area I) in the Alternative 2.

* Residential area: In this report, the residential areas in the east side of Quftawa Road in the Alternative 2 are to follow the Salalah Structure Plan.
As for the west side of Quftawa Road in the Alternative 2, the residential area at the Area (J) is re-arranged in the existing military firing area(Area E). The residential area in the Area H will be not move because the many people is living in this area.

* FTZ and Others: The areas of FTZ and others are arranged same zoning as the Alternative 1.

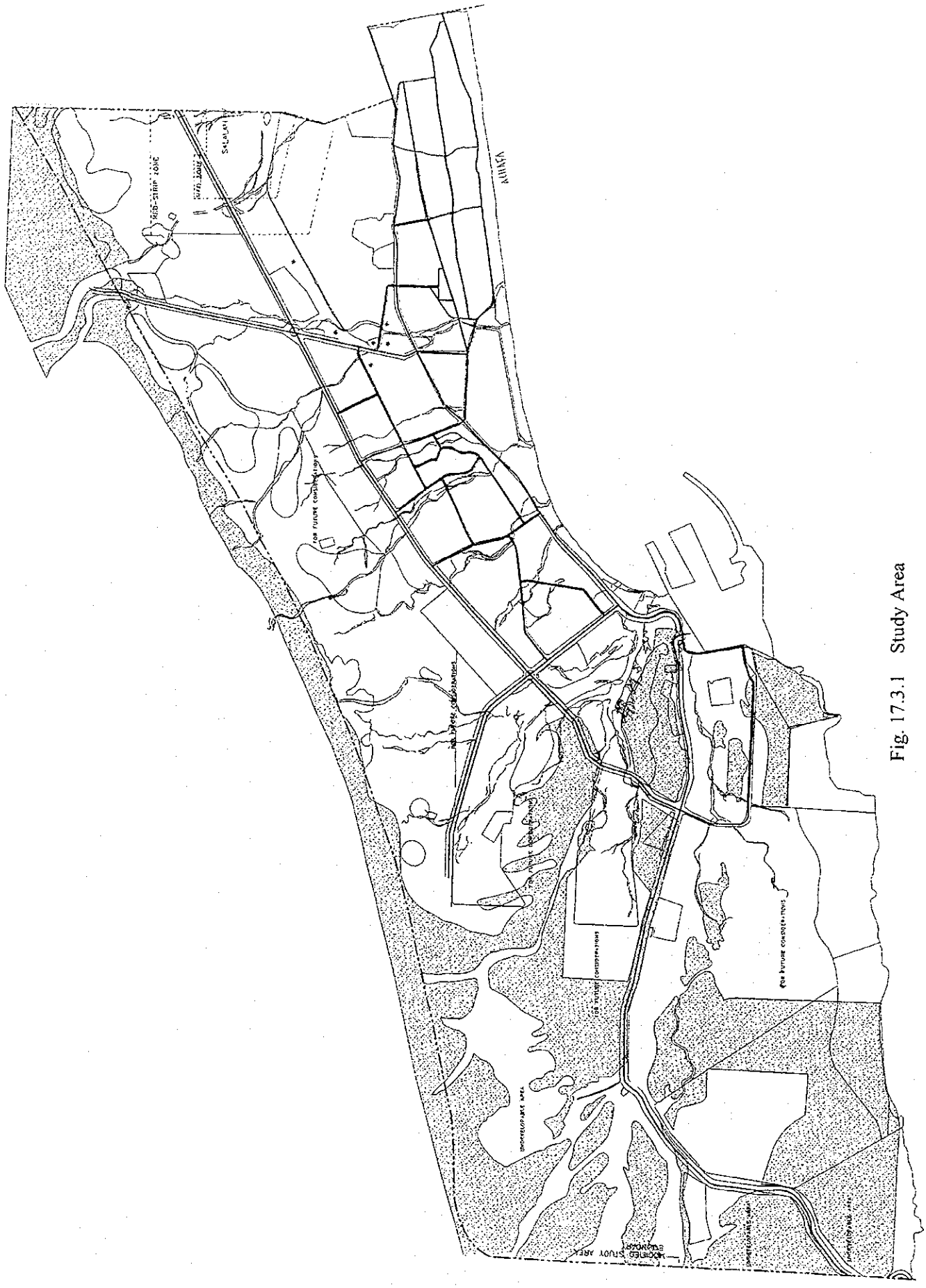

Fig. 17.3.1 Study Area

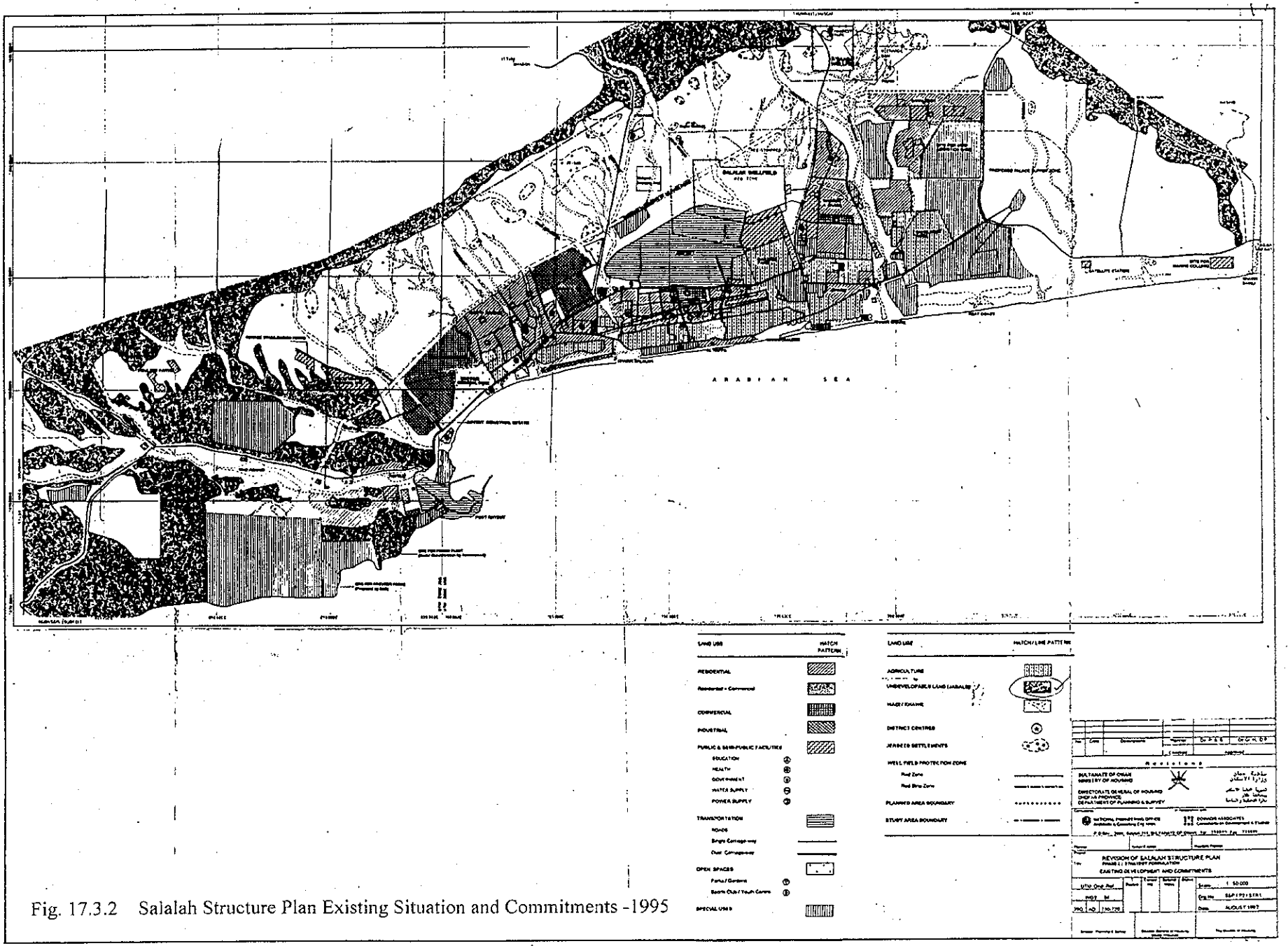

Fig. 17.3.2 Salalah Structure Plan Existing Situation and Commitments -1995

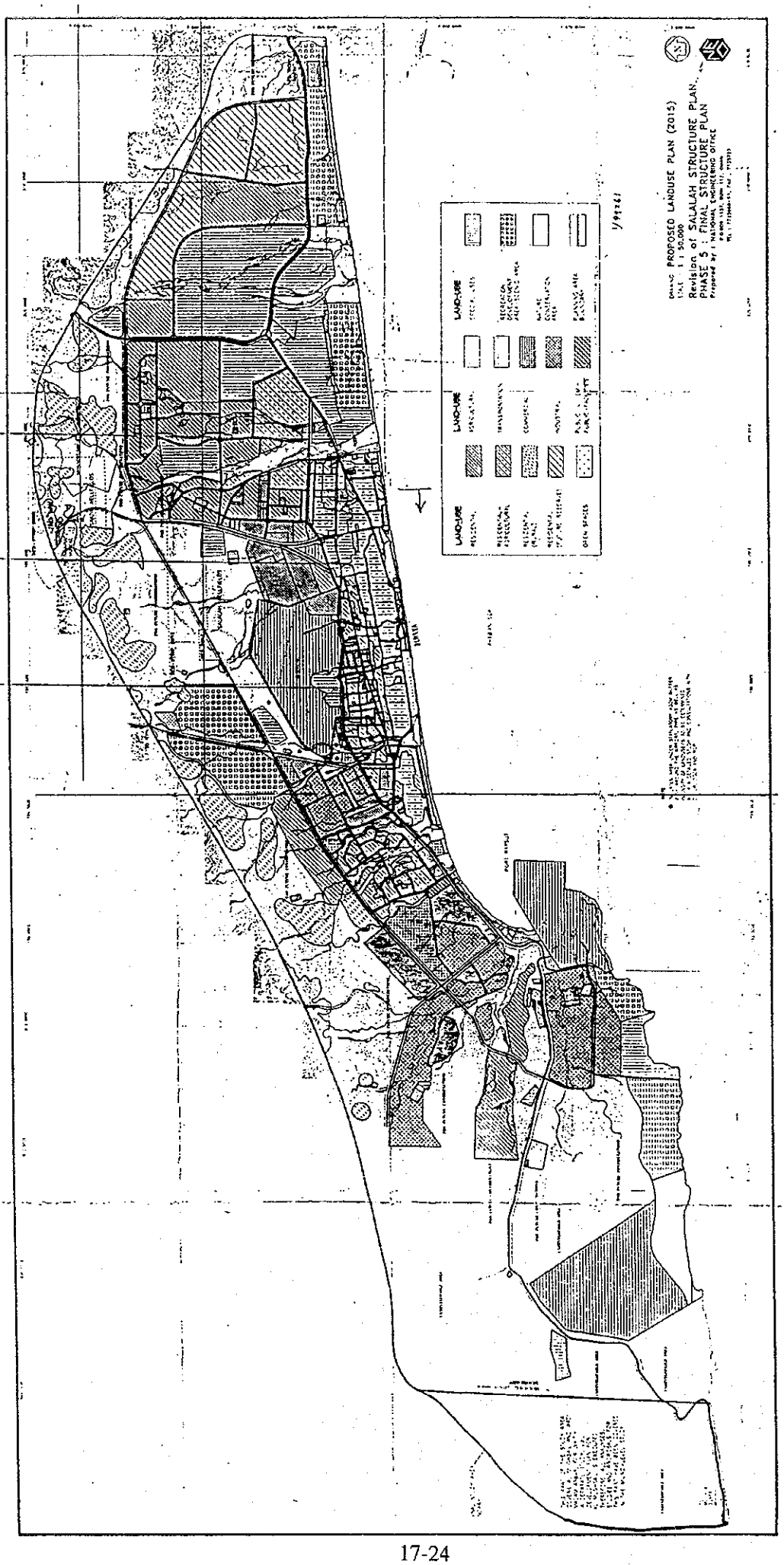

Fig. 17.3.3 Salalah Structure Plan Final Structure Plan (2015)