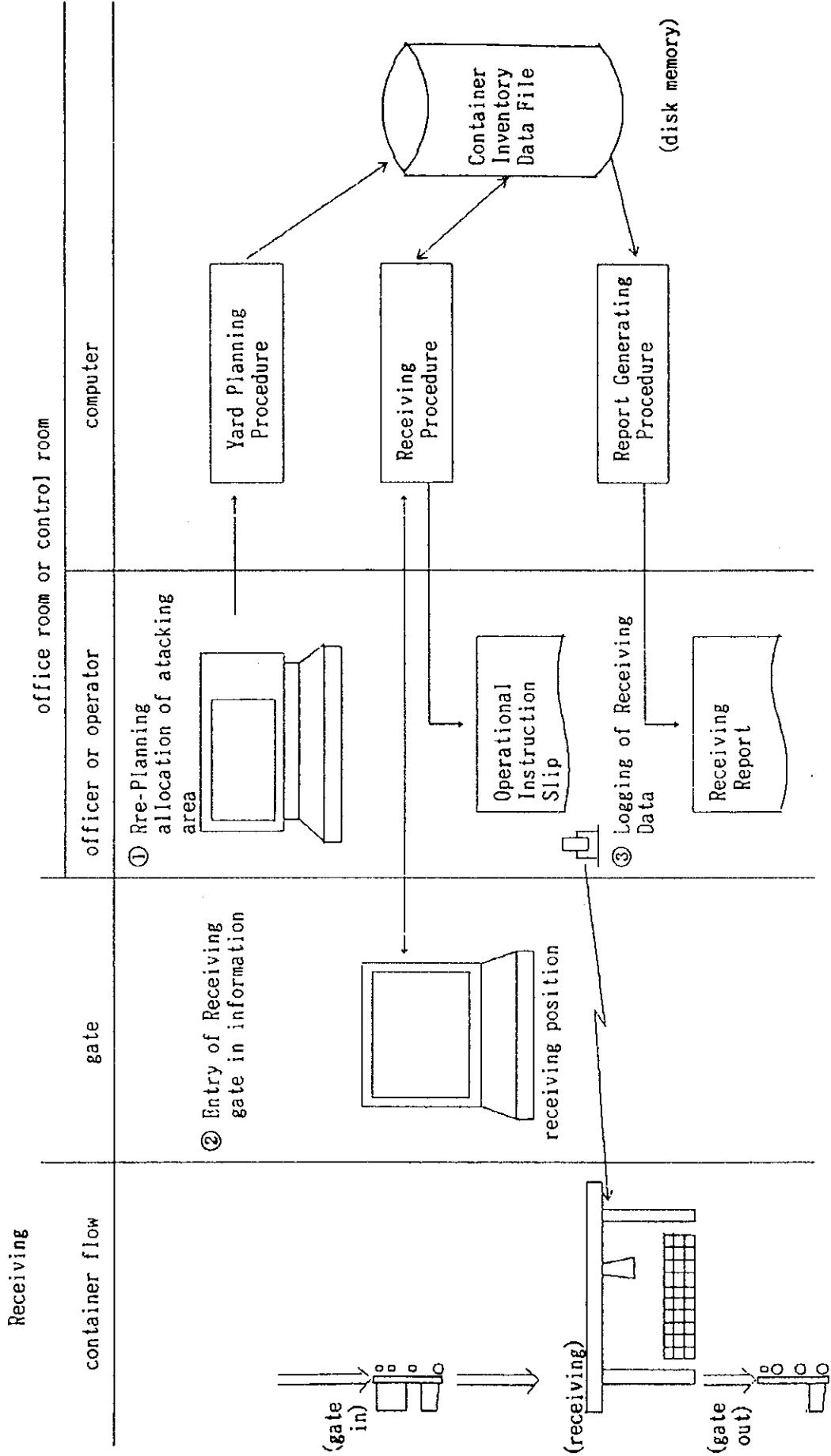
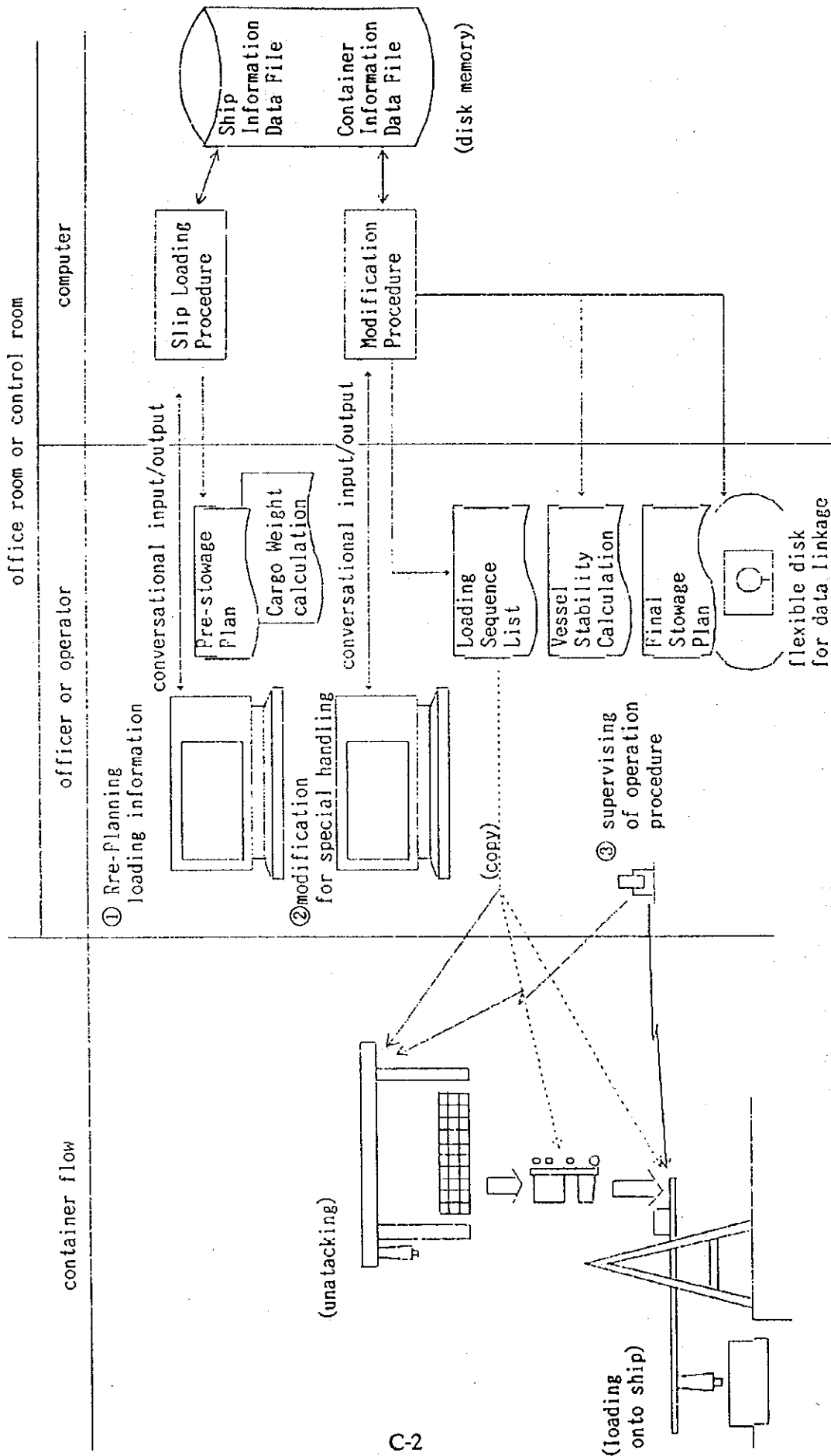


APPENDIX C

Appendix C-1 Image of Terminal Management System (Gate Management)



Appendix C-2 Image of Terminal Planning System (Loading)



Appendix C-3 Operating Revenue (Base Case & Case 1)

Description	Unit - Million Rp												
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Cargo Volume	3,271,000	1,425,000	1,548,000	1,548,000	1,756,000	1,840,000	1,856,000	2,079,000	2,210,000	2,785,000	2,846,000	3,140,000	3,331,000
Export(Stuff)	23,000	25,000	28,000	29,000	31,000	33,000	35,000	38,000	37,000	39,000	41,000	43,000	45,000
Export(Empty)	2,000	3,000	3,000	3,000	3,000	3,000	3,000	4,000	4,000	4,000	4,000	4,000	4,000
Import(Stuff)	3,000	3,000	4,000	4,000	4,000	5,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000
Import(Empty)	2,000	3,000	4,000	4,000	4,000	5,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000
Loading(Stuff)	32,000	35,000	38,000	39,000	41,000	43,000	45,000	48,000	51,000	54,000	56,000	58,000	61,000
Loading(Empty)	26,000	29,000	32,000	34,000	37,000	39,000	42,000	45,000	48,000	51,000	54,000	57,000	60,000
Unloading(Stuff)	52,000	59,000	64,000	68,000	73,000	76,000	81,000	87,000	93,000	100,000	107,000	114,000	122,000
Unloading(Empty)	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	11,000	11,000	12,000
Total	185,000	201,000	216,000	228,000	239,000	249,000	254,000	270,000	287,000	306,000	324,000	345,000	366,000
Staff	116,000	122,000	134,000	143,000	151,000	159,000	168,000	178,000	180,000	191,000	201,000	212,000	228,000
Empty	18,000	19,000	22,000	22,000	24,000	25,000	27,000	28,000	28,000	30,000	32,000	33,000	35,000
Export(Stuff)	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Export(Empty)	17,000	19,000	20,000	20,000	22,000	23,000	25,000	26,000	27,000	28,000	29,000	31,000	32,000
Import(Stuff)	25,000	27,000	29,000	32,000	34,000	35,000	37,000	39,000	42,000	43,000	45,000	47,000	49,000
Import(Empty)	39,000	45,000	49,000	54,000	57,000	59,000	63,000	67,000	71,000	76,000	82,000	88,000	95,000
Loading(Stuff)	4,000	5,000	5,000	5,000	5,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000
Loading(Empty)	127,000	142,000	155,000	168,000	176,000	184,000	196,000	208,000	221,000	235,000	249,000	265,000	282,000
Unloading(Stuff)	89,000	99,000	109,000	118,000	123,000	129,000	137,000	146,000	155,000	165,000	174,000	186,000	197,000
Unloading(Empty)	38,000	43,000	46,000	50,000	53,000	55,000	59,000	62,000	66,000	70,000	75,000	79,000	85,000
Inland Container Yard													
CY Container	12,000	14,000	17,000	19,000	20,000	22,000	24,000	27,000	29,000	32,000	34,000	37,000	39,000
CFS(LCL)	0	0	0	0	16,000	25,000	35,000	45,000	55,000	65,000	75,000	85,000	95,000
Total Container	12,000	14,000	17,000	19,000	36,000	47,000	59,000	72,000	84,000	97,000	109,000	122,000	134,000
Ship Size													
GRT	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Length	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Box/Hour	180	180	180	180	180	180	180	180	180	180	180	180	180
Productivity	220	220	220	220	220	220	220	220	220	220	220	220	220
Cargo Handling	16	16	16	16	16	16	16	16	16	16	16	16	16
Mooring	15	15	15	15	15	15	15	15	15	15	15	15	15
Ship Calls	580	630	670	710	730	740	750	770	780	810	830	850	880
Overseas Ships	170	190	200	210	220	230	240	250	260	270	280	290	300
Domestic Ships	410	440	470	500	510	520	530	540	550	570	580	590	620
Revenues	1838	1939	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Ship Service Fee													
(Overseas)	32	36	38	39	41	42	44	46	48	50	52	54	56
Anchorage Fee	42	47	50	52	54	55	57	59	61	63	65	67	69
Mooring Fee	27	30	31	32	33	34	35	36	37	38	39	40	41
Piloting Fee	59	66	70	73	77	77	80	83	87	90	93	96	99
(Domestic)													
Anchorage Fee	36	39	41	44	45	46	48	50	52	54	56	58	60
Mooring Fee	33	35	36	37	38	39	40	41	42	43	44	45	46
Piloting Fee	36	39	41	44	45	46	48	50	52	54	56	58	60
Towing Fee	85	92	96	104	106	108	110	112	114	119	121	123	129
Container Handling Fee													
FCL Cargo 20F	4,307	4,801	5,237	5,672	6,035	6,362	6,714	7,064	7,462	7,873	8,381	8,887	9,382
FCL Cargo 40F	2,232	2,553	2,815	3,017	3,211	3,354	3,574	3,759	3,969	4,188	4,438	4,683	4,988
Empty	2,788	3,109	3,356	3,562	3,751	3,940	4,187	4,508	4,812	5,174	5,421	5,857	6,220
FCL Cargo 40F	1,886	2,057	2,266	2,431	2,586	2,701	2,877	3,027	3,188	3,374	3,592	3,783	4,021
FCL Cargo 40F	1,382	1,084	1,207	1,283	1,376	1,438	1,532	1,611	1,761	1,795	1,910	2,011	2,138
Empty	1,393	1,333	1,458	1,526	1,608	1,689	1,794	1,932	2,062	2,216	2,323	2,510	2,688
ICV Truking 20F	164	191	222	232	242	250	258	267	276	284	293	302	311
ICV Truking 40F	105	123	143	167	316	412	518	632	737	851	956	1,071	1,176
Stacking Fee													
Container(Stuff) 20F	934	1,040	1,145	1,232	1,292	1,355	1,438	1,533	1,628	1,733	1,827	1,953	2,089
Container(Empty) 20F	67	75	81	88	93	98	103	108	115	122	131	138	149
CFS	58	43	48	51	54	58	60	64	68	72	76	81	86
Container(Stuff) 40F	200	223	245	261	277	290	308	329	349	371	392	418	443
Container(Empty) 40F	57	65	69	75	80	83	89	93	99	105	113	118	128
CFS	14	16	17	19	20	21	22	23	25	26	28	30	32
Revenues Total (Case 1)	15,340	17,107	18,782	20,068	21,633	22,984	24,626	26,277	28,000	29,867	31,754	33,855	36,021
Revenues Total (Case 2)	3,058	3,059	3,058	3,059	3,059	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,054
Revenues Total (Base Case)	8,281	8,048	8,703	11,008	12,574	13,673	15,535	17,186	18,509	20,776	22,663	24,744	26,967

Appendix C-3 Operating Revenue (Case 2)

Description	Unit - Millions \$												
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Carriage Volume													
Export (Stuff)	3,255,000	3,255,000	3,255,000	3,255,000	3,255,000	3,255,000	3,255,000	3,255,000	3,483,000	3,483,000	3,483,000	3,483,000	3,483,000
Export (Empty)	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000
Import (Stuff)	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Import (Empty)	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000
Loading (Stuff)	31,000	31,000	31,000	31,000	31,000	31,000	31,000	31,000	31,000	31,000	31,000	31,000	31,000
Loading (Empty)	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000
Unloading (Stuff)	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000
Unloading (Empty)	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Total	183,000	183,000	183,000	183,000	183,000	183,000	183,000	183,000	183,000	183,000	183,000	183,000	183,000
Staff	108,000	108,000	108,000	108,000	108,000	108,000	108,000	108,000	108,000	108,000	108,000	108,000	108,000
Empty	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000
Export (Stuff)	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000
Export (Empty)	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Import (Stuff)	17,000	17,000	17,000	17,000	17,000	17,000	17,000	17,000	17,000	17,000	17,000	17,000	17,000
Import (Empty)	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000
Loading (Stuff)	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Loading (Empty)	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000
Unloading (Stuff)	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Unloading (Empty)	125,000	125,000	125,000	125,000	125,000	125,000	125,000	125,000	125,000	125,000	125,000	125,000	125,000
Total	88,000	88,000	88,000	88,000	88,000	88,000	88,000	88,000	88,000	88,000	88,000	88,000	88,000
Inland Container Yard													
CV Container	12,000	14,000	17,000	19,000	20,000	22,000	24,000	27,000	29,000	34,000	37,000	39,000	39,000
GFS (LCI)	0	0	0	0	16,000	25,000	35,000	45,000	55,000	65,000	75,000	85,000	95,000
Total Container	12,000	14,000	17,000	19,000	36,000	47,000	59,000	72,000	84,000	100,000	112,000	124,000	134,000
Ship Size													
GRT	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Length	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Box/hour	220	220	220	220	220	220	220	220	220	220	220	220	220
Productivity	14	14	14	14	14	14	14	14	14	14	14	14	14
Box/hour	16	16	16	16	16	16	16	16	16	16	16	16	16
Box/hour	18	18	18	18	18	18	18	18	18	18	18	18	18
Mooring	18	18	18	18	18	18	18	18	18	18	18	18	18
Ship Calls	240	240	240	240	240	240	240	240	240	240	240	240	240
Overseas Ships	170	170	170	170	170	170	170	170	170	170	170	170	170
Potential Ships	170	170	170	170	170	170	170	170	170	170	170	170	170
Revenues	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Ship Service Fee													
(Overseas)	13	13	13	13	13	13	13	13	13	13	13	13	13
Anchorage Fee	17	17	17	17	17	17	17	17	17	17	17	17	17
Mooring Fee	11	11	11	11	11	11	11	11	11	11	11	11	11
Pilotage Fee	24	24	24	24	24	24	24	24	24	24	24	24	24
Towing Fee	15	15	15	15	15	15	15	15	15	15	15	15	15
(Domestic)	15	15	15	15	15	15	15	15	15	15	15	15	15
Anchorage Fee	14	14	14	14	14	14	14	14	14	14	14	14	14
Mooring Fee	15	15	15	15	15	15	15	15	15	15	15	15	15
Pilotage Fee	35	35	35	35	35	35	35	35	35	35	35	35	35
Towing Fee	1,742	1,742	1,742	1,742	1,742	1,742	1,742	1,742	1,742	1,742	1,742	1,742	1,742
Container Handling Fee	913	913	913	913	913	913	913	913	913	913	913	913	913
FCL Cargo 20F	1,094	1,094	1,094	1,094	1,094	1,094	1,094	1,094	1,094	1,094	1,094	1,094	1,094
Box	1,742	1,742	1,742	1,742	1,742	1,742	1,742	1,742	1,742	1,742	1,742	1,742	1,742
FCL Cargo 40F	913	913	913	913	913	913	913	913	913	913	913	913	913
Box	1,215	1,215	1,215	1,215	1,215	1,215	1,215	1,215	1,215	1,215	1,215	1,215	1,215
FCL Cargo 40F	0	0	0	0	0	0	0	0	0	0	0	0	0
Box	0	0	0	0	0	0	0	0	0	0	0	0	0
ICV Trunking 20F	924	924	924	924	924	924	924	924	924	924	924	924	924
Box	65	65	65	65	65	65	65	65	65	65	65	65	65
Stacking Fee	39	39	39	39	39	39	39	39	39	39	39	39	39
Container (Stuff) 20F	198	198	198	198	198	198	198	198	198	198	198	198	198
Container (Empty) 20F	56	56	56	56	56	56	56	56	56	56	56	56	56
Container (Stuff) 40F	14	14	14	14	14	14	14	14	14	14	14	14	14
Container (Empty) 40F	14	14	14	14	14	14	14	14	14	14	14	14	14
CFS	14	14	14	14	14	14	14	14	14	14	14	14	14
Revenue Total (Case 2)	9,059	9,059	9,059	9,059	9,059	9,059	9,059	9,059	9,059	9,059	9,059	9,059	9,054

Appendix C-4 Project Cost and Expenditure

Items	Cost		Foreign P.		Local P.		Cost	Physical Contingency	Engineering Fee	VAT	Total Cost	Mainten Cost	Deprri Period	Deprri /year
	Cost	17,020	8,873	25,893	2,589	2,589								
Civil Construction	25,893	17,020	8,873	25,893	2,589	2,589	3,107	34,179	342					
Inland Container Yard	12,080	7,187	4,873	12,060	1,206	1,206	1,447	15,919	159					
Reclamation	5,344	2,741	2,603	5,344	534	534	641	7,054	71					
Reverment	5,589	3,388	1,171	5,589	57	57	68	751	8					
Pavement	3,741	2,235	1,506	3,741	374	374	449	4,938	49					15
Accessory Construction	2,406	1,813	1,593	2,406	241	241	289	3,176	32					30
Building Construction	5,880	3,560	2,320	5,880	588	588	706	7,762	78					155
Access Road for ICD	487	275	192	467	47	47	56	616	6					25
Connecting Toll Road	582	367	215	582	58	58	70	768	8					25
Access Channel	5,288	4,287	981	5,268	527	527	632	6,954	70					31
Hatta Quay Yard	1,636	1,344	292	1,636	164	164	196	2,180	22					
Building	360	198	162	360	36	36	43	475	5					
Accessory Construction	1,276	1,148	130	1,276	128	128	153	1,684	17					
Procurement	83,657	83,657	0	83,657	0	0	8,617	94,793	4,657					
First Purchase	54,213	54,213	0	54,213	0	0	1,626	61,423	3,071					
Gantry Crane	23,000	23,000	0	23,000	0	0	690	26,059	1,303					15
Transtainer	26,600	26,600	0	26,600	0	0	798	30,138	1,507					12
Others	4,493	4,493	0	4,493	0	0	135	5,091	1,255					509
Computer	120	120	0	120	0	0	4	136	7					27
Second Purchase	12,694	12,694	0	12,694	0	0	381	14,382	719					
Gantry Crane	0	0	0	0	0	0	0	0	0					
Transtainer	3,800	3,800	0	3,800	0	0	114	4,305	215					12
Others	8,814	8,814	0	8,814	0	0	264	9,986	499					999
Computer	80	80	0	80	0	0	2	91	5					18
Third Purchase	15,300	15,300	0	15,300	0	0	459	17,335	867					
Gantry Crane	11,500	11,500	0	11,500	0	0	345	13,029	651					15
Transtainer	3,800	3,800	0	3,800	0	0	114	4,305	0					889
Applications	1,450	1,450	0	1,450	0	0	43	1,643	0					359
Land Acquisition	149	149	0	149	0	0	15	164	0					
Access Road L.A	99	99	0	99	0	0	10	109	0					
Compensation Expense	50	50	0	50	0	0	5	55	0					
Total	109,699	100,677	9,022	109,699	2,589	2,589	11,739	129,126	4,999					
Physical Contingency	2,589	1,683	906	2,589	0	0								
Engineering Fee	5,099	4,259	840	5,099										
Value Added Tax	11,739	0	11,739	11,739										
Total Project Cost	129,126	106,619	22,507	129,126										

Source: calculated by the Study Team

Appendix C-5 Depreciation List

Unit : Million RP

Item	First Procurements			Second Procurements			Third Pro.			Inland Container Yard			Access			Hatta Quay			On-going Project			Total	
	Tenmer	Oters	Comput.	Tenmer	Oters	Comput.	Cranes	Tenmer	Rever	Pave	Oters	Build	ICY	Toll	Build	Oters	Build	Oters	Civil	Build	Oters		
Price	25,300	4,942	132	4,180	9,695	88	12,650	4,180	719	4,732	3,044	7,438	609	1,256	455	1,615	35,264	5,351	3,248	Case 1	3,248	Base	
\$ Life	15	12	10	12	10	10	15	12	50	30	25	30	25	25	30	25	25	30	30	30	30	General	
Cost	1,687	2,438	494	26	348	970	18	348	348	14	158	248	24	50	15	65	1,411	178	108	Project	108	Project	
1997																							
1998	25,300	4,942	132											1,256	455	1,615	35,264	5,351	3,248		3,248	6,472	
1999	2,438	494	26											50	15	65	1,411	178	108		108	4,775	
2000	1,687	2,438	494	26	4,180	9,695	88		719	4,732	3,044	7,438	609	50	15	65	1,411	178	108		108	6,472	
2001	1,687	2,438	494	26	348	970	18		14	158	122	248	24	50	15	65	1,411	178	108		108	8,374	
2002	1,687	2,438	494	26	348	970	18	12,650	4,180	158	122	248	24	50	15	65	1,411	178	108		108	8,374	
2003	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2004	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2005	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2006	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2007	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2008	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2009	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2010	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2011	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2012	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2013	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2014	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2015	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2016	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2017	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2018	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2019	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2020	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2021	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2022	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2023	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2024	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2025	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565
2026	1,687	2,438	494	26	348	970	18	843	348	14	158	122	248	24	50	15	65	1,411	178	108		108	9,565

Appendix C-6 Calculation of FIRR (Base Case)

Origin. 8.571%
 Sense. (1) 6.869%
 Sense. (2) 7.047%
 Sense. (3) 5.411%

Base Case
 Study Project

Year	Revenues		Investment	Cost		Revenues - Cost		Net Present Value			Expense			
	Operating Revenues	Subsidy (G. Fund)		Total	Expense	Total	Revenues - Cost	Revenues	Cost	Difference	Total	Personnel Cost	Maintenance Cost	Others Cost
1 1997	0	0	24,266	2,004	24,266	-24,266	5,328	22,350	-22,350	0	0	0	0	0
2 1998	6,281	0	50,182	2,708	52,186	-45,905	6,289	44,272	-38,943	-61,294	-440	3,016	-572	2,004
3 1999	8,048	0	17,450	4,452	20,158	-12,110	8,993	15,751	-9,462	-70,756	-440	3,720	-572	2,708
4 2000	9,703	0	12,749	4,452	18,201	-8,498	6,993	13,099	-6,116	-76,872	286	3,946	286	4,452
5 2001	11,009	0	3,586	4,452	10,018	-8,981	7,298	6,641	-6,096	-82,311	275	4,013	358	4,452
6 2002	12,574	0	17,533	4,646	22,559	-8,365	7,577	13,773	-6,096	-82,311	275	4,013	358	4,646
7 2003	13,873	0	13,873	4,646	4,778	8,095	7,801	2,667	5,113	-77,197	275	4,013	358	4,646
8 2004	15,535	0	15,535	4,646	4,646	10,889	8,046	2,406	5,640	-71,557	275	4,013	358	4,646
9 2005	17,186	0	17,186	4,646	4,734	12,452	8,199	2,258	5,940	-65,616	275	4,013	358	4,646
10 2006	18,909	0	18,909	4,646	4,646	14,263	8,309	2,041	6,267	-59,349	275	4,013	358	4,646
11 2007	20,776	0	20,776	4,646	4,646	15,130	8,408	1,880	6,528	-52,821	275	4,013	358	4,646
12 2008	22,693	0	22,693	4,646	4,646	16,043	8,486	1,699	6,769	-47,996	275	4,013	358	4,646
13 2009	24,744	0	24,744	4,646	4,646	17,098	8,528	1,555	6,900	-41,098	275	4,013	358	4,646
14 2010	26,967	0	26,967	4,646	4,646	18,321	8,528	1,359	-5,288	-46,384	275	4,013	358	4,646
15 2011	26,967	0	26,967	4,646	4,646	18,141	7,855	1,359	6,501	-39,883	275	4,013	358	4,646
16 2012	26,967	0	26,967	4,646	4,646	18,141	7,235	1,359	4,867	-35,016	275	4,013	358	4,646
17 2013	26,967	0	26,967	4,646	4,646	18,141	6,664	1,359	-769	-31,656	275	4,013	358	4,646
18 2014	26,967	0	26,967	4,646	4,646	18,141	6,137	992	4,129	-28,995	275	4,013	358	4,646
19 2015	26,967	0	26,967	4,646	4,646	18,141	5,653	887	4,310	-26,995	275	4,013	358	4,646
20 2016	26,967	0	26,967	4,646	4,646	17,296	5,207	796	4,310	-22,686	275	4,013	358	4,646
21 2017	26,967	0	26,967	4,646	4,646	17,296	4,796	3,056	4,310	-20,956	275	4,013	358	4,646
22 2018	26,967	0	26,967	4,646	4,646	17,296	4,417	1,552	2,825	-18,141	275	4,013	358	4,646
23 2019	26,967	0	26,967	4,646	4,646	17,296	4,088	1,701	3,367	-14,773	275	4,013	358	4,646
24 2020	26,967	0	26,967	4,646	4,646	14,429	3,747	2,005	1,742	-13,031	275	4,013	358	4,646
25 2021	26,967	0	26,967	4,646	4,646	12,538	3,451	595	2,857	-10,174	275	4,013	358	4,646
26 2022	26,967	0	26,967	4,646	4,646	10,939	3,179	3,997	-818	-8,995	275	4,013	358	4,646
27 2023	26,967	0	26,967	4,646	4,646	9,318	2,928	830	2,097	-8,895	275	4,013	358	4,646
28 2024	26,967	0	26,967	4,646	4,646	7,649	2,697	883	1,814	-7,081	275	4,013	358	4,646
29 2025	26,967	0	26,967	4,646	4,646	6,825	2,484	773	1,711	-5,369	275	4,013	358	4,646
30 2026	26,967	0	26,967	4,646	4,646	5,320	2,293	-3,081	5,369	-0	275	4,013	358	4,646
Total	639,740	0	639,740	139,766	363,834	275,406	172,615	172,615	-0	-0	6,435	114,959	8,376	129,766

Unit : Million RP

Appendix C-6 Calculation of FIRR (Case 1)

Origin. 7.789%
Sense. (1) 6.142%
Sense. (2) 6.298%
Sense. (3) 4.697%

Case 1
General Project

Year	Revenues		Subsidy		Total	Investment	Cost		Revenues - Cost	Net Present Value			Expense			Total
	Operating Revenues	(G. Fund)					Expense	Revenues		Cost	Difference	Personnel Cost	Maintenance Cost	Others Cost	Cost	
1 1997	0	0	0	98.784	98.784	0	0	0	98.784	0	98.784	-91.646	0	0	0	0
2 1998	15.340	0	0	53.362	68.702	0	0	-40.022	13.203	47.650	-34.447	-34.447	3.662	0	0	5.180
3 1999	17.107	0	0	17.450	34.557	0	0	-6.227	13.660	18.632	-4.972	-4.972	4.366	0	0	5.884
4 2000	18.762	0	0	13.748	32.510	0	0	-2.615	13.899	15.836	-1.937	-1.937	4.592	0	0	7.628
5 2001	20.068	0	0	15.566	35.634	0	0	-6.874	13.194	9.068	4.724	4.724	4.592	0	0	1.716
6 2002	21.833	0	0	17.913	39.746	0	0	-4.102	13.793	16.409	-2.615	-2.615	4.659	0	0	7.628
7 2003	22.984	0	0	132	154.984	132	0	15.010	13.584	4.705	8.879	-122.014	1.375	0	0	1.788
8 2004	24.626	0	0	7.822	32.448	0	0	16.804	13.515	4.293	9.222	-112.793	1.375	0	0	7.822
9 2005	26.277	0	0	7.822	34.100	0	0	18.367	13.379	4.027	9.351	-103.441	1.375	0	0	7.822
10 2006	28.000	0	0	7.822	35.822	0	0	20.178	13.226	3.695	9.531	-93.910	1.375	0	0	7.822
11 2007	29.867	0	0	7.822	37.689	0	0	22.045	13.088	3.428	9.660	-84.250	1.375	0	0	7.822
12 2008	31.754	0	0	5.074	36.828	0	0	18.858	12.910	5.243	7.667	-76.583	1.375	0	0	7.822
13 2009	33.835	0	0	7.822	41.657	0	0	26.013	12.702	2.350	9.811	-66.772	1.375	0	0	7.822
14 2010	36.021	0	0	39.043	75.064	0	0	-16.844	12.604	16.399	-3.795	-3.795	4.659	0	0	7.822
15 2011	38.021	0	0	36.021	74.042	0	0	7.822	11.694	2.539	9.154	-61.412	1.375	0	0	7.822
16 2012	36.021	0	0	4.180	40.201	0	0	24.019	10.849	3.615	7.234	-54.178	1.375	0	0	7.822
17 2013	36.021	0	0	25.432	61.453	0	0	2.787	10.065	5.292	7.773	-53.405	1.375	0	0	7.822
18 2014	36.021	0	0	4.180	40.201	0	0	24.019	9.337	3.111	6.226	-47.179	1.375	0	0	7.822
19 2015	36.021	0	0	38	40.059	0	0	26.111	8.683	1.902	6.760	-40.418	1.375	0	0	7.822
20 2016	36.021	0	0	7.822	43.843	0	0	28.189	8.037	1.745	6.292	-34.127	1.375	0	0	7.822
21 2017	36.021	0	0	12.650	48.671	0	0	15.849	7.456	4.237	3.218	-30.368	1.375	0	0	7.822
22 2018	36.021	0	0	3.074	39.095	0	0	23.125	6.917	2.426	4.441	-26.467	1.375	0	0	7.822
23 2019	36.021	0	0	7.822	43.843	0	0	28.199	6.417	1.394	5.024	-21.444	1.375	0	0	7.822
24 2020	36.021	0	0	8.783	44.804	0	0	16.416	5.854	2.910	3.044	-18.400	1.375	0	0	7.822
25 2021	36.021	0	0	35.021	71.042	0	0	-7.065	5.523	6.607	-1.083	-1.083	4.659	0	0	7.822
26 2022	36.021	0	0	29.280	65.301	0	0	1.061	5.124	5.275	-151	-151	4.659	0	0	7.822
27 2023	36.021	0	0	3.003	39.024	0	0	25.196	4.754	1.429	3.325	-16.309	1.375	0	0	7.822
28 2024	36.021	0	0	4.180	40.201	0	0	24.019	4.410	1.470	2.941	-13.268	1.375	0	0	7.822
29 2025	36.021	0	0	3.741	39.762	0	0	24.458	4.082	1.313	2.778	-10.590	1.375	0	0	7.822
30 2026	36.021	0	0	-72.284	-36.263	0	0	100.483	3.786	-6.793	10.550	-0	1.375	0	0	7.822
Total	902.590	0	0	312.532	1215.122	0	0	366.188	286.503	286.503	-0	-0	38.335	133.687	49.848	221.870

Appendix C-6 Calculation of FIRR (Case 2)

Case 2
 On-going Project
 Origin. 6.311%
 Sense. (1) 4.705%
 Sense. (2) 4.858%
 Sense. (3) 3.287%

Year	Revenues		Cost		Revenues - Cost		Net Present Value		Expense			Total		
	Operating Revenues	Subsidy (G. Fund)	Investment	Expense	Total	Revenues - Cost	Revenues	Cost	Difference	Total Difference	Personnel Cost		Maintenance Cost	Others
1	0	0	74.558	0	74.558	-74.558	8.012	70.119	-70.119	-70.119	0	0	0	
2	9.059	0	0	3.176	3.176	5.883	2.809	5.203	5.203	-64.915	1.100	546	1.430	
3	9.059	0	0	3.176	3.176	5.883	2.842	4.893	4.893	-60.922	1.100	546	1.430	
4	9.059	0	0	3.176	3.176	5.883	2.864	4.802	4.802	-55.420	1.100	546	1.430	
5	9.059	0	0	3.176	3.176	5.883	2.937	4.328	4.328	-51.092	1.100	546	1.430	
6	9.059	0	0	3.176	3.176	5.883	2.197	4.070	4.070	-47.021	1.100	546	1.430	
7	9.091	0	0	3.176	3.176	5.915	2.067	3.849	3.849	-43.173	1.100	546	1.430	
8	9.091	0	0	3.176	3.176	5.915	1.944	3.620	3.620	-39.553	1.100	546	1.430	
9	9.091	0	0	3.176	3.176	5.915	1.828	3.404	3.404	-36.149	1.100	546	1.430	
10	9.091	0	0	3.176	3.176	5.915	1.719	3.201	3.201	-32.947	1.100	546	1.430	
11	9.091	0	0	3.176	3.176	5.915	1.617	3.011	3.011	-29.937	1.100	546	1.430	
12	9.091	0	0	3.176	3.176	5.915	1.522	2.832	2.832	-27.105	1.100	546	1.430	
13	9.091	0	0	3.176	3.176	5.915	1.435	2.653	2.653	-24.442	1.100	546	1.430	
14	9.054	0	0	3.176	3.176	5.878	1.345	2.489	2.489	-21.954	1.100	546	1.430	
15	9.054	0	0	3.176	3.176	5.878	1.265	2.341	2.341	-19.613	1.100	546	1.430	
16	9.054	0	0	3.176	3.176	5.878	1.189	2.201	2.201	-17.412	1.100	546	1.430	
17	9.054	0	0	3.176	3.176	5.878	1.119	2.070	2.070	-15.342	1.100	546	1.430	
18	9.054	0	0	3.176	3.176	5.878	1.052	1.947	1.947	-13.395	1.100	546	1.430	
19	9.054	0	0	3.176	3.176	5.878	989	1.831	1.831	-11.564	1.100	546	1.430	
20	9.054	0	0	3.176	3.176	5.878	2.820	1.722	1.722	-9.842	1.100	546	1.430	
21	9.054	0	0	3.176	3.176	5.878	2.652	1.619	1.619	-8.223	1.100	546	1.430	
22	9.054	0	0	3.176	3.176	5.878	2.494	1.523	1.523	-6.700	1.100	546	1.430	
23	9.054	0	0	3.176	3.176	5.878	2.346	1.432	1.432	-5.268	1.100	546	1.430	
24	9.054	0	0	3.176	3.176	5.878	2.206	1.347	1.347	-3.921	1.100	546	1.430	
25	9.054	0	35.264	3.176	38.400	-28.388	1.951	8.284	-6.333	-10.254	1.100	546	1.430	
26	9.054	0	0	3.176	3.176	5.878	1.835	6.444	1.391	-8.057	1.100	546	1.430	
27	9.054	0	0	3.176	3.176	5.878	1.726	5.055	1.120	-7.942	1.100	546	1.430	
28	9.054	0	0	3.176	3.176	5.878	1.623	3.669	1.054	-6.888	1.100	546	1.430	
29	9.054	0	0	3.176	3.176	5.878	1.528	2.285	931	-5.897	1.100	546	1.430	
30	9.054	0	-31.318	3.176	-28.142	37.196	-4.462	-4.462	5.897	-	1.100	546	1.430	
Total	282.850	0	78.504	92.104	170.608	92.242	111.976	111.976	0	-755.171	31.900	18.734	41.470	82.104

Appendix C-6 Calculation of FIRR (Case 3)

Origin. 9.951%
 Sense. (1) 7.280%
 Sense. (2) 7.527%
 Sense. (3) 5.015%

Case 3
 Privatized Project 1

Year	Revenues		Cost		Revenues - Cost		Net Present Value		Expense			Total		
	Operating Revenues	Subsidy (G. Fund)	Investment	Expense	Total	Revenues - Cost	Revenues	Cost	Difference	Total Difference	Personnel Cost		Maintenance Cost	Others Cost
1 1997	0	0	24,268	0	24,268	-24,266	0	22,070	-22,070	-22,070	0	0	0	0
2 1998	13,842	0	50,182	4,520	54,712	-40,870	11,450	45,257	-33,807	-55,877	860	3,012	853	4,530
3 1999	15,451	0	17,450	5,238	22,688	-7,237	11,624	17,068	-5,445	-61,321	860	3,720	858	5,338
4 2000	16,980	0	13,749	6,982	20,731	-3,751	11,618	14,165	-2,567	-63,868	1,320	3,946	1,716	6,982
5 2001	18,185	0	6,566	7,176	13,548	4,637	11,317	8,431	-2,886	-61,002	1,320	3,946	1,716	6,982
6 2002	19,698	0	17,913	7,176	25,089	-5,391	11,149	14,200	-3,051	-64,053	1,375	4,013	1,788	7,176
7 2003	20,859	0	17,132	7,176	7,308	13,551	10,737	3,762	6,978	-57,078	1,375	4,013	1,788	7,176
8 2004	22,441	0	88	7,176	7,176	15,265	10,506	3,960	7,147	-49,931	1,375	4,013	1,788	7,176
9 2005	24,030	0	88	7,176	7,264	16,765	10,237	3,093	7,139	-42,792	1,375	4,013	1,788	7,176
10 2006	25,661	0	88	7,176	7,176	18,485	8,938	2,778	7,138	-35,634	1,375	4,013	1,788	7,176
11 2007	27,443	0	88	7,176	7,176	20,267	8,866	2,527	7,138	-28,495	1,375	4,013	1,788	7,176
12 2008	29,235	0	5,074	7,176	12,250	16,985	9,365	3,924	5,441	-23,055	1,375	4,013	1,788	7,176
13 2009	31,196	0	0	7,176	7,176	24,020	9,089	2,091	6,989	-16,056	1,375	4,013	1,788	7,176
14 2010	33,259	0	39,043	7,176	46,219	-12,960	8,813	12,247	-3,434	-19,491	1,375	4,013	1,788	7,176
15 2011	33,259	0	-54,782	7,176	-47,616	80,875	8,015	-11,475	19,491	-0	1,375	4,013	1,788	7,176
Total	331,539	0	119,671	95,492	215,163	116,376	143,518	143,518	-0	-600,744	17,710	54,754	23,028	95,492

Appendix C-6 Calculation of FIRR (Case 4)

Origin. 13.61%
 Sense. (1) 10.24%
 Sense. (2) 10.55%
 Sense. (3) 7.37%

Case 4
 Privatized Project 2

Year	Revenues		Investment	Cost		Revenues - Cost		Net Present Value		Expense			Total
	Operating Revenues	Subsidy (G. Fund)		Expense	Total	Revenues	Cost	Cost	Difference	Total	Personnel Cost	Maintenance Cost	
1 1997	0	0	22,672	0	-22,672	0	19,955	-19,955	0	660	0	0	0
2 1998	13,679	0	41,318	4,521	-27,639	10,597	35,510	-24,914	-44,869	680	3,003	858	4,521
3 1999	15,261	0	4,529	4,521	9,050	10,406	6,171	4,235	-40,534	680	3,003	858	4,521
4 2000	16,750	0	9,434	6,737	16,171	10,052	9,705	347	-40,286	1,320	3,701	1,116	6,737
5 2001	17,927	0	5,566	6,737	12,303	9,469	6,499	2,971	-37,316	1,320	3,701	1,116	6,737
6 2002	19,016	0	11,264	7,706	18,970	8,841	8,619	21	-37,294	1,375	4,543	1,788	7,706
7 2003	19,917	0	132	7,706	12,079	8,150	3,207	4,943	-32,352	1,375	4,543	1,788	7,706
8 2004	21,217	0	0	7,706	13,511	7,641	2,775	4,866	-27,486	1,375	4,543	1,788	7,706
9 2005	22,507	0	88	7,708	14,213	7,114	2,471	4,664	-22,822	1,375	4,543	1,788	7,706
10 2006	23,854	0	0	7,708	16,148	6,655	2,150	4,505	-18,316	1,375	4,543	1,788	7,706
11 2007	25,340	0	0	7,706	17,634	6,223	1,892	4,330	-13,988	1,375	4,543	1,788	7,706
12 2008	26,847	0	5,074	7,706	12,780	5,803	2,762	3,040	-10,946	1,375	4,543	1,788	7,706
13 2009	28,511	0	0	7,706	14,067	5,424	1,466	3,958	-6,988	1,375	4,543	1,788	7,706
14 2010	30,289	0	39,043	7,706	-8,754	5,071	7,627	-2,556	-9,744	1,375	4,543	1,788	7,706
15 2011	30,289	0	-43,536	7,706	-35,830	4,464	-5,280	9,744	-0	1,375	4,543	1,788	7,706
Total	311,404	0	95,584	99,576	185,160	105,929	105,929	-0	-382,992	17,710	58,838	23,028	99,576

Unit : Million Rp

Appendix C-10 Financial Statements for Short-term project (Base Case)

PROFIT AND LOSS STATEMENT (UNIT: Million Rp.)																								
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Operating Revenue	0	6,281	8,048	9,703	11,009	12,574	13,873	15,535	17,186	18,909	20,776	22,663	24,744	26,967	26,967	26,967	26,967	26,967	26,967	26,967	26,967	26,967	26,967	2
Operating Expenses	0	2,004	7,483	9,227	11,196	11,323	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	1
Personnel	0	-440	-440	220	220	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275
Maintenance and repair	0	3,016	3,720	3,946	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	
Other expenditure	0	-572	-572	286	286	358	358	358	358	358	358	358	358	358	358	358	358	358	358	358	358	358	358	
Depreciation costs	0	0	4,775	4,775	6,677	6,677	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	
Net Operating Income	0	4,277	565	476	-187	1,252	1,360	3,022	4,673	6,396	8,263	10,150	12,231	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	1
Non-operating Revenues	0	0	287	841	1,396	2,167	3,210	4,466	5,972	7,712	9,739	12,073	13,973	16,876	14,273	17,311	19,761	19,102	21,586	24,885	28,464	30,433	33,700	3
Interest on deposit	0	0	287	841	1,396	2,167	3,210	4,466	5,972	7,712	9,739	12,073	13,973	16,876	14,273	17,311	19,761	19,102	21,586	24,885	28,464	30,433	33,700	3
Non-operating Expenses	0	631	1,936	2,389	2,747	2,892	3,357	3,357	3,357	3,357	3,357	3,357	3,356	3,343	3,321	3,296	3,236	3,156	3,075	2,995	2,915	2,834	2,754	
Interest on long-term loans	0	631	1,936	2,389	2,747	2,892	3,357	3,357	3,357	3,357	3,357	3,357	3,356	3,343	3,321	3,296	3,236	3,156	3,075	2,995	2,915	2,834	2,754	
Interest on short-term loans	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Net Income Before Tax	0	3,646	-1,084	-1,072	-1,538	527	1,212	4,130	7,287	10,751	14,644	18,865	22,847	27,987	25,406	28,469	30,978	30,400	32,964	36,344	40,003	42,052	45,400	4
Income Tax	0	1,094	0	0	0	158	364	1,239	2,186	3,225	4,393	5,659	6,854	8,396	7,622	8,541	9,294	9,120	9,889	10,903	12,001	12,616	13,620	1
Net Income After Tax	0	2,552	-1,084	-1,072	-1,538	369	849	2,891	5,101	7,525	10,251	13,205	15,993	19,591	17,784	19,928	21,685	21,280	23,075	25,441	28,002	29,437	31,780	3
(Contribution To the Government)	0	638	0	0	0	92	212	723	1,275	1,881	2,563	3,301	3,998	4,898	4,446	4,982	5,421	5,320	5,769	6,360	7,000	7,359	7,945	
Net Income After Contribution	0	1,914	-1,084	-1,072	-1,538	277	637	2,168	3,826	5,644	7,688	9,904	11,995	14,693	13,338	14,946	16,264	15,960	17,306	19,080	21,001	22,078	23,835	2
Retained Earnings	0	1,914	831	-242	-1,779	-1,503	-866	1,302	5,128	10,772	18,460	28,364	40,359	55,052	68,390	83,336	99,600	115,560	132,866	151,946	172,948	195,025	218,860	24

CASH FLOW STATEMENT (Unit: Million Rp.)																								
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Cash Beginning	0	0	1,914	5,606	9,308	14,448	21,401	29,774	39,810	51,416	64,928	80,484	93,151	112,509	95,155	115,410	131,739	127,348	143,906	165,901	189,759	202,888	224,669	25
Cash Inflow (excluding G. Funds)	24,266	54,459	23,077	19,841	13,452	28,009	12,438	15,356	18,512	21,976	25,870	30,090	34,071	39,198	36,595	39,633	42,082	41,424	43,907	47,207	50,785	52,755	56,022	6
Net operating income	0	4,277	565	476	-187	1,252	1,360	3,022	4,673	6,396	8,263	10,150	12,231	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	1
Depreciation costs	0	0	4,775	4,775	6,677	6,677	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	
Long-term loans	24,266	50,182	17,450	13,749	5,566	17,913	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Interest on deposits	0	0	287	841	1,396	2,167	3,210	4,466	5,972	7,712	9,739	12,073	13,973	16,876	14,273	17,311	19,761	19,102	21,586	24,885	28,464	30,433	33,700	3
Cash Outflow (excluding G. Funds)	24,266	52,545	19,386	16,138	8,313	21,055	4,065	5,319	6,906	8,464	10,313	17,423	14,713	56,552	16,340	23,304	46,473	24,866	21,912	23,349	37,656	30,974	27,409	3
Investment	24,266	50,182	17,450	13,749	5,566	17,913	132	0	88	0	0	5,074	0	39,043	0	4,180	25,432	4,180	88	0	12,650	5,074	0	
Repayment for long-term loans	0	0	0	0	0	0	0	0	0	0	0	0	31	504	872	951	2,305	3,091	3,091	3,091	3,091	3,091	3,091	
Interest on long-term loans	0	631	1,936	2,389	2,747	2,892	3,357	3,357	3,357	3,357	3,357	3,357	3,356	3,343	3,321	3,296	3,236	3,156	3,075	2,995	2,915	2,834	2,754	
Income Tax	0	1,094	0	0	0	158	364	1,239	2,186	3,225	4,393	5,659	6,854	8,396	7,622	8,541	9,294	9,120	9,889	10,903	12,001	12,616	13,620	1
(Contribution to the Government)	0	638	0	0	0	92	212	723	1,275	1,881	2,563	3,301	3,998	4,898	4,446	4,982	5,421	5,320	5,769	6,360	7,000	7,359	7,945	
Interest on short-term loans	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Cash Inflow - Cash Outflow	0	1,914	3,691	3,703	5,139	6,954	8,373	10,036	11,606	13,512	15,556	12,667	19,358	-17,354	20,255	16,329	-4,391	16,558	21,996	23,858	13,129	21,781	28,612	2
Cash Ending	0	1,914	5,606	9,308	14,448	21,401	29,774	39,810	51,416	64,928	80,484	93,151	112,509	95,155	115,410	131,739	127,348	143,906	165,901	189,759	202,888	224,669	253,282	27
Cash excess	0	1,914	5,606	9,308	14,448	21,401	29,774	39,810	51,416	64,928	80,484	93,151	112,509	95,155	115,410	131,739	127,348	143,906	165,901	189,759	202,888	224,669	253,282	27
Cash shortage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

BALANCE SHEET (UNIT: Million Rp.)																								
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
(Assets)																								
Current Assets	0	1,914	5,606	9,308	14,448	21,401	29,774	39,810	51,416	64,928	80,484	93,151	112,509	95,155	115,410	131,739	127,348	143,906	165,901	189,759	202,888	224,669	253,282	27
Cash & Deposit	0	1,914	5,606	9,308	14,448	21,401	29,774	39,810	51,416	64,928	80,484	93,151	112,509	95,155	115,410	131,739	127,348	143,906	165,901	189,759	202,888	224,669	253,282	27
Fixed Assets	24,266	74,448	87,123	96,097	94,986	106,222	98,486	90,618	82,838	74,970	67,102	64,308	56,440	87,615	79,747	76,059	93,623	89,935	82,155	74,287	79,069	76,275	68,407	7
Construction costs	24,266	74,448	91,898	105,647	111,213	129,126	129,258	129,258	129,346	129,346	129,346	134,420	134,420	173,463	173,463	177,643	203,075	207,255	207,343	219,993	225,067	225,067	225,067	23
Accumulated depreciation	0	0	4,775	9,550	16,227	22,904	30,772	38,640	46,508	54,376	62,244	70,112	77,980	85,848	93,716	101,584	109,452	117,320	125,188	133,056	140,924	148,792	156,660	16
Net fixed assets	24,266	74,448	87,123	96,097	94,986	106,222	98,486	90,618	82,838	74,970	67,102	64,308	56,440	87,615	79,747	76,059	93,623	89,935	82,155	74,287	79,069	76,275	68,407	7
Total Assets	24,266	76,362	92,729	105,405	109,434	127,623	128,260	130,428	134,254	139,898	147,586	157,459	168,949	182										

object (Base Case)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
18	9,703	11,009	12,574	13,873	15,535	17,186	18,909	20,776	22,663	24,744	26,987	26,967	26,967	26,967	26,967	26,967	26,967	26,967	26,967	26,967	26,967	26,967	26,967	26,967	26,967	26,967	26,967
33	9,227	11,196	11,323	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514	12,514
10	220	220	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275
20	3,946	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013	4,013
12	286	286	358	358	358	358	358	358	358	358	358	358	358	358	358	358	358	358	358	358	358	358	358	358	358	358	358
15	4,775	6,677	6,677	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868
15	476	-187	1,252	1,360	3,022	4,673	6,396	8,263	10,150	12,231	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454
17	841	1,396	2,167	3,210	4,466	5,972	7,712	9,739	12,073	13,973	16,876	14,273	17,311	19,761	19,102	21,586	24,885	28,464	30,433	33,700	37,992	41,161	46,053	46,948	51,858	56,984	62,586
17	841	1,396	2,167	3,210	4,466	5,972	7,712	9,739	12,073	13,973	16,876	14,273	17,311	19,761	19,102	21,586	24,885	28,464	30,433	33,700	37,992	41,161	46,053	46,948	51,858	56,984	62,586
16	2,389	2,747	2,892	3,357	3,357	3,357	3,357	3,357	3,357	3,356	3,343	3,321	3,296	3,236	3,156	3,075	2,995	2,915	2,834	2,754	2,674	2,593	2,513	2,432	2,352	2,272	2,191
16	2,389	2,747	2,892	3,357	3,357	3,357	3,357	3,357	3,357	3,356	3,343	3,321	3,296	3,236	3,156	3,075	2,995	2,915	2,834	2,754	2,674	2,593	2,513	2,432	2,352	2,272	2,191
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	-1,072	-1,538	527	1,212	4,130	7,287	10,751	14,644	18,865	22,847	27,987	25,406	28,469	30,978	30,400	32,964	36,344	40,003	42,052	45,400	49,772	53,021	57,994	58,969	63,959	69,166	74,848
14	0	0	158	364	1,239	2,186	3,225	4,393	5,659	6,854	8,396	7,622	8,541	9,294	9,120	9,889	10,903	12,001	12,616	13,620	14,932	15,906	17,398	17,691	19,188	20,750	22,455
14	-1,072	-1,538	369	849	2,891	5,101	7,525	10,251	13,205	15,993	19,591	17,784	19,928	21,685	21,280	23,075	25,441	28,002	29,437	31,780	34,841	37,115	40,596	41,278	44,771	48,416	52,394
0	0	0	92	212	723	1,275	1,881	2,563	3,301	3,998	4,898	4,446	4,862	5,421	5,320	5,769	6,360	7,000	7,359	7,945	8,710	9,279	10,149	10,320	11,193	12,104	13,098
14	-1,072	-1,538	277	637	2,168	3,826	5,644	7,688	9,904	11,995	14,693	13,338	14,946	16,264	15,960	17,306	19,080	21,001	22,078	23,835	26,130	27,836	30,447	30,959	33,578	36,312	39,295
11	-242	-1,779	-1,503	-866	1,302	5,128	10,772	18,460	28,364	40,359	55,052	68,390	83,336	99,600	115,560	132,866	151,946	172,948	195,025	218,860	244,991	272,827	303,274	334,232	367,811	404,123	443,418

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
19	5,606	9,308	14,448	21,401	29,774	39,810	51,416	64,928	80,484	93,151	112,509	95,155	115,410	131,739	127,348	143,906	165,901	189,759	202,888	224,669	253,282	274,407	307,020	312,985	345,718	379,894	417,242
7	19,841	13,452	28,009	12,438	15,356	18,512	21,976	25,870	30,090	34,071	39,198	36,595	39,633	42,082	41,424	43,907	47,207	50,785	52,755	56,022	60,314	63,483	68,375	69,269	74,179	79,306	84,908
15	476	-187	1,252	1,360	3,022	4,673	6,396	8,263	10,150	12,231	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454	14,454
5	4,775	6,677	6,677	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868	7,868
10	13,749	5,566	17,913	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	841	1,396	2,167	3,210	4,466	5,972	7,712	9,739	12,073	13,973	16,876	14,273	17,311	19,761	19,102	21,586	24,885	28,464	30,433	33,700	37,992	41,161	46,053	46,948	51,858	56,984	62,586
16	16,138	8,313	21,055	4,065	5,319	6,806	8,464	10,313	17,423	14,713	56,552	16,340	23,304	46,473	24,866	21,912	23,349	37,656	30,974	27,409	39,189	30,869	62,410	36,536	40,003	41,957	40,835
0	0	0	0	132	0	88	0	0	5,074	0	39,043	0	4,180	25,432	4,180	88	0	12,650	5,074	0	9,783	0	29,260	3,003	4,180	3,741	0
16	2,389	2,747	2,892	3,357	3,357	3,357	3,357	3,357	3,357	3,356	3,343	3,321	3,296	3,236	3,156	3,075	2,995	2,915	2,834	2,754	2,674	2,593	2,513	2,432	2,352	2,272	2,191
0	0	0	158	364	1,239	2,186	3,225	4,393	5,659	6,854	8,396	7,622	8,541	9,294	9,120	9,889	10,903	12,001	12,616	13,620	14,932	15,906	17,398	17,691	19,188	20,750	22,455
0	0	0	92	212	723	1,275	1,881	2,563	3,301	3,998	4,898	4,446	4,862	5,421	5,320	5,769	6,360	7,000	7,359	7,945	8,710	9,279	10,149	10,320	11,193	12,104	13,098
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	3,703	5,139	6,954	8,373	10,036	11,606	13,512	15,556	12,667	19,358	-17,354	20,255	16,329	-4,391	16,558	21,996	23,858	13,129	21,781	28,612	21,125	32,614	5,964	32,733	34,176	37,349	44,073
16	9,308	14,448	21,401	29,774	39,810	51,416	64,928	80,484	93,151	112,509	95,155	115,410	131,739	127,348	143,906	165,901	189,759	202,888	224,669	253,282	274,407	307,020	312,985	345,718	379,894	417,242	461,315
6	9,308	14,448	21,401	29,774	39,810	51,416	64,928	80,484	93,151	112,509	95,155	115,410	131,739	127,348	143,906	165,901	189,759	202,888	224,669	253,282	274,407	307,020	312,985	345,718	379,894	417,242	461,315
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
6	9,308	14,448	21,401	29,774	39,810	51,416	64,928	80,484	93,151	112,509	95,155	115,410	131,739	127,348	143,906	165,901	189,759	202,888	224,669	253,282	274,407	307,020	312,985	345,718	379,894	417,242	461,315
3	9,308	14,448	21,401	29,774	39,810	51,416	64,928	80,484	93,151	112,509	95,155	115,410	131,739	127,348	143,906	165,901	189,759	202,888	224,669	253,282	274,407	307,020	312,985	345,718	379,894	417,242	461,315
6	96,097	94,986	106,222	98,486	90,618	82,838	74,970	67,102	64,308	56,440	87,615	79,747	76,059	93,623	89,935	82,155	74,287	79,069	76,275	68,407	70,322	62,454	83,846	78,981	75,293	71,166	63,298
18	105,647	111,213	129,126	129,258	129,258	129,346	129,346	129,346	134,420	134,420	173,463	173,463	177,643	203,075	207,255	207,343	207,343	219,993	225,067	225,067	234,850	234,850	264,110	267,113	271,293	275,034	275,034
5	9,550	16,227	22,904	30,772	38,640	46,508	54,376	62,244	70,112	77,980	85,848	93,716	101,584	109,452	117,320	125,188	133,056	140,924	148,792	156,660	164,528	172,396	180,264	188,132	196,000	203,868	211,736
3	96,097	94,986	106,222	98,486	90,618	82,838	74,970	67,102	64,308	56,440	87,615	79,747	76,059	93,623	89,935	82,155	74,287	79,069	76,275	68,407	70,322	62,454	83,846				

Appendix C-11 Financial Statements for Short-term project (Case 1)

PROFIT AND LOSS STATEMENT (UNIT: Million Rp.)																							
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Operating Revenue	0	15,340	17,107	18,762	20,068	21,633	22,964	24,626	26,277	28,000	29,867	31,754	33,835	36,021	36,021	36,021	36,021	36,021	36,021	36,021	36,021	36,021	36,021
Operating Expenses	0	5,180	12,356	14,100	16,002	16,196	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387
Personnel	0	660	660	1,320	1,320	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375
Maintenance and repair	0	3,662	4,366	4,592	4,592	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659
Other expenditure	0	858	858	1,716	1,716	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788
Depreciation costs	0	0	6,472	6,472	8,374	8,374	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565
Net Operating Income	0	10,160	4,751	4,662	4,066	5,438	5,578	7,240	8,891	10,614	12,481	14,368	16,449	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635
Non-operating Revenues	0	0	598	1,685	2,815	4,244	5,882	7,782	9,983	12,474	15,310	18,516	21,358	25,277	23,767	27,984	31,705	32,418	36,382	41,278	46,579	50,406	55,677
Interest on deposit	0	0	598	1,685	2,815	4,244	5,882	7,782	9,983	12,474	15,310	18,516	21,358	25,277	23,767	27,984	31,705	32,418	36,382	41,278	46,579	50,406	55,677
Non-operating Expenses	0	2,568	3,873	4,327	4,684	4,829	5,295	5,295	5,295	5,295	5,295	5,295	5,294	5,281	5,258	5,233	5,173	5,093	5,013	4,932	4,852	4,772	4,691
Interest on long-term loans	0	2,568	3,873	4,327	4,684	4,829	5,295	5,295	5,295	5,295	5,295	5,295	5,294	5,281	5,258	5,233	5,173	5,093	5,013	4,932	4,852	4,772	4,691
Interest on short-term loans	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Income Before Tax	0	7,592	1,476	2,020	2,196	4,852	6,165	9,727	13,579	17,793	22,496	27,589	32,513	38,631	37,143	41,385	45,166	45,960	50,004	54,980	60,361	64,269	69,620
Income Tax	0	2,277	443	606	659	1,456	1,849	2,918	4,074	5,338	6,749	8,277	9,754	11,589	11,143	12,416	13,550	13,788	15,001	16,494	18,108	19,281	20,886
Net Income After Tax	0	5,314	1,033	1,414	1,538	3,397	4,315	6,809	9,505	12,455	15,747	19,312	22,759	27,042	26,000	28,970	31,616	32,172	35,003	38,486	42,253	44,988	48,734
(Contribution To the Government)	0	1,329	258	354	384	849	1,079	1,702	2,376	3,114	3,937	4,828	5,690	6,760	6,500	7,242	7,904	8,043	8,751	9,621	10,563	11,247	12,184
Net Income After Contribution	0	3,986	775	1,061	1,153	2,547	3,237	5,107	7,129	9,341	11,810	14,484	17,069	20,281	19,500	21,727	23,712	24,129	26,252	28,864	31,690	33,741	36,551
Retained Earnings	0	3,986	4,760	5,821	6,974	9,521	12,758	17,865	24,994	34,335	46,145	60,630	77,699	97,980	117,480	139,207	162,920	187,049	213,301	242,165	273,855	307,596	344,146

CASH FLOW STATEMENT (Unit: Million Rp.)																							
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Cash Beginning	0	0	3,986	11,232	18,765	28,292	39,213	51,883	66,555	83,161	102,067	123,442	142,386	168,516	158,447	186,561	211,369	216,123	242,547	275,185	310,524	336,038	371,180
Cash Inflow (excluding G. Funds)	98,784	60,342	29,271	26,568	20,821	35,968	21,025	24,589	28,439	32,653	37,356	42,449	47,371	53,477	51,967	56,184	59,905	60,618	64,582	69,477	74,778	78,605	83,876
Net operating income	0	10,160	4,751	4,662	4,066	5,438	5,578	7,240	8,891	10,614	12,481	14,368	16,449	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635
Depreciation costs	0	0	6,472	6,472	8,374	8,374	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565
Long-term loans	98,784	50,182	17,450	13,749	5,566	17,913	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest on deposits	0	0	598	1,685	2,815	4,244	5,882	7,782	9,983	12,474	15,310	18,516	21,358	25,277	23,767	27,984	31,705	32,418	36,382	41,278	46,579	50,406	55,677
Cash Outflow (excluding G. Funds)	98,784	56,356	22,024	19,035	11,294	25,047	8,355	9,915	11,833	13,746	15,980	23,505	21,242	63,546	23,853	31,376	55,150	34,195	31,943	34,138	49,264	43,464	40,851
Investment	98,784	50,182	17,450	13,749	5,566	17,913	132	0	88	0	0	5,074	0	39,043	0	4,180	25,432	4,180	88	0	12,650	5,074	0
Repayment for long-term loans	0	0	0	0	0	0	0	0	0	0	0	31	504	0	872	951	2,305	3,091	3,091	3,091	3,091	3,091	3,091
Interest on long-term loans	0	2,568	3,873	4,327	4,684	4,829	5,295	5,295	5,295	5,295	5,295	5,295	5,294	5,281	5,258	5,233	5,173	5,093	5,013	4,932	4,852	4,772	4,691
Income Tax	0	2,277	443	606	659	1,456	1,849	2,918	4,074	5,338	6,749	8,277	9,754	11,589	11,143	12,416	13,550	13,788	15,001	16,494	18,108	19,281	20,886
(Contribution to the Government)	0	1,329	258	354	384	849	1,079	1,702	2,376	3,114	3,937	4,828	5,690	6,760	6,500	7,242	7,904	8,043	8,751	9,621	10,563	11,247	12,184
Interest on short-term loans	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash Inflow - Cash Outflow	0	3,986	7,247	7,533	9,527	10,921	12,670	14,672	16,606	18,906	21,375	18,944	26,130	-10,069	28,114	24,807	4,755	26,423	32,638	35,339	25,514	35,141	43,025
Cash Ending	0	3,986	11,232	18,765	28,292	39,213	51,883	66,555	83,161	102,067	123,442	142,386	168,516	158,447	186,561	211,369	216,123	242,547	275,185	310,524	336,038	371,180	414,205
Cash excess	0	3,986	11,232	18,765	28,292	39,213	51,883	66,555	83,161	102,067	123,442	142,386	168,516	158,447	186,561	211,369	216,123	242,547	275,185	310,524	336,038	371,180	414,205
Cash shortage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

BALANCE SHEET (UNIT: Million Rp.)																							
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
(Assets)																							
Current Assets	0	3,986	11,232	18,765	28,292	39,213	51,883	66,555	83,161	102,067	123,442	142,386	168,516	158,447	186,561	211,369	216,123	242,547	275,185	310,524	336,038	371,180	414,205
Cash & Deposit	0	3,986	11,232	18,765	28,292	39,213	51,883	66,555	83,161	102,067	123,442	142,386	168,516	158,447	186,561	211,369	216,123	242,547	275,185	310,524	336,038	371,180	414,205
Fixed Assets	98,784	148,966	159,944	167,221	164,413	173,952	164,519	154,954	145,477	135,912	126,347	121,856	112,291	141,769	132,204	126,819	142,686	137,301	127,824	118,259	121,344	116,853	107,288
Construction costs	98,784	148,966	166,416	180,165	185,731	203,644	203,776	203,864	203,864	203,864	208,938	208,938	208,938	247,981	247,981	252,161	277,593	281,773	281,861	281,861	294,511	299,585	299,585
Accumulated depreciation	0	0	6,472	12,944	21,318	29,692	39,257	48,822	58,387	67,952	77,517	87,082	96,647	106,212	115,777	125,342	134,907	144,472	154,037	163,602	173,167	182,732	192,297
Net fixed assets	98,784	148,966	159,944	167,221	164,413	173,952	164,519	154,954	145,477	135,912	126,347	121,856	112,291	141,769	132,204	126,819	142,686	137,301	127,824	118,259	121,344	116,853	107,288
Total Assets	98,784	152,952	171,176	185,986	192,705	213,165	216,402	221,509	228,638	237,979	249,789	264,242	280,807	300,216</									

roject (Case 1)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
999	18,762	20,068	21,633	22,964	24,526	26,277	28,000	29,867	31,754	33,835	36,021	36,021	36,021	36,021	36,021	36,021	36,021	36,021	36,021	36,021	36,021	36,021	36,021	36,021	36,021	36,021	36,021
107	14,100	16,002	16,196	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387	17,387
356	1,320	1,320	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375
366	4,592	4,592	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659	4,659
358	1,716	1,716	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788	1,788
172	6,472	8,374	8,374	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565
751	4,662	4,066	5,438	5,578	7,240	8,891	10,614	12,481	14,368	16,449	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635
598	1,685	2,815	4,244	5,882	7,782	9,983	12,474	15,310	18,516	21,358	25,277	23,767	27,984	31,705	32,418	36,382	41,278	46,579	50,406	55,677	62,131	67,632	69,750	72,942	80,330	88,130	96,616
598	1,685	2,815	4,244	5,882	7,782	9,983	12,474	15,310	18,516	21,358	25,277	23,767	27,984	31,705	32,418	36,382	41,278	46,579	50,406	55,677	62,131	67,632	69,750	72,942	80,330	88,130	96,616
373	4,327	4,684	4,829	5,295	5,295	5,295	5,295	5,295	5,295	5,294	5,281	5,258	5,233	5,173	5,093	5,013	4,932	4,852	4,772	4,691	4,611	4,531	4,450	4,370	4,290	4,209	4,129
373	4,327	4,684	4,829	5,295	5,295	5,295	5,295	5,295	5,295	5,294	5,281	5,258	5,233	5,173	5,093	5,013	4,932	4,852	4,772	4,691	4,611	4,531	4,450	4,370	4,290	4,209	4,129
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
176	2,020	2,196	4,852	6,165	9,727	13,579	17,793	22,496	27,589	32,513	38,631	37,143	41,385	45,166	45,960	50,004	54,980	60,361	64,269	69,620	76,154	81,735	83,934	87,206	94,675	102,555	111,122
143	606	659	1,456	1,849	2,918	4,074	5,338	6,749	8,277	9,754	11,589	11,143	12,416	13,550	13,788	15,001	16,494	18,108	19,281	20,886	22,846	24,521	25,180	26,162	28,402	30,767	33,336
133	1,414	1,538	3,397	4,315	6,809	9,505	12,455	15,747	19,312	22,759	27,042	26,000	28,970	31,616	32,172	35,003	38,486	42,253	44,988	48,734	53,308	57,215	58,754	61,044	66,272	71,789	77,785
258	354	384	849	1,079	1,702	2,376	3,114	3,937	4,828	5,690	6,760	6,500	7,242	7,904	8,043	8,751	9,621	10,563	11,247	12,184	13,327	14,304	14,688	15,261	16,568	17,947	19,446
175	1,061	1,153	2,547	3,237	5,107	7,129	9,341	11,810	14,484	17,069	20,281	19,500	21,727	23,712	24,129	26,252	28,864	31,690	33,741	36,551	39,981	42,911	44,065	45,783	49,704	53,841	58,339
760	5,821	6,974	9,521	12,758	17,865	24,994	34,335	46,145	60,630	77,699	97,980	117,480	139,207	162,920	187,049	213,301	242,165	273,855	307,596	344,146	384,127	427,038	471,104	516,887	566,591	620,433	678,771

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
999	11,232	18,765	28,292	39,213	51,883	66,555	83,161	102,067	123,442	142,386	168,516	158,447	186,561	211,369	216,123	242,547	275,185	310,524	336,038	371,180	414,205	450,877	464,999	486,278	535,533	587,532	644,107
271	26,568	20,821	35,968	21,025	24,587	28,439	32,653	37,356	42,449	47,371	53,477	51,967	56,184	59,905	60,618	64,582	69,477	74,778	78,605	83,876	90,330	95,831	97,949	101,141	108,529	116,329	124,816
751	4,662	4,066	5,438	5,578	7,240	8,891	10,614	12,481	14,368	16,449	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635	18,635
172	6,472	8,374	8,374	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565	9,565
150	13,749	5,566	17,913	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
598	1,685	2,815	4,244	5,882	7,782	9,983	12,474	15,310	18,516	21,358	25,277	23,767	27,984	31,705	32,418	36,382	41,278	46,579	50,406	55,677	62,131	67,632	69,750	72,942	80,330	88,130	96,616
124	19,035	11,294	25,047	8,355	9,915	11,833	13,746	15,980	23,505	21,242	63,546	23,853	31,376	55,150	34,195	31,943	34,138	49,264	43,464	40,851	53,658	81,709	76,669	51,886	56,531	59,754	60,002
150	13,749	5,566	17,913	132	0	88	0	5,074	0	39,043	0	4,180	25,432	4,180	88	12,650	5,074	0	9,783	35,264	29,260	3,003	4,180	3,741	0	0	0
0	0	0	0	0	0	0	0	31	504	0	872	951	2,305	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091	3,091
373	4,327	4,684	4,829	5,295	5,295	5,295	5,295	5,295	5,295	5,294	5,281	5,258	5,233	5,173	5,093	5,013	4,932	4,852	4,772	4,691	4,611	4,531	4,450	4,370	4,290	4,209	4,129
143	606	659	1,456	1,849	2,918	4,074	5,338	6,749	8,277	9,754	11,589	11,143	12,416	13,550	13,788	15,001	16,494	18,108	19,281	20,886	22,846	24,521	25,180	26,162	28,402	30,767	33,336
258	354	384	849	1,079	1,702	2,376	3,114	3,937	4,828	5,690	6,760	6,500	7,242	7,904	8,043	8,751	9,621	10,563	11,247	12,184	13,327	14,304	14,688	15,261	16,568	17,947	19,446
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
247	7,533	9,527	10,921	12,670	14,672	16,606	18,906	21,375	18,944	26,130	-10,069	28,114	24,807	4,755	26,423	32,638	35,339	25,514	35,141	43,025	36,672	14,122	21,280	49,255	51,999	56,575	64,813
232	18,765	28,292	39,213	51,883	66,555	83,161	102,067	123,442	142,386	168,516	158,447	186,561	211,369	216,123	242,547	275,185	310,524	336,038	371,180	414,205	450,877	464,999	486,278	535,533	587,532	644,107	708,920
232	18,765	28,292	39,213	51,883	66,555	83,161	102,067	123,442	142,386	168,516	158,447	186,561	211,369	216,123	242,547	275,185	310,524	336,038	371,180	414,205	450,877	464,999	486,278	535,533	587,532	644,107	708,920
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
999	18,765	28,292	39,213	51,883	66,555	83,161	102,067	123,442	142,386	168,516	158,447	186,561	211,369	216,123	242,547	275,185	310,524	336,038	371,180	414,205	450,877	464,999	486,278	535,533	587,532	644,107	708,920
232	18,765	28,292	39,213	51,883	66,555	83,161	102,067	123,442	142,386	168,516	158,447	186,561	211,369	216,123	242,547	275,185	310,524	336,038	371,180	414,205	450,877	464,999	486,278	535,533	587,532	644,107	708,920
944	167,221	164,413	173,952	164,519	154,954	145,477	135,912	126,347	121,856	112,291	141,769	132,204	126,819	142,686	137,301	127,824	118,259	121,344	116,853	107,288	107,506	133,205	152,900	146,338	140,953	135,129	125,564
416	180,165	185,731	203,644	203,776	203,776	203,864	203,864	208,938	208,938	247,981	247,981	252,161	277,593	281,773	281,861	281,861	294,511	299,585	299,585	309,368	344,632	373,892	376,895	381,075	384,816	384,816	384,816

Appendix C-12 Air quality in Ujung Pandang port

PARAMETER	UNIT	OBSERVATION'S LOCATION		STANDARD 827/MENDE H/1988
		LOSARI BENTENG BEACH	HATTA PORT	
Carbon Monoxide	$\mu\text{g}/\text{m}^3$	800	1250	22609
Sulphur Dioxide	$\mu\text{g}/\text{m}^3$	1.383	2.556	260
Nitrogen Oxide	$\mu\text{g}/\text{m}^3$	2.243	5.934	92.5-
Oxidant	$\mu\text{g}/\text{m}^3$	11.057	48.742	200
Hydrogen Sulfide	$\mu\text{g}/\text{m}^3$	<0.001	<0.001	42
Ammonia	$\mu\text{g}/\text{m}^3$	0.548	1.755	1360
Lead	mg/m^3	0.003	0.005	0.06
Hydrocarbons	$\mu\text{g}/\text{m}^3$	25	40	160
Dust (*)	mg/m^3	0.885	1,185	0.26

Source : SEAMEO BIOTROP, December 1994

(*) Parameter that has exceeded the NAB (maximum-limit of the standard)

Appendix C-13 Water quality analysis Ujung Pandang port

NO.	PARAMETER	Unit	DS ₁ B	DS ₂ B	DS ₁ T	DS ₂ T	DS ₁ A	DS ₂ A	N A B	
									YOB	YDI
A. PHYSICS										
1.	Colour	Pt.Co	20.5	22.5	17.5	20	22.5	25.0	< 50	≤ 30
2.	Transparency	NTU	8.5	1	1	1.7	1	2.0	≤ 3	≥ 5
3.	Total suspended solid	mg/l	470	350	402	282	318	364	< 80	≤ 25
4.	Temperature	C	30.6	30.2	29.5	30.07	30	30		
B. CHEMISTRY										
1.	pH		7.7	7.4	7.3	7.2	7.25	7.26	6-9	6-8.5
2.	Salinity	%	27.90	28.00	27.80	28.00	27.90	28.00	10.000	Alami
3.	Dissolved Oksigen (DO)	mg/l	-	-	5.70	-	6.10	-	> 4	> 6
4.	BOD	mg/l	1.00	1.00	1.50	1.30	1.20	1.00	< 45	< 25
5.	COD	mg/l	130.43	101.95	101.95	88.46	142.43	143.92	< 80	< 40
6.	Amonia (NH ₃ -N)	mg/l	0.048	0.047	0.051	0.121	0.887	0.168	< 1	< 3
7.	Nitrit (N-NO ₂)	mg/l	< 0.001	< 0.001	0.005	0.005	< 0.001	< 0.001	Nihil	Nihil
8.	Cyanide (CN)	mg/l	0.00456	0.001248	0.002392	0.00364	< 0.00000	0.001872	0.2	< 0.5
9.	Sulfide (H ₂ S)	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	< 0.01
10.	Oil & grease	mg/l	0.47	0.47	0.38	0.46	0.47	0.48	≤ 5	Nihil
11.	Fenol	mg/l	0.04	0.04	0.02	0.02	0.03	0.03	≤ 0.002	Nihil
12.	Mercury (Hg)	mg/l	0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	≤ 0.003	0.0001
13.	Chrom Heksavalen (Cr ⁶⁺)	mg/l	0.037	0.043	0.028	0.038	0.041	0.043	≤ 0.01	0.00004
14.	Arsen (As)	mg/l	0.00005	0.00007	0.00002	0.00001	< 0.00001	0.00005	≤ 0.01	0.0026
15.	Selenium (Se)	mg/l	0.046	0.045	0.037	0.041	0.046	0.047	≤ 0.005	0.00045
16.	Cadmium (Cd)	mg/l	0.049	0.045	0.032	0.032	0.04	0.04	≤ 0.01	0.00002
17.	Copper (Cu)	mg/l	0.047	0.04	0.014	0.014	0.023	0.057	≤ 0.05	0.001
18.	Lead (Pb)	mg/l	0.188	0.23	0.133	0.309	0.212	0.186	≤ 0.01	0.00002
19.	Zinc (Zn)	mg/l	0.053	0.071	0.007	0.048	0.02	0.167	≤ 0.1	0.002
20.	Nikel (Ni)	mg/l	0.058	0.033	0.014	0.032	0.035	< 0.001	≤ 0.002	0.007
21.	Silver (Ag)	mg/l	0.034	0.042	0.038	0.044	0.037	0.034	≤ 0.05	0.0003

SAMPLING LOCATION

DS₁B : Dumping Site 1 Bottom
 DS₂B : Dumping Site 2 Bottom
 DS₁T : Dumping Site 1 Middle

DS₂T : Dumping Site 2 Middle
 DS₁A : Dumping Site 1 Surface
 DS₂A : Dumping Site 2 Surface

NAB : Standard Value
 YOB : Allowable Limit
 YDI : Desirable Limit

Appendix C-14 Water quality analysis Ujung Pandang port

NO.	PARAMETER	UNIT	CH-Sr	CH-Ps	N A B	
					YDB	YDI
A. PHYSICS						
1.	Colour	Pl.Co	22.5	20.0	< 50	≤ 30
2.	Transparency	NTU	8.5	1	≤ 3	≥ 5
3.	Total suspended solid	mg/l	288	446	< 80	≤ 25
4.	Temperature	C	30.5	30.9		
B. CHEMISTRY						
1.	pH		7.4	7.3	6-9	6-8.5
2.	Salinity	%	27.00	28.50	10.00	Alami
3.	Dissolved Oksigen (DO)	mg/l	5.00	5.70	> 4	> 6
4.	BOD	mg/l	1.00	0.80	< 45	< 25
5.	COD	mg/l	161.91	149.92	< 80	< 40
6.	Amonia (NH ₃ -N)	mg/l	0.586	0.215	< 1	< 3
7.	Nitrit (N-NO ₂)	mg/l	< 0.001	0.001	Nihil	Nihil
8.	Cyanide (CN)	mg/l	58.16	37.44	0.2	< 0.5
9.	Sulfide (H ₂ S)	mg/l	< 0.01	< 0.01	< 0.03	< 0.01
10.	Oil & grease	mg/l	0.48	0.40	≤ 5	Nihil
11.	Fenol	mg/l	0.026	0.025	≤ 0.002	Nihil
12.	Mercury (Hg)	mg/l	0.000010	< 0.00001	≤ 0.003	0.0001
13.	Chrom Heksavalen (Cr ⁺⁶)	mg/l	0.040	0.032	≤ 0.01	0.00004
14.	Arsen (As)	mg/l	0.00002	< 0.00001	≤ 0.01	0.0026
15.	Selenium (Se)	mg/l	0.044	0.040	≤ 0.005	0.00045
16.	Cadmium (Cd)	mg/l	0.037	0.037	≤ 0.01	0.00002
17.	Copper (Cu)	mg/l	0.023	0.023	≤ 0.06	0.001
18.	Lead (Pb)	mg/l	0.167	0.22	≤ 0.01	0.00002
19.	Zinc (Zn)	mg/l	0.067	0.021	≤ 0.1	0.002
20.	Nikel (Ni)	mg/l	0.024	0.011	≤ 0.002	0.007
21.	Silver (Ag)	mg/l	0.038	0.04	≤ 0.05	0.0003

SAMPLING LOCATION

CH-Sr : Channel Ebbtide

CH-Ps : Channel Neap

NAB : Standard Value

YDB : Allowable Limit

YDI : Desirable Limit

Appendix C-15 Water quality analysis Ujung Pandang port

NO.	PARAMETER	UNIT	KL-Ps	KL-Sr	N A B	
					YDB	YDI
A. PHYSICS						
1.	Colour	Pt.Co	20	20.0	< 50	≤ 30
2.	Transparency	NTU	2.5	1.7	≤ 3	≥ 5
3.	Total suspended solid	mg/l	312	308	< 80	≤ 25
4.	Temperature	C	30.2	31		
B. CHEMISTRY						
1.	pH		7.1	7.5	6-9	6-8.5
2.	Salinity	%	28.00	29.00	10.00	Alami
3.	Dissolved Oksigen (DO)	mg/l	5.60	4.80	> 4	> 6
4.	BOD	mg/l	1.20	1.00	< 45	< 25
5.	COD	mg/l	118.44	95.96	< 80	< 40
6.	Amonia (NH ₃ -N)	mg/l	0.189	0.098	< 1	< 3
7.	Nitrit (N-NO ₂)	mg/l	< 0.001	< 0.001	Nihil	Nihil
8.	Cyanide (CN)	mg/l	21.840	< 0.01	0.2	< 0.5
9.	Sulfide (H ₂ S)	mg/l	< 0.01	< 0.01	< 0.03	< 0.01
10.	Oil & grease	mg/l	0.440	0.440	≤ 5	Nihil
11.	Fenol	mg/l	0.034	0.034	≤ 0.002	Nihil
12.	Mercury (Hg)	mg/l	< 0.00001	< 0.00001	≤ 0.003	0.0001
13.	Chrom Heksavalen (Cr ⁺⁶)	mg/l	0.034	0.038	≤ 0.01	0.00004
14.	Arsen (As)	mg/l	0.060	0.050	≤ 0.01	0.0026
15.	Selenium (Se)	mg/l	0.043	0.043	≤ 0.005	0.00045
16.	Cadmium (Cd)	mg/l	0.040	0.044	≤ 0.01	0.00002
17.	Copper (Cu)	mg/l	0.039	0.029	≤ 0.06	0.001
18.	Lead (Pb)	mg/l	0.239	0.232	≤ 0.01	0.00002
19.	Zinc (Zn)	mg/l	0.088	0.156	≤ 0.1	0.002
20.	Nikel (Ni)	mg/l	0.067	0.072	≤ 0.002	0.007
21.	Silver (Ag)	mg/l	0.037	0.036	≤ 0.05	0.0003

SAMPLING LOCATION

KL-Sr : Basin Port Ebbtide

KL-Ps : Basin Port Neap

NAB : Standard Value

YDI : Desirable Limit

YDB : Allowable Limit

Appendix C-16 Sediment analysis Ujung Pandang port

NO.	PARAMETER	UNIT	KL-Sr	KL-Ps
A.	CHEMISTRY			
1.	Cadmium (Cd)	$\mu\text{g/g}$	2.65	3.10
2.	Timbal (Pb)	$\mu\text{g/g}$	83.30	115.80
3.	Mercury (Hg)	$\mu\text{g/g}$	1.017	0.020
4.	Arsen (As)	$\mu\text{g/g} \times 10^{-3}$	10.53	15.78
5.	Phosphat (PO_4)	$\mu\text{g/g}$	0.10	0.42
6.	Los ignition (Kadar Abu)	%	39.34	82.59
7.	Los indraier (Kadar Air)	%	55.81	33.34
8.	Nitrogen (N)	$\mu\text{g/g}$	52.12	53.00

Note : KL-Sr = Basin Port Ebb Tide
 KL-Ps = Basin Port Tide

Appendix C-17 Sediment analysis Ujung Pandang port

NO.	PARAMETER	UNIT	CH-Sr	CH-Ps
A.	CHEMISTRY			
1.	Cadmium (Cd)	$\mu\text{g/g}$	0.85	1.40
2.	Timbal (Pb)	$\mu\text{g/g}$	87.65	71.60
3.	Mercury (Hg)	$\mu\text{g/g}$	0.036	0.020
4.	Arsen (As)	$\mu\text{g/g} \times 10^{-3}$	10.53	10.53
5.	Phosphat (PO_4)	$\mu\text{g/g}$	0.12	0.20
6.	Los ignition (Kadar Abu)	%	34.78	62.70
7.	Los indraier (Kadar Air)	%	62.69	61.98
8.	Nitrogen (N)	$\mu\text{g/g}$	56.00	52.24

Note : CH-Sr = Channel Ebb Tide
 CH-Ps = Channel Tide

Appendix C-18 Water biota list in Ujung Pandang port

Phytoplankton Abundance (Ind/l)

NO.	ORGANISM	DS
A.	BACILLARIOPHYCEAE	
1.	<i>Chaetoceros sp</i>	23669
2.	<i>Rhizosolenia sp</i>	1406
3.	<i>Pleurosigma sp</i>	186
4.	<i>Lauderia sp</i>	1364
5.	<i>Amphora sp</i>	21
6.	<i>Guinardia sp</i>	165
7.	<i>Bacteriastrum sp</i>	1197
8.	<i>Amphipora sp</i>	21
9.	<i>Climacodium sp</i>	372
10.	<i>Streptotheca sp</i>	41
11.	<i>Leptocylindrus sp</i>	83
12.	<i>Cyclotella sp</i>	62
B.	DINOPHYCEAE	
1.	<i>Peridinium sp</i>	83
2.	<i>Ceratium sp</i>	21
3.	<i>Dinophysis sp</i>	21
C.	CYANOPHYCEAE	
1.	<i>Trichodesmium sp</i>	2460
	Taxa Quantity	16
	Quantity Ind/l	31172
	Diversity	0.99
	Maximum H'	2.77
	Uniformity	0.36
	Dominantion	0.59

Note Station :

DS = Dumping Site

Appendix C-19 Water biota list in Ujung Pandang port

Phytoplankton Abundance (Ind/l)

NO.	ORGANISM	KL-Sr	KL-Ps
A.	BACILLARIOPHYCEAE		
1.	<i>Chaetoceros sp</i>	125401	43824
2.	<i>Rhizosolenia sp</i>	1268	1778
3.	<i>Pleurosigma sp</i>	-	41
4.	<i>Lauderia sp</i>	6765	3307
5.	<i>Guinardia sp</i>	106	413
6.	<i>Bacteriastrum sp</i>	3594	2460
7.	<i>Hemiaulus sp</i>	148	83
8.	<i>Streptothecca sp</i>	-	269
9.	<i>Leptocylindrus sp</i>	1057	310
10.	<i>Cyclotella sp</i>	-	124
11.	<i>Coscinodiscus sp</i>	106	62
12.	<i>Biddulphia sp</i>	317	83
13.	<i>Nitzschia sp</i>	211	-
14.	<i>Triceratium sp</i>	106	-
15.	<i>Thalassiastrix sp</i>	-	83
16.	<i>Eucampia sp</i>	-	62
B.	DINOPHYCEAE		
1.	<i>Peridinium sp</i>	634	-
2.	<i>Ceratium sp</i>	106	62
3.	<i>Dinophysis sp</i>	106	-
C.	CYANOPHYCEAE		
1.	<i>Trichodesmium sp</i>	6360	1057
	Taxa Quantity	15	16
	Quantity Ind/l	146285	54018
	Diversity	0.66	0.84
	Maxjimum H'	2.71	2.77
	Uniformity	0.24	0.30
	Dominantion	0.74	0.66

Note Station :

KL-Sr = Basin Port Ebb Tide

KL-Ps = Basin Port Tide

Appendix C-20 Water biota list in Ujung Pandang port

Zooplankton Abundance (Ind/l)

NO.	ORGANISM	KL-Sr	KL-Ps
A.	<i>COPEPODA</i>		
1.	<i>Nauplius sp</i>	269	145
2.	<i>Oithona sp</i>	-	4
3.	<i>Microsetella sp</i>	-	66
4.	<i>Neocalanus sp</i>	41	8
5.	<i>Calanus sp</i>	-	8
B.	<i>CILIATA</i>		
1.	<i>Codonella sp</i>	41	16
2.	<i>Tintinnopsis sp</i>	186	-
3.	<i>Favella sp</i>	41	-
	Taxa Quantity	5	6
	Quantity Ind/l	578	247
	Diversity	1.28	1.13
	Maximum H'	1.61	1.79
	Uniformity	0.80	0.63
	Dominantion	0.33	0.42

Note Station :

KL-Sr = Basin Port Ebb Tide

KL-Ps = Basin Port Tide

Appendix C-21 Water biota list in Ujung Pandang port

Zooplankton Abundance (Ind/l)

NO.	ORGANISM	DS
A.	<i>COPEPODA</i>	
1.	<i>Nauplius sp</i>	107
2.	<i>Oithona sp</i>	8
3.	<i>Microsetella sp</i>	21
4.	<i>Acartia sp</i>	4
5.	<i>Oncaea sp</i>	8
B.	<i>CILIATA</i>	
1.	<i>Codonella sp</i>	16
2.	<i>Tintinnopsis sp</i>	8
	Taxa Quantity	7
	Quantity Ind/l	172
	Diversity	1.29
	Maximum H'	1.94
	Uniformity	0.66
	Dominantion	0.42

Note Station :

DS = Dumping Site

Appendix C-22 Water biota list in Ujung Pandang port

Zooplankton Abundance (Ind/l)

NO.	ORGANISM	CH-Sr	CH-Ps
A.	<i>COPEPODA</i>		
1.	<i>Nauplius sp</i>	120	298
2.	<i>Oithona sp</i>	16	25
3.	<i>Microsetella sp</i>	16	50
4.	<i>Acartia sp</i>	4	-
5.	<i>Neocalanus sp</i>	-	25
6.	<i>Calanus sp</i>	8	8
7.	<i>Enterpina sp</i>	4	-
8.	<i>Pontella sp</i>	-	12
9.	<i>Corycaeus sp</i>	-	8
B.	<i>CILIATA</i>		
1.	<i>Codonella sp</i>	12	21
2.	<i>Tintinnopsis sp</i>	4	12
	Taxa Quantity	8	9
	Quantity Ind/l	190	459
	Diversity	1.26	1.31
	Maximum H'	2.08	2.20
	Uniformity	0.60	0.60
	Dominantion	0.42	0.44

Note Station :

CH-Sr = Ebb Tide Channel
 CH-Ps = Tide Channel

Appendix C-23. Water biota list in Ujung Pandang port

Benthos Density (Ind/m²)

NO.	ORGANISM	CH-Sr	CH-Ps
A.	<i>GASTROPODA</i>		
1.	<i>Umboium sp</i>	-	-
2.	<i>Pysene sp</i>	-	12
3.	<i>Nassarius sp</i>	6	-
B.	<i>BIVALVIA</i>		
1.	<i>Anadara sp</i>	-	-
2.	<i>Tellina sp</i>	6	6
3.	<i>Acanthocardia sp</i>	8	-
C.	<i>POLYCHAETA</i>		
1.	<i>Nereis sp</i>	6	-
2.	<i>Glycera sp</i>	-	6
3.	<i>Lycartopsis sp</i>	6	-
4.	<i>Orbinia sp</i>	31	-
	Taxa Quantity	6	3
	Quantity Ind/l	26	24
	Diversity	2.14	1.50
	Maximum H'	2.58	1.58
	Uniformity	0.83	0.95
	Dominantion	0.31	0.37

Note : CH-Sr = Channel Ebb Tide
 CH-Ps = Channel Tide

Appendix C-24 Water biota list in Ujung Pandang port

Benthos Density (Ind/m²)

NO.	ORGANISM	KL-Sr	KL-Ps
A.	GASTROPODA		
1.	<i>Umboonium sp</i>	6	-
2.	<i>Pysene sp</i>	-	6
B.	BIVALVIA		
1.	<i>Anadara sp</i>	6	-
2.	<i>Tellina sp</i>	12	6
C.	POLYCHAETA		
1.	<i>Glycera sp</i>	-	6
	Taxa Quantity	3	3
	Quantity Ind/l	24	18
	Diversity	1.50	1.58
	Maximum H'	1.58	1.58
	Uniformity	0.95	1.00
	Dominantion	0.37	0.33

Note : KL-Sr = Basin Port Ebb Tide
 KL-Ps = Basin Port Tide

Appendix C-25 Water biota list in Ujung Pandang port

Phytoplankton Abundance (Ind/l)

NO.	ORGANISM	CH-Sr	CH-Ps
A.	BACILLARIOPHYCEAE		
1.	<i>Chaetoceros sp</i>	23566	21457
2.	<i>Rhizosolenia sp</i>	847	4424
3.	<i>Pleurosigma sp</i>	-	103
4.	<i>Lauderia sp</i>	1406	2894
5.	<i>Guinardia sp</i>	207	1240
6.	<i>Bacteriastrum sp</i>	413	2687
7.	<i>Hemiaulus sp</i>	103	868
8.	<i>Climacodium sp</i>	21	868
9.	<i>Streptothecca sp</i>	62	124
10.	<i>Leptocylindrus sp</i>	351	372
11.	<i>Cyclotella sp</i>	310	-
12.	<i>Coscinodiscus sp</i>	21	62
13.	<i>Biddulphia sp</i>	62	207
14.	<i>Nitzschia sp</i>	41	62
15.	<i>Triceratium sp</i>	-	21
16.	<i>Thalassiastrum sp</i>	83	83
17.	<i>Eucampia sp</i>	41	331
18.	<i>Hemidiscus sp</i>	21	21
19.	<i>Cerataulina sp</i>	-	661
20.	<i>Diploneis sp</i>	-	21
21.	<i>Ditylum sp</i>	-	21
B.	DINOPHYCEAE		
1.	<i>Peridinium sp</i>	41	289
2.	<i>Ceratium sp</i>	83	145
3.	<i>Dinophysis sp</i>	-	21
C.	CYANOPHYCEAE		
1.	<i>Trichodesmium sp</i>	1268	2687
	Taxa Quantity	10	24
	Quantity Ind/l	28947	39669
	Diversity	0.88	1.73
	Maximum H'	2.94	3.18
	Uniformity	0.30	0.54
	Dominantion	0.67	0.32

Note Station :

CH-Sr = Ebb Tide Channel

CH-Ps = Tide Channel

Appendix C-26 Water biota list in proposed inland container terminal

Benthos Density (Ind/m²)

NO.	ORGANISM	I	II.W	IV.W
A.	GASTROPODA			
1.	<i>Cithon sp</i>	96	64	192
2.	<i>Cerithium sp</i>	336	80	352
3.	<i>Epitonium sp</i>	48	32	336
4.	<i>Littorina sp</i>	—	16	112
5.	<i>Polinices sp</i>	—	—	16
B.	PELECYPODA			
1.	<i>Plicatula sp</i>	16	—	—
2.	<i>Cardium sp</i>	—	80	—
3.	<i>Macoma sp</i>	—	96	16
4.	<i>Anadara sp</i>	—	16	—
5.	<i>Tivela sp</i>	—	16	—
6.	<i>Tellina sp</i>	—	32	—
7.	<i>Lucina sp</i>	—	48	—
8.	<i>Macrocalista sp</i>	—	16	—
C.	OLYGOCHAETA			
1.	<i>Fridericia sp</i>	—	—	16
	Taxa Quantity	4	11	7
	Quantity Ind/l	496	496	1040
	Diversity	0.92	2.19	1.48
	Maximum H'	1.39	2.40	1.94
	Uniformity	0.66	0.91	0.45
	Dominantion	0.92	0.13	0.27

Appendix C-27 Water biota list in proposed inland container terminal

Plankton Abundance (Ind/l)						
NO.	ORGANISM	1a	2a	3	1b	2b
A.	CYANOPHYCEAE					
1.	<i>Pelagothrix sp</i>	848	-	-	-	-
2.	<i>Trichodesmium sp</i>	424	-	-	848	-
B.	BACILLARIOPHYCEAE					
1.	<i>Chaetocheros sp</i>	25864	44520	848	52152	24188
2.	<i>Nitzschia sp</i>	424	-	424	1696	-
3.	<i>Skeletonema sp</i>	-	1272	3392	424	848
4.	<i>Cymbella sp</i>	-	-	-	424	-
5.	<i>Pleurosigma sp</i>	-	-	-	424	424
C.	DINOPHYCEAE					
1.	<i>Gyrodinium sp</i>	424	-	-	848	424
2.	<i>Peridinium sp</i>	-	1272	848	-	424
3.	<i>Ceratium sp</i>	-	-	424	-	-
4.	<i>Prorocentrum sp</i>	-	-	424	-	-
D.	CILIOPHORA					
1.	<i>Tintinnopsis</i>	-	424	-	-	-
	Taxa Quantity	5	4	7	6	4
	Quantity Ind/l	27984	47488	7208	55968	25864
	Diversity	0.37	0.30	1.61	0.35	0.31
	Maximum H'	1.61	1.39	1.95	1.79	1.39
	Uniformity	0.23	0.21	0.83	0.19	0.22
	Dominantion	0.86	0.88	0.28	0.87	0.87

Appendix C-28 Sediment analysis in proposed inland container terminal

NO.	PARAMETER	UNIT	I	II.W	IV.2
A.	CHEMISTRY				
1.	Cadmium (Cd)	µg/g	<0,001	0.240	<0,001
2.	Timbal (Pb)	µg/g	28.613	1.276	5.492
3.	Mercury (Hg)	µg/g x 10 ⁻³	<0,01	0.10	0.15
4.	Arsen (As)	µg/g x 10 ⁻³	4.78	1.91	1.05
5.	Phosphat (PO ₄)	µg/g	1136.36	1,590.91	1,500.00
6.	Los'ignation (Kadar Abu)	%	47.93	57.81	51.50
7.	Los'indraier (Kadar Air)	%	31.17	24.44	28.43
8.	Nitrogen (N)	µg/g	336.20	28.43	51.50

Appendix C-29 Water quality analysis in proposed inland container terminal

NO.	PARAMETER	UNIT	1	2	3	4
A.	PHYSICS					
1.	Colour	Pt.Co	7.5	10.0	7.5	12.5
2.	Turbidity	NTU	3.7	0.7	2.3	1.5
3.	Suspended Solid	mg/l	172	162	330	192
4.	Temperature	°C	30.50	30.40	30.90	30.70
B.	CHEMISTRY					
1.	pH		7.15	7.25	7.25	7.30
2.	Salinity	mg/l	28.00	27.00	27.50	27.50
3.	BOD	mg/l	0.80	1.00	1.00	0.90
4.	COD	mg/l	19.51	12.01	139.43	116.94
5.	NH ₃ -N (NH ₃ + NH ₄)	mg/l	0.530	0.043	0.150	0.707
6.	NO ₂ -N	mg/l	0.004	< 0,001	0.007	0.004
7.	Cianide (CN)	mg/l x 10 ⁻³	24.96	29.12	18.62	12.48
8.	Arsen (As)	mg/l x 10 ⁻³	0.084	0.053	0.079	0.053
9.	Mercury (Hg)	mg/l x 10 ⁻³	0.020	0.030	0.020	0.010
10.	Oil and Grease	mg/l	0.043	0.052	0.044	0.054
11.	Phenol	mg/l	0.016	0.018	0.017	0.020
12.	Detergent	mg/l	0.010	0.015	0.010	0.015
13.	Chrome Hexavalent (Cr ⁶⁺)	mg/l	0.037	0.043	0.038	0.046
14.	Selenium (Se)	mg/l	0.014	0.021	0.014	0.024
15.	Cadmium (Cd)	mg/l	0.009	0.010	0.017	0.013
16.	Copper (Cu)	mg/l	0.008	0.001	< 0,001	< 0,001
17.	Lead (Pb)	mg/l	< 0,001	0.093	0.164	0.106
18.	Zinc (Zn)	mg/l	0.026	0.138	< 0,001	< 0,001
19.	Nickel (Ni)	mg/l	0.010	0.018	0.043	< 0,001

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